

Modeling Authority at the
Canadian Fisheries Museum, 1884-1918

by

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Abstract

This dissertation charts the history of the Canadian Fisheries Museum, established in Ottawa in 1884. Initially assembled for the 1883 International Fisheries Exhibition in London, the Fisheries Museum was a hybrid of natural history museum and industrial exhibition that modeled fish and fisheries as national possessions under progressive state administration. In 1918, after an extensive renovation, the museum was closed and the collection dispersed. The Fisheries Museum's demise raises questions about museological permanency and power, particularly the authority of natural history museums to produce what Jens Andermann calls "hegemonic figurations" of nature and nation. This study—focused on the museum's practices of curating, collecting, cataloguing, modeling, and exhibiting—examines how the museum navigated its material and conceptual challenges as it sought to model Canada's aquatic nature. These included the museum's spatial constraints, the authenticity of fish models, the museum's competing local and national roles, the professionalization of government science, and the gendered shift from production to consumption in fisheries administration. These challenges necessitated an ongoing project of remodeling as the Fisheries Museum sought to stabilize and maintain its authority. Remodeling also shaped the construction of curatorial authority, evidenced in the career of Andrew Halkett. Halkett, a self-trained naturalist and member of the Ottawa Field-Naturalists' Club, negotiated changing ideals of masculine identity as he rose from a clerical position to become the museum's curator, engaged in Arctic expeditions and acclimatization. This dissertation resurrects a "lost" museum, with exhibits spanning fish culture, whale skeletons, and fish restaurants at the

Canadian National Exhibition. Drawing on museum studies, environmental and fisheries history, state formation, and gender studies, it reveals the Fisheries Museum as an arena where ideas about fish, the role of state administration, and the construction of masculine authority were tested and contested.

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Chapter One: Introduction

In 1929, Andrew Halkett retired after a 51-year career in Canada's fisheries department. The Toronto *Globe* dedicated two articles to Halkett, who had risen over the course of his working life from clerk to the rank of "Associate Zoologist." Celebrating Halkett's "faithful, outstanding and distinguished service," the newspaper stressed his courage, noting that Halkett had "reached within 10 degrees of the Pole" on one expedition. "Possessing an adventurous spirit and a courage that was ever dauntless," *The Globe* related, "Mr. Halkett fearlessly braved many dangers and with a smile shouldered risks as he attempted scientific investigations."¹ *The Globe*, however, failed to mention the Canadian Fisheries Museum, a place that was critical to Halkett's career. Founded in 1884, the Fisheries Museum was counted among Ottawa's important attractions, an element in a nascent exhibitionary landscape. A self-trained naturalist, Halkett had been appointed its curator after almost 25 years as a clerk and considered his modernization of the "old time" fisheries exhibit a work of "permanent importance."² In 1918, the museum had closed and Halkett had supervised the collection's dispersal and witnessed the museum building's demolition. In short order the Fisheries Museum had been erased from the Ottawa's landscape of national institutions. By Halkett's retirement, its erasure from public memory was also well underway.

The Canadian Fisheries Museum's demolition in 1918 marks the endpoint of this

¹ "Zoologist honored on his retirement after long service," *The Globe*, May 6, 1929, 16.

² Andrew Halkett to G. J. Desbarats, 30 November 1917, RG 32, volume 119, file 391, LAC.

dissertation, which examines how the museum's authority to model aquatic nature was tested and contested. The Fisheries Museum—part of the federal Department of Marine and Fisheries—was established in 1884 immediately following the International Fisheries Exhibition in London, where Canada had presented a spectacular fisheries display. A hybrid of natural history museum and Victorian industrial exhibition, the museum presented an eclectic mix of objects both biological and mechanical: specimens of fish, birds, and mammals; models of fishing boats and gear; and displays of fisheries-related texts and images. The museum also came to include a working fish hatchery, which reflected the interests and investments of the museum's founder, Canada's superintendent of fish culture Samuel Wilmot. Arranging specimens of live and dead fish alongside the fishing technologies that transformed them into commodities, the museum also arranged visitors' perceptions about nature and of the nation's role in governing it.

The Canadian Fisheries Museum was part of a wider network of fisheries exhibits and museums established in the last half of the nineteenth century in Europe and the United States. This network included fish hatcheries, aquariums, and biological stations, sites where fish and fisheries-related objects were displayed. These different sites, such as the Naples Zoological Station in Italy and the Brighton Aquarium in England, brought fish into public view as objects of commercial exploitation, scientific interest, and aesthetic appreciation. In the era of late nineteenth-century imperialism and deep-water navies, fisheries and maritime exhibits also projected sovereignty. The Berlin Oceanographic museum, for example, demonstrated Germany's military, economic, and intellectual mastery of the seas in exhibits of scientific equipment and models of fishing and naval boats. Sovereignty was also on display at international exhibitions, where

nations contended with one another to project confident representations of fisheries under state administration.³

Fisheries exhibits and museums fit Jens Andermann's conception of natural history museums as "material theatres of sovereignty."⁴ Andermann, along with other observers of natural history museums, argues they naturalized the bourgeois nation-state and its claim to territorial integrity through displays of plants, animals, rocks, and fossils. Such exhibits produced identifications between nature and nation by instructing "museum visitors," Karen Wonders argues, "as to which forms of organic life were native and rightfully belonged to a specific region or country."⁵ Citizens would come to identify characteristic flora and fauna as nationally distinctive and thus develop a sense of the nation as a natural formation. Canadian natural history exhibits and displays, including as Kevin Wamsley notes the fisheries museum's exhibit in Ottawa, produced images of control over nature that sustained representations of Canada as a "progressive culture."⁶ The Fisheries Museum, like other fisheries exhibits, posited this identification through fish; unlike other natural history museums, however, the museum also displayed the

³ Lynn A. Nyhart, *Modern Nature: The Rise of the Biological Perspective in Germany* (Chicago: University of Chicago Press, 2009) 288. For international exhibitions see Paul Greenhalgh, *Ephemeral Vistas: The Expositions Universelles, Great Exhibitions and World's Fairs, 1851-1939* (Manchester: Manchester University press, 1988); Robert W. Rydell, *All the World's a Fair: Visions of Empire at American International Expositions, 1876-1916* (Chicago: University of Chicago Press, 1984); E. A. Heaman, *The Inglorious Arts of Peace: Exhibitions in Canadian Society During the 19th Century* (Toronto: University of Toronto Press, 1999).

⁴ Jens Andermann, *The Optic of the State: Visuality and Power in Argentina and Brazil* (Pittsburgh: University of Pittsburgh Press, 2007) 7 & 33.

⁵ Karen Wonders, "Habitat Dioramas and the Issue of Nativeness," *Landscape Research* 28, no. 1 (2003): 90; Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (New York: Princeton Architectural Press, 2005) 5; Thomas R. Dunlap, *Nature and the English Diaspora: Environment and History in the United States, Canada, Australia, and New Zealand* (Cambridge: Cambridge University Press, 1999) 97-104; Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* revised ed. (London: Verso, 2006) 164.

⁶ Kevin Wamsley, "Good Clean Sport and a Deer Apiece: Game Legislation and State Formation in 19th Century Canada," *Canadian Journal of History of Sport* 25, no. 2 (1994): 13.

technologies used to commodify the animals on display. The museum thus not only proposed to naturalize fish as national possessions, but also the role of state fisheries administration in regulating and guaranteeing production.

The history of the Fisheries Museum shows that the production of what Andermann calls “hegemonic figurations” of nature and nation were uncertain and contingent. Paying close attention to the museum’s history of curating, collecting, cataloguing, modeling, and exhibiting, this dissertation argues that the Fisheries Museum is best understood, in Leanne McTavish’s words, as an “arena that was perpetually under reconstruction.”⁷ From the London fisheries exhibition in 1883 to the Canadian National Exhibition in 1918, the Fisheries Museum negotiated a range of material and conceptual challenges. These included the museum’s physical limitations; the reliability of fish models; the provenance of its collection; the museum’s local and national roles; the professionalization of fisheries administration; and gendered ideas of fisheries. These issues complicated the Fisheries Museum’s modeling of Canada’s aquatic nature, necessitating an ongoing process of remodeling as the museum sought to stabilize and maintain the foundations of its authority. Remodeling was not just a matter of materials—of fish specimens and scale-model boats—but also entailed questions about curatorial authority.

This dissertation is a study of modeling. Modeling stands at the junction of thinking and making, mediating between the conceptual and material domains. To model means to show how as well as to propose; to quickly shape and to carefully build. A model may be an abstract theory or a concrete object; it may be an explanation or an

⁷ McTavish, *Defining the Modern Museum*, 20.

exemplar. Natural history specimens, such as fish, occupy both realms at once. Joseph Griesemer argues that museum specimens are “remnant models:” the material remains of a unique animal that also stands for “other more inclusive entities, such as biological species or ecological communities in nature.”⁸ In the Fisheries Museum, a mounted specimen of a green sturgeon, for example, was an instance of a particularly rare individual fish and a reference model for the sturgeon species. It could also be an element of a larger model, a national “fauna,” a collection of animals mapped to political territory. Simon Schaffer argues that models stake claims to governing the natural or artificial systems the model represents. Through its array of objects, the Fisheries Museum asserted the state’s administrative ordering of fisheries, a model that legitimated practices and actors such as the primacy of technology and capital in modern fishing. Objects also modeled exclusions, notably women, as well as native people whose fishing practices were represented as primitive.

Modeling was also something that curators did to themselves as they modeled nature. Cristina Grasseni notes how taxidermists fashioned themselves into scientific experts through tacit skills in modeling animals.⁹ Both museum founder Samuel Wilmot and long-time curator Andrew Halkett claimed similar forms of self-fashioned authority; although neither were taxidermists, their claims to expertise were based on their experience in assembling and arranging models into exhibits, with Halkett claiming distinctive competency in his mastery of taxonomy and his direct involvement in field collecting. Modeling was a fluid process that thus brought objects and curators into a

⁸ James R. Griesemer, “Modeling in the Museum: On the Role of Remnant Models in the Work of Joseph Grinnell,” *Biology and Philosophy* 5 (1990): 8.

⁹ Cristina Grasseni, “Taxidermy as Rhetoric of Self-Making: Charles Waterton (1782–1865), Wandering Naturalist,” *Studies in History and Philosophy of Biological and Biomedical Sciences* 29 (1998): 275.

relationship of mutual constitution: models authorized curators and curators authorized models. Asking how the museum organized authoritative representations of “Canadian fish” also involves asking another question: what type of authority, embodied in what type of man, warranted the museum’s modeling of nature and nation? Within the changing terrain of fisheries administration, museums, and gender in late nineteenth and early twentieth century Canada, these questions remained active ones as the museum struggled to survive.

1.1 Contexts and arguments

The Fisheries Museum existed during a period of rapid change in late nineteenth-century Canada. Between the late 1840s and the early 1920s—the larger temporal frame of this project—there were major transformations in demography, economy, and political organization. Within this context of broad change, this dissertation focuses on change in four key areas: state administration, fisheries, museums, and gender.

The late nineteenth century, as Patrick Carroll has pointed out, was marked by the intensification of state administration and the integration of science and technology. Government commissions, departments, and agencies were established to deal with problems of production, including managing access to resources and maximizing state revenue from them. Framing their initiatives in terms of conservation—a program to “improve” both nature and society—governments recruited scientific experts to rationalize production in forestry, agriculture, and fisheries as exploitation intensified in the last half of the nineteenth century. As Stéphane Castonguay notes, “the power of science, in representing the natural world, sought and found legitimacy in the political

world.”¹⁰ In Canada, as in the United States, fisheries administrations integrated the technology of fish culture in the 1860s and biological science in the 1900s. The intensification of administration paralleled changes in the fisheries: fishing increased, widened geographically, and became more technology- and capital-intensive. Steam fishing technology replaced sail- and hand-power; railways and refrigeration led to changes in marketing and distribution; and capital investment led to consolidation in fisheries businesses, especially processing. Salmon fishing boomed on the west coast, while salt cod fisheries went into decline in the east. And though Aboriginal fisheries continued, they were marginalized through restrictive regulation as commercial and recreational fisheries expanded.¹¹

These shifts took place in the context of, and as responses to, environmental change. Settlement, urbanization, increased fishing pressure, and the introduction of non-native fish species dramatically altered North American aquatic environments. In the late 1890s, for example, native Lake Ontario salmon went extinct after decades of decline. Changes caused by forest clearing, agricultural settlement, industrial activity, and dam

¹⁰ Patrick Carroll, *Science, Culture, and Modern State Formation* (Berkeley: University of California Press, 2006) 25; Stéphane Castonguay, “Naturalizing Federalism: Insect Outbreaks and the Centralization of Entomological Research in Canada, 1884-1914,” *Canadian Historical Review* 85, no. 1 (2004): 3. For contributions to the Canadian literature on conservation and the rule of experts see John Sandlos, *Hunters at the Margin: Native Peoples and Wildlife Conservation in the Northwest Territories* (Vancouver: UBC Press, 2007); Tina Loo, *States of Nature: Conserving Canada's Wildlife in the Twentieth Century* (Vancouver: UBC Press, 2006); Stéphane Castonguay, *Protection Des Cultures, Construction De La Nature* (Sillery: Septentrion, 2004); H. V. Nelles, *The Politics of Development: Forests, Mines and Hydro-Electric Power in Ontario, 1849-1941*, 2nd ed. (Kingston and Montreal: McGill-Queen's University Press, 2005).

¹¹ J.A. Balcom, “Technology Rejected: Steam Trawlers and Nova Scotia, 1897-1933,” in *How Deep Is the Ocean? Historical Essays on Canada's Atlantic Fishery*, eds. James E. Candow and Carol Corbin (Sydney, NS: University College of Cape Breton Press, 1997); Geoff Meggs, *Salmon: The Decline of the British Columbia Salmon Fishery* (Vancouver: Douglas & McIntyre, 1991); Dianne Newell, *The Development of the Pacific Salmon-Canning Industry: A Grown Man's Game* (Montreal: McGill-Queen's University Press, 1989); Douglas C. Harris, *Fish, Law, and Colonialism: The Legal Capture of Salmon in British Columbia* (Toronto: University of Toronto Press, 2001); Bill Parenteau, ““Care, Control and Supervision”: Native People in the Canadian Atlantic Salmon Fishery, 1867-1900,” *Canadian Historical Review* 79, no. 1 (1998): 1-35.

building affected fish habitat throughout the Great Lakes and eastern Canada. Increasing fishing pressure also caused changes in species composition, which also altered patterns of human exploitation; on Lake Ontario, whitefish scarcities forced fishermen to shift their efforts to Georgian Bay, while on the Atlantic Ocean declines of cod and haddock led to the increased exploitation of halibut. Introductions of non-native species such as European carp, and the exchange of western and eastern North American fish, rewrote fish distributions and altered ecosystems.¹²

The museum landscape was also changing. Private museums had first been established in colonial British North America in the 1820s, followed by voluntary society museums, which in turn fostered the growth of provincial museums. In the last half of the nineteenth century, there was a surge in natural history museum construction and an expansion of collecting efforts, particularly in the United States. Museum reformers became active in the 1880s, proposing a larger public role for natural history museums as centers of research and education. They sought new arrangements of physical space within museums and promoted new logics of display, storage, and research. The “New Museum” movement also sought to professionalize museum curatorship by establishing standards of education and practice. Natural history museums responded to changes in biology as well: while still focused on matters of classification, museum curators also began taking into account biogeography—the distribution of animals—and ecology.

These disciplinary changes affected museum display as curators turned to habitat

¹² Margaret Beattie Bogue, *Fishing the Great Lakes: An Environmental History, 1783-1933* (Madison: University of Wisconsin Press, 2000) 19-27 and 169-70; Glenn M. Grasso, “What Appeared Limitless Plenty: The Rise and Fall of the Nineteenth-Century Atlantic Halibut Fishery,” *Environmental History* 13 (2008): 66-91; Glenn Sandiford, “Transforming an Exotic Species: Nineteenth-Century Narratives about Introduction of Carp in America,” (PhD, University of Illinois at Urbana-Champaign, 2009); Jerry C. Towle, “Authored Ecosystems. Livingston Stone and the Transformation of California Fisheries.” *Environmental History* 5: 1 (2000) 54-74.

dioramas to depict animals in relation to specific habitats and ecological communities.¹³

In Canada, the museum boom was characterized by the consolidation of natural history collections and their arrangement in provincial and university museums. The first purpose-built museum structures were erected, including the Victoria Memorial Museum, begun in 1905, which housed the Geological Survey of Canada and its large natural history collection.¹⁴

The late-nineteenth and early-twentieth centuries saw significant shifts in ideas about professionalization and gender. Notions of masculinity and femininity were undergoing change as industrialization and urbanization altered relations among women and men at home and in the workplace. As Gail Bederman, John Tosh, John Kasson, and others have shown, there was considerable flux in ideas about manliness and masculinity with competing and overlapping notions of what constituted a man in relation to changing ideals of womanhood.¹⁵ Different models of male middle-class authority emerged with professionalization, which shifted the basis for power as credentialed expertise and academic qualifications became requirements for career advancement.

¹³ Tony Bennett, *Pasts Beyond Memory: Evolution, Museums, Colonialism* (London: Routledge, 2004); Robert E. Kohler, *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950* (Princeton: Princeton University Press, 2006); Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History* (Uppsala: Acta Universitatis Upsaliensis, 1993).

¹⁴ Eileen Diana Mak, "Patterns of Change, Sources of Influence: An Historical Study of the Canadian Museum and the Middle Class, 1850-1950," (Ph.D., University of British Columbia Press, 1996); J. Lynne Teather, *The Royal Ontario Museum: A Prehistory, 1830-1914*. Toronto: Canada University Press, 2005); W.A. Waiser, *The Field Naturalist: John Macoun, the Geological Survey, and Natural Science* (Toronto: University of Toronto Press, 1989).

¹⁵ Gail Bederman, *Manliness and Civilization: A Cultural History of Gender and Race in the United States 1880-1917* (Chicago: University of Chicago Press, 1995) 11-16; John F. Kasson, *Houdini, Tarzan, and the Perfect Man: The White Male Body and the Challenge of Modernity in America* (New York: Hill and Wang, 2001) 10-13; John Tosh, *Manliness and Masculinities in Nineteenth-Century Britain: Essays on Gender, Family and Empire* (Harlow UK: Pearson Longman, 2005); Michael Roper, *Masculinity and the British Organization Man Since 1945* (Oxford: Oxford University Press, 1994); *Canadian Men and Masculinities: Historical and Contemporary Perspectives*, eds. Christopher J. Grieg and Wayne J. Martino (Toronto: Canadian Scholars' Press, 2012).

Professionalization was particularly evident in natural resources management, including fisheries; as I noted earlier, governments turned to experts with specialized knowledge to maximize efficiency and productivity in numerous fields. Framed in gendered terms of male objectivity and capacity, professionalization set up dichotomies, such the “scientific man” versus the “practical man,” the professional versus the amateur. Authority was not just vested in knowledge, but embodied in particular types of gendered behaviour and dispositions.¹⁶

These dynamics constitute a complex context of shifting, contingent authority that frames my inquiry into the Fisheries Museum. I begin by establishing the state formative importance of fisheries administration in colonial and post-Confederation Canada. Dominated by middle-class men, who filled key roles as fisheries inspectors, Canadian fisheries administration reflected their ideological interests in open-access capitalist fisheries. This model of fisheries also found support in Samuel Wilmot, a prominent middle-class man from rural Ontario, who transformed his private hatchery operation into the foundation for Canada’s federal fish-culture system. Wilmot, who developed fish culture’s exhibitionary potential at his home hatchery, assembled Canada’s display for the International Fisheries Exhibition in London in 1883. This exhibition modeled Canadian fisheries as a national enterprise under rational state administration, supported by fish culture. The collection was the basis for the Fisheries Museum, which Wilmot

¹⁶ Carolyn Korsmeyer, “Amateurs and Professionals,” in *Gender and Aesthetics: An Introduction* (New York & London: Routledge, 2004); Jeff Hearn, *Men in the Public Eye: The Construction and Deconstruction of Public Men and Public Patriarchies* (London: Routledge, 1992); Rudi Volti, “Professions and Professionalization,” in *An Introduction to the Sociology of Work and Occupations* (Thousand Oaks, CA: Pine Forge Press, 2008) 97-116; Donald Wright, *The Professionalization of History in English Canada* (Toronto: University of Toronto Press, 2005); Hearn, *Men in the Public Eye*, 3; Amber Loydlangston, “Women in Botany and the Canadian Federal Department of Agriculture, 1887-1919,” *Scientia Canadensis* 29, no. 2 (2006): 99-130.

established in Ottawa in 1884. In Ottawa, the museum became an arena for debates over fish culture's efficacy and Wilmot's personal power in Canadian fisheries administration. Argued in terms of personal manly character, this debate culminated with Wilmot's consolidation of power, materializing in the inclusion of a working fish hatchery in the museum in 1890.

The foundations of Wilmot's authority, and the Fisheries Museum, shifted as professionalization began to gain traction in Canadian fisheries administration and, more broadly, the Canadian civil service. In the late nineteenth century, civil service reformers sought to replace authority based on character and personal connection with authority based on credentialed and objective expertise. Within the fisheries department, professionalization intensified after the Canadian government appointed English fisheries scientist Edward Prince as Dominion Fisheries Commissioner in 1892.¹⁷ Prince initiated the integration of scientific experts into Canadian fisheries administration and came into conflict with Wilmot over the fisheries collection. Prince questioned the material authority of Wilmot's care-worn and incomplete exhibit and, seeking to establish the collection as an authoritative "scientific" museum, appointed Andrew Halkett, a long-serving fisheries clerk and self-trained naturalist, to renew it. Halkett thus embarked on his project to establish the Fisheries Museum as a national institution that plotted fish to nation.

Modeling authoritative representations of Canada's fish and fisheries, however,

¹⁷ On Canada's civil service see J. E. Hodgetts, W. McCloskey, R. Whitaker, and V. S. Wilson, *The Biography of An Institution: The Civil Service Commission, 1908-1967* (Montreal & London: McGill-Queen's University Press, 1972); Luc Juillet and Ken Rasmussen, *Defending a Contested Ideal: Merit and the PSC of Canada, 1908-2008* (Ottawa: University of Ottawa Press, 2008); Jennifer Hubbard, *A Science on the Scales: The Rise of Canadian Atlantic Fisheries Biology, 1898-1939* (Toronto: University of Toronto Press, 2006) 19.

depended not just on collecting, making, displaying and maintaining credible physical models. It also depended on the presence of a professional curator to guarantee the credibility of the museum's objects, and arrange them in a scientific manner. Paying close attention to Halkett's emergence as a government curator and naturalist, I show how his attempts to secure the museum's authority were intimately bound up with his efforts to establish his professional identity. Halkett negotiated a complex terrain of overlapping models of masculine authority within Canadian fisheries administration, evident particularly in his participation in Ottawa's local natural history society, the Ottawa Field-Naturalists' Club. Following a traditional route to civil service advancement, Halkett joined the club and cultivated contacts among Ottawa's male-dominated senior civil service establishment, many of whom were also self-trained naturalists. Among this peer group, Halkett developed a reputation as a popular natural historian by leading club excursions and exhibiting his collecting skills at club events. This eased Halkett's appointment as the Fisheries Museum's curatorship, a position that Halkett used to support the club's program of local nature studies and further his reputation as a public naturalist.

Once in the Fisheries Museum, and after assignment to a variety of curatorial and naturalist duties, Halkett began to identify himself as a "scientific field naturalist." This conscious identification occurred after his participation in the Neptune Arctic expedition in 1903-04, the first large-scale collecting expedition in Halkett's career. This type of naturalist—serving the state on a mission of national sovereignty—was a more authoritative and masculine figure than the popular naturalist, who was associated with a form of feminized natural history study at the local level. Different forms of collecting

thus underwrote different forms of authority, which were not always complementary. Later collecting expeditions in western Canada also showed that scientific reputations could be risked in collecting; between 1907 and 1908, Halkett engaged in collecting expeditions that also sought to identify opportunities for non-native fish introductions. These expeditions posed challenges to his and Prince's reputations as fisheries experts when people began to question acclimatization. After 1908, Halkett's status as a naturalist was further placed in doubt when a new, professionalizing system of civil-service classification raised doubts about his qualifications for the post.

The contingency of Halkett's authority was complicated by material challenges to the museum's authority, not least being the "question of fish exhibition" itself. Fish were a refractory presence at the museum's core and were stubbornly resistant to museological modeling. While bad taxidermy plagued animal displays of all kinds in natural history museums, taxidermists agreed that fish were the most difficult of all animals to mount and display. Fish, William Hornaday averred, were "the least attractive, and the least life-like of all the vertebrates."¹⁸ Displays of fish in jars filled with a preservative solution were also problematic: while a standard for the scientific presentation of fish specimens, they were aesthetically off-putting. These material problems with "life-likeness" emphasized that the Fisheries Museum's authority was contingent on its ability to model fish in convincing ways. Compounding this basic challenge was the Fisheries Museum's difficulty in securing skilled model-makers and taxidermists. Curator Halkett had to turn to foreign experts, including American taxidermists, as he sought to complete his long-

¹⁸ William T. Hornaday, *Taxidermy and Zoological Collecting*, 4th edition (New York: Charles Scribner's Sons, 1894) 208; Jane Desmond, "Displaying Death Animating Life: Changing Fictions of "Liveness" From Taxidermy to Animatronics," in *Representing Animals*, ed. Nigel Rothfels. Bloomington: Indiana University Press, 2002). 163

projected catalogue of Canada's fish fauna. Fish, however, had to be caught in Canadian waters to count as Canadian fish; Halkett's reliance on an American taxidermist who sometimes substituted specimens caught in American waters threatened to undermine the Fisheries Museum's modeling of a national fish fauna.

In contrast to fish, scale-models of fishing boats and fishing technology offered more stable depictions of Canadian fisheries. During a major remodeling of the Fisheries Museum, Halkett commissioned finely wrought scale-models of fishing boats and fishing gear, which provided authoritative representations of Canadian fisheries. The crowning object was a 50-foot whale skeleton, reconstructed by the museum's care-taker into a spectacular exhibit. More than any other object, the whale skeleton was a prestigious display that offered to authenticate the museum as a metropolitan-style natural history museum. A serious obstacle to this aspiration, however, was Fisheries Museum's home, a structure known as the Fisheries Building. Sophie Forgan argues that a museum building "is an integral part of the collection;" its layout and architecture say as much about the museum's purpose and vision as the objects on display.¹⁹ The Fisheries Building posed several problems: while distinguished, it was small and lacked adequate facilities for display and research. It lacked the architectural grandeur that marked the collection as a nationally important one, an impression exacerbated when the Victoria Memorial Museum, the first purpose-built museum structure in Ottawa, opened in 1911. The massive building, designed in a historicist architectural style, conveyed the importance of its tenant, the Geological Survey of Canada and signified the value attached to the Survey's large natural history collection. The Fisheries Museum's prestige was damaged

¹⁹ Sophie Forgan, "Building the Museum: Knowledge, Conflict, and the Power of Place," *Isis* 96, no. 4 (2005) 574-75.

when it was excluded from the new building.

Questions about the Fisheries Museum's authority were further sharpened when the collection went on display at the Canadian National Museum in Toronto in 1913. Before World War I, the Fisheries Museum's displays emphasized production, which was modeled as a male domain. Representations of women, who were critical to shore-based processing, were absent in exhibits. This changed in 1913 when Andrew Halkett organized a collaborative display with fish wholesalers at Toronto's Canadian National Exhibition. The exhibit, centred on a model retail shop, was organized around a publicity campaign designed to promote fish consumption. Reflecting the late-nineteenth-century identification of women as consumers, the exhibit came to include a fish cookbook and fish restaurant that gendered fish consumption as a feminine domain. Targeting women as the gatekeepers of domestic foodways, the campaign presumed that housewives' inability to properly cook fish held back fish consumption and harmed Canadian fisheries. The focus on feminine consumption overlapped the Fisheries Museum's masculine representation of production and threw it into a shadow.²⁰ Fish also posed problems in the consumer-oriented displays at the CNE. Susceptible to rotting and odour, fresh fish were as difficult to handle and display as dead mounted fish.

The Canadian Fisheries Museum's contingency and uncertainty are encapsulated in the problem of its name. Although I refer throughout this dissertation to "the Canadian Fisheries Museum," that name was never officially adopted. Fisheries officials variously

²⁰ Kathy L. Peiss, "American Women and the Making of Modern Consumer Culture," *The Journal for MultiMedia History* 1, no. 1 (1998) <http://www.albany.edu/jmmh/vol1no1/peiss-text.html#biblio%20notes> (accessed October 12, 2013); Donica Belisle, "Buyers of the Nation: Women and the Rise of Consumer Citizenship in the Global North," Future of Consumerism and Well-Being in a World of Ecological Restraints Conference, June 12, 2013.

referred to the institution over the years as an exhibit, an exhibition, and a museum, and sometimes all three at once. The lack of a standardized name is both a challenge and an opportunity for this dissertation. On a practical level, the lack of a standard name poses problems of reference and consistency. When discussing the period 1884 to 1903, I avoid using the term “museum” in favour of “exhibit” and “collection,” unless it appears in a quotation. This terminology reflects the uncertainty over the collection’s status within the fisheries department; it also highlights Andrew Halkett’s understanding of “museum” as a place vested with authority and dignity, the very qualities he hoped to inject into the collection as curator—itsself a term that projected a certain conception of the collection. After 1903, I use the term “Fisheries Museum,” following Halkett’s appointment as a curator and his consistent use of the term “museum” to describe the collection. Uncertainty over the name persisted, however, as in 1911 when Halkett asked that the name “Canadian Fisheries Museum” be officially adopted. He thought it was “a more dignified name” that better reflected the museum’s national character. The uncertain identity of the fisheries collection is emblematic of the museum’s material and conceptual instabilities, a core issue for this dissertation.²¹

1.2 Historiography

This dissertation is the first full-length treatment of a fisheries exhibition or

²¹ “Natural History Report, Appendix No. 18,” Canada, *Forty-Fourth Annual Report of the Department of Marine and Fisheries 1910-11* (Ottawa: King’s Printer, 1911) 420. The question of an appropriate name for a national museum also troubled ornithologist Percy Taverner in the same period. Taverner, Canada’s first state ornithologist, was hired in 1911 to manage the avian collection at the Victoria Memorial Museum. Taverner was uncomfortable with the museum’s name, which he argued applied to the building and not the collection. “Could we not get authority for using our proper cognomen of Canadian National Museum instead?” Such a name would be “more appealing to the national spirit of Canada.” Percy Taverner to R.M. Brock, 19 February 1913, CMNAC/96-021, Taverner Correspondence, Canadian Museum of Nature Archives, Aylmer, Quebec.

museum. It examines the Canadian Fisheries Museum from an interdisciplinary perspective, drawing on museum studies, environmental and fisheries history, state formation analysis, and gender studies. In this section, I examine the critical works in these fields that were important to this project, and how my dissertation draws on and responds to them.

My argument that the Fisheries Museum was an unstable “material theatre of sovereignty” locates this dissertation among recent works that extend what Victoria Cain has called the fracturing of the “master narrative of the museum that emerged in the 1990s.”²² Drawing on Michel Foucault’s ideas of governmentality and the emergence of the disciplinary society, museum scholars—notably Tony Bennett—theorized museums as powerful instruments of cultural inculcation. Museums molded people, particularly members of the working-class, into liberal self-regulating citizens, who adopted the habitus of bourgeois comportment modeled in the halls of metropolitan museums. Bennett later extended this analysis to natural history museums, which displayed nature in evolutionary exhibits that reinforced European ideas of racial superiority and historical progress.²³ As Cain notes, Bennett’s critical theoretical insights have been tempered by histories of specific institutions that emphasize the “disarray of contingency and context” over the museum’s presumed power as an instrument of social regulation.²⁴

Indeed, individual case studies of contingency, context, and contest characterize the

²² Victoria Cain, “Exhibitionary Complexity: Reconsidering Museums’ Cultural Authority,” *American Quarterly* 60, no. 4 (December 2008): 1143-44.

²³ Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London: Routledge, 1995) and *Pasts Beyond Memory: Evolution, Museums, Colonialism* (London: Routledge, 2004).

²⁴ Cain, “Exhibitionary Complexity,” 1143. See also Andrew Whitcomb, *Re-Imagining the Museum: Beyond the Mausoleum* (London and New York: Routledge, 2003) for a wider discussion of reaction to New Museology theorizing. John MacKenzie recently offered a less nuanced critique in *Museums and Empire: Natural History, Human Cultures and Colonial Identities* (Manchester: Manchester University Press, 2009) 8.

small Canadian historiography of museums and exhibitions. Among these works are Brian Young's *The Making and Unmaking of a University Museum: The McCord, 1921-1996* (2000) and J. Lynne Teather's *The Royal Ontario Museum: A Prehistory, 1830-1914* (2005), both of which highlight the struggles of individual museums and their curators under changing circumstances.²⁵ Young's study follows the vicissitudes of the McCord Museum in Montreal, from its founding by wealthy collector David McCord in the late nineteenth century to its emergence in the 1950s, under a woman curator, as an important site for the study of Canadian history. Teather shows that museum failure is not an exceptional story, noting the closure of the Ontario Provincial Museum (OPM) in 1933, as the Royal Ontario Museum grew in stature. Teather also follows OPM curator David Boyle, showing how self-trained middle-class men established museum careers. Canadian exhibition literature also highlights contingency. Keith Walden shows in *Becoming Modern in Toronto: The Industrial Exhibition and the Shaping of a Late Victorian Culture* (1997) that the Toronto Industrial Exhibition created opportunities for people to co-opt or subvert the exhibition's efforts to engineer consent to a new urban consumer order. And as Elizabeth Heamen argues in *The Inglorious Arts of Peace: The Industrial Exhibition and the Shaping of a Late Victorian Culture* (1999) Canada's displays at international exhibitions collapsed under the weight of their own myth-

²⁵ Brian Young, *The Making and Unmaking of a University Museum: The McCord, 1921-1996* (Montreal & Kingston: McGill-Queen's University Press, 2000); J. Lynne Teather, *The Royal Ontario Museum: A Prehistory, 1830-1914* (Toronto: Canada University Press, 2005) 191. See also Gerald Killan, *David Boyle: From Artisan to Archaeologist* (Toronto: University of Toronto Press, 1983); Dennis Duffy, "Triangulating the ROM," *Journal of Canadian Studies* 40, no. 1 (2006): 157-181; Hervé Gagnon, "The Natural History Society of Montreal's Museum and the Socio-Economic Significance of Museums in 19th-Century Canada," *Scientia Canadensis* 18, no. 2 (1994): 103-135.

making and unfulfilled promises.²⁶

For this study, however, three recent studies of smaller museums have been particularly important: Kate Hill's *Culture and Class in English Public Museums, 1850-1914* (2005); Samuel Alberti's *Nature and Culture: Objects, Discipline and the Manchester Museum* (2009); and Leanne McTavish's *Defining the Modern Museum: A Case Study of the Challenges of Exchange* (2013). These monographs focus on the "actual museum practices" of sub-national institutions: Alberti and Hill on English municipal museums, and McTavish on the New Brunswick Provincial Museum, a "marginal Canadian institution."²⁷ They seek to balance understandings of museums as "extremely powerful instruments for the shaping of society, individual consciousness, and knowledge," with studies of smaller museums, which were, as Kate Hill puts it, "fragile, chronically and sometimes acutely short of resources."²⁸ The object is not to refute Bennett's "exhibitionary complex," but to understand how power was produced and hedged day-to-day within smaller institutions on the metropolitan margins. It is in smaller museums, Hill argues, that historical change and contingency are revealed in the "details, weaknesses and inconsistencies" of administration, collecting, layout, and display. At this smaller scale, museums come into clearer focus as arenas of contingent authority.²⁹

Contingencies include, as Hill notes, spatial constraints. Smaller museums were

²⁶ Keith Walden, *Becoming Modern in Toronto: The Industrial Exhibition and the Shaping of a Late Victorian Culture* (Toronto: University of Toronto Press, 1997) 43; E. A. Heaman, *The Inglorious Arts of Peace: Exhibitions in Canadian Society During the 19th Century* (Toronto: University of Toronto Press, 1999) 197.

²⁷ Leanne McTavish, *Defining the Modern Museum: A Case Study of the Challenges of Exchange* (Toronto: University of Toronto Press, 2013) 7.

²⁸ Kate Hill, *Culture and Class in English Public Museums, 1850-1914* (Aldershot UK: Ashgate, 2005) 1.

²⁹ *Ibid.*, 1.

typically housed in existing buildings with limited room for display and storage. These limits challenge Tony Bennett's persuasive analysis of museum space as a site for self-regulation; lacking open sight lines and galleries, smaller institutions did not afford the mutual surveillance that Bennett argues sustained visual self-regulation. Moreover, constrained space disrupted the narrative sequencing of objects and displays that critically shaped visitor understandings of their position in the world. Municipal and provincial museums also sometimes lacked the architectural authority of purpose-built museum structures, which in the nineteenth century were typically built in styles that referenced historical structures of past patrician orders, such as Greek and Roman civic buildings and Gothic castles.³⁰ English municipal museums were gradually installed in grand edifices, but both the New Brunswick museum and the Fisheries Museum made do with existing structures.

As Hill, Alberti, and McTavish show, historical contingencies also shaped collecting and the authority associated with it. Lacking the financial clout of larger metropolitan museums, which drew support from wealthy patrons, municipal and provincial museums operated on smaller budgets and drew on smaller pools of patrons and donors. Collections were contingent on disparate gifts and exchanges, rather than expeditions or single-source donations of large private collections of prestigious objects. As with all museums, donations were double-edged. Gifts established the cultural capital of both donor and museum, but could also be burdens: they established uncomfortable obligations and contributed to the creation of eclectic collections that threatened museum prestige. On the other hand, exchanges of objects and specimens, as Alberti and

³⁰ Ibid., 90-106; Bennett, *Birth of the Museum*, 101; Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (New York: Princeton Architectural Press, 2005).

McTavish both point out, established authority through reciprocal acts of recognition between regional and metropolitan museums.³¹ Relying on different modes of collecting, municipal and provincial museums continually had to negotiate, as Hill puts it, the “meaning of good objects and collections.”³² Curators strove to reform the “absurd miscellany” of collections haphazardly gathered into ordered collections structured around scientific disciplines such as archaeology or zoology. Museums, big and small, had to contend with these issues, but in smaller museums there was less room to maneuver.³³

Particularly important for my dissertation is the way these studies treat smaller museums as active arenas for the construction, and contestation, of curatorial authority in terms of class and gender. Acknowledging the uneven or “patchy” nature of professionalization, these monographs trace the “slow development of curatorial authority” in regional institutions. Curatorship was principally the province of middle-class men, who established their professional authority through collecting and the administrative management of collections, as well as such activities as specimen exchanges, museum visits, and participation in natural history societies.³⁴ Indeed membership in these organizations, Hill claims in the English context, was more important to curatorial advancement in the last half of the nineteenth century than any other factor.³⁵ Critical to middle-class formation in England and Canada, natural history societies provided an entrée to museum curatorship for male self-trained naturalists, as

³¹ Samuel J. M. M. Alberti, *Nature and Culture: Objects, Disciplines and the Manchester Museum* (Manchester: Manchester University Press, 2009) 112; McTavish, *Defining the Modern Museum*, 8.

³² Hill, *Culture and Class*, 71-3.

³³ Alberti, *Nature and Culture*, 3.

³⁴ Hill, *Culture and Class*, 63-4; Alberti, *Nature and Culture*, 129.

³⁵ Hill, *Culture and Class*, 62-3.

McTavish demonstrates in her account of William MacIntosh. MacIntosh was a self-trained generalist in natural history and gained his position as the New Brunswick museum's curator in 1907 through his participation in the local natural history society. MacIntosh strove to professionalize himself and the museum, but his long tenure in the position was increasingly seen as a liability by the museum's benefactors because he lacked specialist credentials, an emerging professional standard in natural sciences and museums.³⁶

This supports Hill's contention that smaller museums were more important as arenas of middle-class prestige than as training schools for the working class.³⁷ Among these studies under discussion, only McTavish's extends her analysis of professionalization to gender. Recognizing that women play important roles in museum development, including in collecting and curatorial roles, she shows how gendered ideas of the physical and intellectual capacities of men and women—embodied in the figures of the “Ideal Museum Man” and “Ideal Museum Woman”—shaped access to curatorial positions.³⁸ In the case of the Fisheries Museum, the gendering of authority was a question of middle-class masculinity; while women were members of the Ottawa Field-Naturalists' Club, which provided Andrew Halkett a stepping-stone into the Fisheries Museum curatorship, they had yet to break the male monopoly of jobs within Canadian fisheries administration. It must be noted the large metropolitan museums were not

³⁶ McTavish, *Defining the Modern Museum*, 132-42; see also Eileen Diana Mak, “Patterns of Change, Sources of Influence: An Historical Study of the Canadian Museum and the Middle Class, 1850-1950,” (PhD, University of British Columbia Press, 1996).

³⁷ Hill, *Culture and Class*, 36-7.

³⁸ McTavish, *Defining the Modern Museum*, 132-150. She also shows that women museum members contested curatorial authority as they sought recognition for their contributions to museum development. See also Kohlstedt, “Thoughts in Things,” 596 for brief discussion of women in American museums.

immune to questions of curatorial authority, as Ronald Rainger has shown in *Agenda for Antiquity: Henry Fairfield Osborn and Vertebrate Paleontology at the American Museum of Natural History, 1890-1935* (1991). But in smaller museums, which were often supervised by a sole curator, questions over authority implicated the entire museum, rather than subordinate departments.³⁹

This dissertation also draws on the growing literature on natural history specimens and animal taxidermy, which likewise emphasizes the tension between instability and authority. Samuel Alberti stresses that natural history specimens are not simply collected, but made and undergo a number of processes “to render them stable and legible.” These include preserving, classifying, and cataloguing, which stabilize specimens as natural, authentic and thus authoritative objects. Such processes are also constitutive of curatorial authority, although, as Alberti argues, signs of human labour are erased to make specimens appear “authorless.” “[I]f objects are to act as data,” Alberti notes, “they need to be impartial—their constructedness needs to be hidden by those whose credibility depends upon them.”⁴⁰ Poor workmanship, however, could also expose the seams of human construction: mounts with visible or burst stitches and badly made glass eyes undermined their authority as true models. Many museums purged their mounted-specimen collections as new taxidermic techniques made old specimens obsolete. Instead of being stable places for modeling nature, museums were constantly working to renew

³⁹ Ronald Rainger, *An Agenda for Antiquity: Henry Fairfield Osborn and Vertebrate Paleontology at the American Museum of Natural History, 1890-1935* (Tuscaloosa: University of Alabama Press, 1991).

⁴⁰ Samuel J. M. M. Alberti, “Constructing Nature Behind Glass,” *Museum and Society* 6, no. 2 (2008): 74 and 81-82. As Donna Haraway has shown, the apparent naturalness of specimens and displays authorized the highly racialized and gendered narratives that animal specimens, arranged in habitat dioramas, could contain. Donna Haraway, “Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936,” in *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989).

their representations, seeking new methods of modeling nature in more authoritative ways. The focus of this literature, however, has largely been on charismatic mammalian species, such as whales, elephants, and game animals. Fish, which posed unique modeling challenges, have largely been ignored and so this dissertation provides a new perspective on “making” museum nature.⁴¹

Fish are, of course, central to fisheries and the environmental history literature that considers commercial, recreational, and Aboriginal fisheries in North America. This dissertation draws on a solid body of work to situate the Fisheries Museum, notably Joseph Taylor’s *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (1999), Margaret Beattie Bogue’s *Fishing the Great Lakes: An Environmental History* (2000), and W. Jeffrey Bolster’s *The Mortal Sea: Fishing the Atlantic in the Age of Sail* (2012).⁴² These monographs provide a comprehensive geographical overview of North America’s major fisheries in the nineteenth century and emphasize the complex and dynamic aquatic, social, and political environments in which fisheries take place with Taylor focusing on Pacific salmon fisheries, Bogue on Great Lake fisheries, and Bolster

⁴¹ Samuel J. M. M. Alberti, “The Dead Ark,” in *The Afterlives of Animals*, ed. Samuel J. M. M. Alberti (Charlottesville and London: University of Virginia Press, 2011) 8. See also Alberti “Constructing Nature Behind the Glass,” *Museum and Society* 6, no. 2 (2008): 73-97 and “Objects and the Museum,” *Isis* 96, no. 4 (2005): 559-571; Sally G. Kohlstedt, “Nature by Design: Masculinity and Animal Display in Nineteenth-Century America,” in *Figuring It Out: Science, Gender, and Visual Culture*. Ann B Shteir and Bernard Lightman, editors (Hanover, NH: Dartmouth College, 2006); Nigel Rothfels, “Trophies and Taxidermy,” in *Gorgeous Beasts: Animal Bodies in Historical Perspective*, Joan B. Landes, Paula Young Lee and Paul Youngquist, editors (University Park: Pennsylvania State Press, 2012); Rachel Poliquin, “The matter and meaning of museum taxidermy,” *Museum & Society* 6, no. 2 (July 2008): 123-134; Merle Patchett and Kate Foster, “Repair Work: Surfacing the Geographies of Dead Animals,” *Museum & Society* 6, no. 2 (July 2008): 98-122; Jane Desmond, “Displaying Death Animating Life: Changing Fictions of “Liveness” From Taxidermy to Animatronics,” in *Representing Animals*, ed. Nigel Rothfels (Bloomington: Indiana University Press, 2002).

⁴² Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* ((Seattle: University of Washington Press, 1999); Margaret Beattie Bogue, *Fishing the Great Lakes: An Environmental History, 1783-1933* (Madison: University of Wisconsin Press, 2000); W. Jeffrey Bolster, *The Mortal Sea: Fishing the Atlantic in the Age of Sail* (Cambridge, MA: Harvard University Press, 2012).

on fisheries of the northwest Atlantic Ocean. These works address the impacts of technology, capitalism, and administration on fish, fishermen, and environments; they also detail administrators' faith in, and reliance on, fish culture to solve declines arising from over-fishing and environmental degradation.⁴³ These invaluable overviews are supplemented by recent studies of fishing at smaller scales, including Brian Payne's *Fishing a Borderless Sea: Environmental Territorialism in the North Atlantic 1818-1910* (2010) and Lissa Waddewitz *The Nature of Borders: Salmon, Boundaries, and Bandits on the Salish Sea* (2012). Highlighting the porosity of international aquatic borders, these studies reveal the unstable edges of national sovereignty through the movement of fishermen across international boundaries. They also provide the historical context for the Fisheries Museum and underline the complexity and uncertainty of fisheries, particularly the difficulties of defining fish and fluid environments within arbitrary boundaries, a problem that Andrew Halkett grappled with as he plotted fish fauna to political territory.⁴⁴

For the most part, however, environmental histories of North American fisheries only grant passing recognition to fisheries exhibitions and museums. Taylor, for example, recognizes their propaganda value, aptly describing them as "didactic dioramas of the power of science and technology." And Bogue notes the Canadian fisheries department's

⁴³ For more on fish culture see Darin Kinsey, "'Seeding the Water As the Earth': the Epicenter and Peripheries of a Western Aquacultural Revolution," *Environmental History* 11 (2006): 527-566; William Knight, "Samuel Wilmot, Fish Culture, and Recreational Fisheries in Late 19th Century Ontario," *Scientia Canadensis* 30, no. 1 (2007): 75-90; Stephen Bocking, "Stocking the Great Lakes: Fish Culture in the 19th Century," *Inland Seas* 57, no. 1 (2001): 64-74; John F. Reiger, *American Sportsmen and the Origins of Conservation*, third edition (Corvallis, OR: Oregon State University Press, 2001); Jerry C. Towle, "Authored Ecosystems. Livingston Stone and the Transformation of California Fisheries," *Environmental History* 5: 1 (2000) 54-74.

⁴⁴ Lissa K. Wadewitz, *The Nature of Borders: Salmon, Boundaries, and Bandits on the Salish Sea* (Vancouver: UBC Press, 2012); Brian J. Payne, *Fishing a Borderless Sea: Environmental Territorialism in the North Atlantic 1818-1910* (East Lansing: Michigan State University Press, 2010).

participation at the Canadian National Exhibition (CNE), an episode that Suzanne Morton takes up in more detail in her contribution to *Making Up the State: Women in 20th-Century Atlantic Canada* (2010).⁴⁵ Jennifer Hubbard's *A Science on the Scales: The Rise of Canadian Atlantic Fisheries Biology, 1898-1939* (2007) also notes the CNE, or more precisely the cookbook distributed there, which Hubbard argues exemplifies how the Canadian fisheries department failed to substantively address problems with Atlantic Canada's fisheries.⁴⁶ This provides a point of departure for chapter six, which examines the cookbook's role in a consumption campaign that revealed the limits of the Fisheries Museum. Hubbard also provides important context for Edward Prince and his role in the development of Canadian fisheries science in the late nineteenth and early twentieth centuries. Prince's quest to reform the Fisheries Museum as a scientific institution and as a sort of experimental station for acclimatization projects fits within the larger trajectory outlined by Hubbard.⁴⁷

By bringing fisheries exhibitions into closer focus, this dissertation expands our understanding of Canadian fisheries administration. State administration is the necessary context for the Fisheries Museum: in chapter two I give an account of its emergence drawing on the state formation perspectives of Philip Corrigan and Derek Sayer's *The*

⁴⁵ Taylor, *Making Salmon*, 95; Bogue, *Fishing the Great Lakes*, 276; Suzanne Morton, "The End Man Is a Woman: Women, Fisheries, and the Canadian State in the 20th Century," in *Making Up the State: Women in 20th-Century Atlantic Canada*, Janet Guildford and Suzanne Morton, editors. (Fredericton: Acadiensis Press, 2010).

⁴⁶ Jennifer Hubbard, *A Science on the Scales: The Rise of Canadian Atlantic Fisheries Biology, 1898-1939* (Toronto: University of Toronto Press, 2006) 129.

⁴⁷ For other views on the development of fisheries science see Tim D. Smith, *Scaling Fisheries: the Science of Measuring the Effects of Fishing, 1855-1955* (Cambridge: Cambridge University Press, 1994); Dean C. Allard, *Spencer Fullerton Baird and the U.S. Fish Commission* (New York: Arno Press, 1978); Eric L. Mills, *Biological Oceanography: An Early History, 1870-1960* (Ithaca: Cornell University Press, 1989); Dean Bavington, *Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse* (Vancouver: UBC Press, 2010).

Great Arch: English State Formation as Cultural Revolution (1985) and the work of Canadian historian Bruce Curtis.⁴⁸ The *Great Arch* argues that the English nation-state, and the emergence of liberal rule, was the product of a bourgeois cultural revolution as much as a political revolution. This revolution was long and complex, and was consolidated in the nineteenth century through the extension of state administration, which normalized bourgeois values through state inspection and regulation.⁴⁹ As Curtis and others have shown, this governmental revolution—an extension of masculine middle-class rule—also shaped administration in British North America.⁵⁰ I have used this approach to understand fisheries administration as an expression of male settler interests, particularly evident in the marginalization of Aboriginal and subsistence fisheries and the privileging of commercial and recreational fisheries. These, as I demonstrate, shaped Canada's displays at the International Fisheries Exhibition in London and the Fisheries Museum in Ottawa.⁵¹

In drawing on state formation analysis, I follow the lead of other Canadian environmental historians who have also studied the administration of nature in these terms. These include Kevin Wamsley and Stéphane Castonguay who have argued that the

⁴⁸ Philip Corrigan and Derek Sayer, *The Great Arch: English State Formation As Cultural Revolution* (Oxford: Basil Blackwell, 1985). Curtis' account of inspection in *True Government by Choice Men? Inspection, Education, and State Formation in Canada West* (Toronto: University of Toronto Press, 1992) and the census in *The Politics of Population: State Formation, Statistics, and the Census of Canada, 1840-1875* (Toronto: University of Toronto Press, 2001) are central to my understanding of, respectively, fisheries inspection and faunal survey.

⁴⁹ Corrigan and Sayer, *The Great Arch*, 197.

⁵⁰ See *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*, eds. Allan Greer and Ian Radforth (Toronto: University of Toronto Press, 1992).

⁵¹ Bill Parenteau, "'Care, Control and Supervision': Native People in the Canadian Atlantic Salmon Fishery, 1867-1900," *Canadian Historical Review*. 79 (1998): 1-35 and "A 'Very Determined Opposition to the Law: Conservation, Angling Leases, and Social Conflict in the Canadian Atlantic Salmon Fishery, 1867-1914,'" *Environmental History*. 9 (2004): 436-463; Douglas C. Harris, *Fish, Law, and Colonialism: The Legal Capture of Salmon in British Columbia* (Toronto: University of Toronto Press, 2001); J. Michael Thoms, "Ojibwa Fishing Grounds: A history of Ontario fisheries law, science, and the sportsmen's challenge to Aboriginal treaty rights, 1650-1900," (PhD thesis, University of British Columbia, 2004).

administration of fish, wildlife, and forestry was, in Wamsley's words, "integral to state formation and expansion in 19th century Canada."⁵² Castonguay has focused on the centralization of scientific knowledge and expertise in his studies of federal entomological research, tracing how federal scientists modeled nature in ways that rationalized centralized administration over local efforts. Along with Darin Kinsey, Castonguay has also sketched how the extension of state administration reshaped people's relation with themselves and with nature in nineteenth-century Quebec. The state appropriated nature as "national resources" and framed "rational and efficient exploitation" as norms for the government of nature and the orientation of liberal conduct. Scientific forestry, for example, attempted to cultivate new attitudes among settlers so that they would treat the forest as property and seek to maximize its long-term productivity. The ideology of conservation also rationalized the government's leasing of large tracts of public lands to sportsmen who transformed them into private paradises that valorized individual recreational pleasure over collective access to subsistence resources. To Castonguay, "the construction of Canadian nature and the construction of liberal culture are part of the same ideological order."⁵³

I also draw on state formation analysis because it helps establish this dissertation's larger cultural and political framework, Canada's nineteenth century "liberal order," the setting for the Fisheries Museum. The question of the "liberal order

⁵² Wamsley, "Good Clean Sport and a Deer Apiece," 1.

⁵³ Stéphane Castonguay, "Naturalizing Federalism: Insect Outbreaks and the Centralization of Entomological Research in Canada, 1884-1914," *Canadian Historical Review* 85, no. 1 (2004): 1-34 and *Protection Des Cultures, Construction De La Nature* (Sillery: Septentrion, 2004); Stéphane Castonguay and Darin Kinsey, "The Nature of the Liberal Order: State Formation, Conservation, and the Government of Non-Humans in Canada" in *Liberalism and Hegemony: Debating the Canadian Liberal Revolution*, eds. Michel Ducharme and Jean-François Constant (Toronto: University of Toronto Press, 2009) 225. See also Darcy Ingram, *Wildlife, Conservation, and Conflict in Quebec 1840-1914* (Vancouver: UBC Press, 2013).

framework”—first articulated by Ian McKay in 2000—has been a matter of some debate in Canadian history. I do not take up this issue as I accept Ian McKay’s basic premise that Canada was a “project of liberal rule,” which gained ground in the nineteenth-century as reformers sought to inculcate liberalism’s ideals—liberty, equality, property⁵⁴—into Canadian society. As state formation approaches make clear, state administration was a key element in advancing the liberal order. Museum scholars, as noted above, have linked the museum to formation of the bourgeois nation-state and the middle-class; this study examines one small museum as an arena for authority within those contexts, tempering claims about museum power, arguing that their authority is highly contingent. The Fisheries Museum’s failure does not strike such theorizations down nor do I intend it as a critique of liberal order analysis. It highlights rather the contingent nature of such enterprises illustrating that the state, museums, and gender are “constituted and reconstituted continuously.”⁵⁵

Indeed as gender historians have shown, contingency is central to gender analysis, which shows that masculine and feminine identities are fluid historical cultural constructions, rather than stable timeless natural categories. The context for this study is the late nineteenth and early twentieth centuries, an era of significant shifts in European and North American ideas about masculinity and femininity. The “New Women”—a masculinized cigarette-smoking figure—and the suffragist challenged male dominance under conditions of urbanization and industrialization; and men turned to more rugged

⁵⁴ Ian McKay, “The Liberal Order Framework: A Prospectus for a Reconnaissance of Canadian History,” *Canadian Historical Review* 81: 623-24. Debate reached a high-water mark in 2009 with the publication of *Liberalism and Hegemony*. This collection contained a series of responses to McKay’s call for a synthesis or what he termed a “reconnaissance” of Canadian history. Responses included Castonguay cited above.

⁵⁵ A. Mark Liddle, “State Masculinities and Law,” *British Journal of Criminology* 36, no. 3 (1996): 362.

conceptions of masculinity, embodied in such virile figures as the outdoor adventurer, expedition leader, or big-game hunter. For this project, I draw on such works as Gail Bederman's classic work *Manliness and Civilization: A Cultural History of Gender and Race in the United States 1880-1917* (1995), as well as John Kasson's *Houdini, Tarzan, and the Perfect Man* (2001) and John Tosh's *Manliness and Masculinities in Nineteenth-Century Britain* (2005). These studies stress the malleability of manliness as a social construction, which as Kasson notes, "demanded constant work in new arenas to remain strong."⁵⁶ Lisa Bloom's *Gender on Ice: American Ideologies of Polar Expeditions* (1993) was particularly helpful in analyzing Andrew Halkett's Arctic experiences during the 1903-04 Neptune Expedition. Donald Wright's *The Professionalization of History in English Canada* (2005) was also important as it casts light on the gendering of professionalization in English Canada in the late nineteenth century.⁵⁷

Drawing on gender to analyze the Fisheries Museum helps, I believe, correct a tendency to gender blindness in fisheries history. This is true, for example, of the major fisheries histories cited above, which generally do not recognize gender as structuring fisheries or fisheries administration. Gender is not entirely absent from fisheries, however, and can be found in several American and Canadian collections. It shapes an

⁵⁶ Gail Bederman, *Manliness and Civilization: A Cultural History of Gender and Race in the United States 1880-1917* (Chicago: University of Chicago Press, 1995); John F. Kasson, *Houdini, Tarzan, and the Perfect Man: The White Male Body and the Challenge of Modernity in America* (New York: Hill and Wang, 2001) 10; John Tosh, *Manliness and Masculinities in Nineteenth-Century Britain: Essays on Gender, Family and Empire* (Harlow UK: Pearson Longman, 2005). See also R. W. McConnell, *Masculinities* (Cambridge: Polity Press, 1995); *Manliness and Morality: Middle-Class Masculinity in Britain and America*, eds. J. A. Mangan and James Walvin (Manchester: Manchester University Press, 1987). A recent analysis of masculinity in nineteenth century Canada see Jane Nicholas, "Representing the Modern Man: Beauty, Culture and Masculinity in Early-Twentieth-Century Canada," in *Canadian Men and Masculinities: Historical and Contemporary Perspectives*, eds. Christopher J. Grieg and Wayne J. Martino (Toronto: Canadian Scholars' Press, 2012).

⁵⁷ Donald Wright, *The Professionalization of History in English Canada* (Toronto: University of Toronto Press, 2005).

important American collection, *Iron Men, Wooden Women: Gender and Seafaring in the Atlantic World, 1700-1920* (1996) and is also present in *Fishing Places, Fishing People: Traditions and Issues in Canadian Small-Scale Fisheries* (1999).⁵⁸ Breaking down notions of fishing as an exclusively male domain, both American and Canadian historians have shown that women have played active roles in fisheries in shore-based processing and other areas. In Canada, for example, women have played important roles in family-based businesses on the Great Lakes, in Aboriginal fur-trade fisheries, and in fish processing on both coasts.⁵⁹ Taking the museum as both product and instrument of fisheries administration, this dissertation foregrounds the male domination of fisheries, which appears naturalized in other accounts. Turning a gendered lens on Samuel Wilmot, Edward Prince, and Andrew Halkett—three men who loom large in this dissertation—denaturalizes male domination first by acknowledging that fisheries administration was a male domain. Secondly it shows how gendered understandings of male capacities warranted authority within fisheries administration. A gendered approach can thus complement and extend historical analyses of women in the fisheries and add to a growing body of work on Canadian historical masculinities.⁶⁰

⁵⁸ See *Iron Men, Wooden Women: Gender and Seafaring in the Atlantic World, 1700-1920*, eds. Margaret S. Creighton and Lisa Norling (Baltimore: Johns Hopkins University Press, 1996). This collection includes a piece by Bolster on masculinity and African-American sailors. William Washabaugh and Catherine Washabaugh's *Deep Trout: Angling in Popular Culture* (2000) offers a discussion of masculinity in relation to angling or sport-fishing.

⁵⁹ *Fishing Places, Fishing People: Traditions and Issues in Canadian Small-Scale Fisheries*, eds. Dianne Newell and Rosemary E. Ommer (Toronto: University of Toronto Press, 1999). In this volume see contributions by Barbara Neis, Jean Manore, and Arthur Ray

⁶⁰ See for example Jane Nicholas, "Representing the Modern Man: Beauty, Culture and Masculinity in Early-Twentieth-Century Canada," in *Canadian Men and Masculinities: Historical and Contemporary Perspectives*, Christopher J. Grieg and Wayne J. Martino, editors. (Toronto: Canadian Scholars' Press, 2012). Other work includes Christopher Dummitt's *The Manly Modern: Masculinity in Postwar Canada* (2007) and another edited collection, *Making It Like a Man: Canadian Masculinities in Practice* (2011).

1.3 Organization and summaries

The dissertation follows a chronological order from the museum's origin at the Great International Fisheries Exhibition in London in 1883 to the museum's demise in 1918. It offers a close study of the museum's practices of collecting, modeling and exhibiting and how they served and risked the construction of authority. The first chapter after the introduction establishes the broad framework for understanding the museum in terms of Canadian state formation and the emergence of fisheries administration in the nineteenth century. Chapters three and four explore the museum's establishment and as a site where authority in fisheries administration was tested and constructed. Chapters five and six turn to more material considerations as they address the modeling and display of fish.

Chapter Two, "Administering Fish," establishes the background of the Canadian Fisheries Museum with a history of fisheries administration and Canada's participation in the 1883 International Fisheries Museum in London. I trace the emergence of fisheries as an administrative domain through the work of three middle-class men: Moses Perley, Pierre Fortin, and Samuel Wilmot. They exemplify the administrative revolution that marked the development of "responsible government;" this was a gendered form of rule vested in propertied white males who were deemed to be endowed with natural abilities—such as rationality—that suited them to self-government. These qualities also made them suitable as trustworthy inspectors who, like Moses Perley and Pierre Fortin, sought to inculcate bourgeois norms of industry and productivity in Canadian fisheries. Their work as inspectors before Canada's Confederation in 1867 not only laid the groundwork for formative legislation that consolidated fisheries as an administrative

object, but also produced among the first faunal surveys of fish in colonial Canada. Perley and Fortin also exemplify how the extension of fisheries administration entailed a fundamental exclusion, the marginalization of aboriginal people and the enclosure of their traditional fisheries as “public” or common fisheries. After Confederation, I trace the further extension of Canadian fisheries administration in the figure of Samuel Wilmot. Wilmot fused his private interests in fish culture—a male middle-class hobby and business—with state interests in sustaining increasingly intensive fisheries. Wilmot became Canada’s chief bureaucrat responsible for fish culture and oversaw the expansion of the technology as a key pillar in Canadian fisheries administration. Wilmot also exploited fish culture’s exhibitionary potential and was selected to organize Canada’s exhibit at the 1883 International Fisheries Exhibition in London. The chapter concludes with an examination of the Canadian exhibit, the Canadian Court, and how it materialized the state formative work of Perley, Fortin, and particularly Wilmot. The Court figured the male-dominated character of Canadian fisheries through the exclusion of women and native fishers: it celebrated fisheries as an object shaped by the nation-state and under its rational management.

Chapter Three, “Exhibiting Authority,” explores the establishment of the Canadian Fisheries Museum in Ottawa in 1884 after the London fisheries exhibition. This chapter opens the question of gendered authority within the museum and shows how it was not just a place for representations of fisheries, but also an arena where male authority in fisheries was tested and contested. I show first how the museum buttressed Samuel Wilmot’s power within Canadian fisheries administration, although his authority did not go unchallenged. Critiques of fish culture, which had emerged in London,

continued to circulate in Ottawa and were framed in terms of manly authority and character. Beating back these attacks on fish culture and his character, Wilmot consolidated his power: he convinced the fisheries department to purchase the building that housed the museum and then extended the museum's exhibitionary scope by installing a full-scale fish hatchery in its basement. The contest of authority is further explored in the transition in Canadian fisheries administration from Wilmot's "practical" regime to Edward Prince's "scientific" one. Prince, an English fisheries scientist, joined the fisheries department in 1892 and clashed with Wilmot over the fisheries exhibit's purpose and lack of scientific rigour. Wilmot embodied the "practical man," the sturdy Victorian figure of tacit experience and entrepreneurial zeal, while Prince represented the new generation of government expert committed to science and research. To Prince, Wilmot's collection exhibited all the pitfalls of inexpert "practical" direction: a worn and unsystematic exhibit that would require much work before it could authoritatively represent Canada's fish and fisheries. Wilmot, however, retained significant power within the department and it was not until his retirement in 1895 that Prince was able to begin the exhibit's reform when he turned to Andrew Halkett. Lacking university qualifications, Halkett was an unexpected choice to lead the museum's reform. But Halkett had demonstrated through his membership in the Ottawa Field-Naturalists' Club—which included Prince and other senior civil servants in Ottawa's natural history establishment—that he was both an able general natural historian and an upstanding Victorian man who could be relied on to carry out his duties. Prince assigned Halkett to both curatorial and naturalist duties between 1895 and 1901 and I show how Halkett used these assignments to build his authority as a scientific officer and popular natural

historian that warranted, in 1903, his official appointment as the museum's curator.

Chapter Four, "Collecting and the Scientific Field Naturalist," further explores Andrew Halkett's construction as a popular naturalist and scientific field naturalist. It examines Halkett's collecting practices and how they shaped the modeling of his authority as a curator and a naturalist and, by extension, the museum's authority. In 1903, Halkett proposed to collect and catalogue Canada's fish fauna, a project with a national and authoritative scope. The museum's resources, however, were insufficient to conduct regular collecting expeditions and Halkett had to be content with opportunistic accessions through donations, loans, and occasional purchases. Such collecting threatened to undermine the museum's authority by filling it with a motley selection of objects, including live animals. This form of collecting did, however, support Halkett's promotion of local nature study through the Ottawa Field-Naturalists' Club and contributed to the construction of his authority as a popular naturalist. This entailed risk as well, as popularization was also associated with amateurism and femininity. Expedition collecting, in contrast, provided opportunities for Halkett to assert his authority as a "scientific field naturalist." Expeditions were rare events for Halkett, with the most significant expedition being his participation in the 1903-04 Neptune expedition to the Arctic. This expedition aimed to establish Canada's sovereignty in the region and allowed Halkett to claim authority upon the more manly ground of scientific field experience in service to the nation. I end this chapter by examining Halkett's 1907 and 1908 expeditions to the Canadian west. These expeditions extended the museum's collection and catalogue, but were also used to further the fisheries department's acclimatization projects and reconstruct native fish faunas with non-native fish

introductions that met settler expectations for sport and commercial fisheries. Halkett and the museum were agents of faunal transformation: but this work also risked challenges to their authority when fish introductions were resisted.

Chapter Five, “Modeling, Remodeling, and Display,” moves from collecting fish to modeling them as material and conceptual objects. The chapter deals in particular with the museum’s renovation or “remodeling,” which began in 1911 and continued until the museum re-opened in stages beginning in 1914. This span was perhaps the most active period of collecting and model-making in the museum’s history, and marks a concerted effort on curator Andrew Halkett’s behalf to establish the museum as a credible, national institution. This chapter explores the “question of fish exhibition” and the difficulties of modeling fish, which were widely regarded as the most difficult of animals to mount. To validate itself as a credible institution, however, the museum required accurate and authentic models, and had to turn to an American taxidermist for specimens made to museum standards. While the museum renewed its collection of mounted fish—which exemplified taxonomy or systematics—the museum also experimented with more spectacular forms of display. In 1913 the museum secured a whale skeleton, which the museum’s porter articulated in a display of craft labour. The museum also commissioned new and expensive models of fishing vessels and fishing gear. These models renovated the museum’s material collection.

Chapter Six, “Consuming at the Canadian National Exhibition,” explores the Canadian Fisheries Museum at the Canadian National Exhibition (CNE) between 1913 and 1918. The exhibition marked a significant shift in the fisheries department’s exhibitionary strategy as it began to shift from issues of production to questions of

consumption. Consumption had emerged as a concern in the 1900s when the Canadian fisheries department tried to tackle what it termed “stagnation” in fisheries production. This shift materialized at the CNE with the integration of the Fisheries Museum’s collection into a promotional campaign designed to increase fish consumption. Produced in collaboration with fish wholesalers, this campaign aimed to expand demand for fresh fish, particularly from eastern Canadian fisheries. Andrew Halkett organized the first display in 1913 which integrated mounted fish from Fisheries Museum into an exhibit constructed to resemble a modern fishmonger’s shop. In 1915 the campaign was expanded to include a fish restaurant and a complimentary fish cookbook. Mobilizing gendered notions of cookery, cleanliness, nutrition, and health, these exhibitionary efforts proselytized what the newly launched trade publication *The Canadian Fisherman* called “the gospel of clean fish.”⁶¹ This campaign was commandeered by the federal government food controller during World War I and supported a wider effort to ration food and save meat for front-line troops. I argue that the CNE exhibits and fish-consumption campaign brought consumers into closer contact with fish and fishermen than the museum; indeed they offered a multisensory encounter with fish that the Fisheries Museum could not produce. In 1918 the fisheries department withdrew from the CNE; it also closed the Fisheries Museum and in early spring of that year the Fisheries Building was demolished.

1.4 Sources

This project faced some significant archival challenges. The main source was

⁶¹ “The Gospel of Clean Fish,” *The Canadian Fisherman* 1 (February 1914): 43-44.

Record Group 23, the archive for the Canadian Department of Marine and Fisheries, located in the national archives in Ottawa. This archival source was critical to this project: it contains correspondence among fisheries officials about the operations of the museum as well as Andrew Halkett's memos and reports concerning the Fisheries Museum. The records of Andrew Halkett loom large: as curator he was the only one to write consistently detailed reports about the museum. There are large gaps in this record, however. As a clerk, Halkett was beneath the notice of departmental records for 26 years, until 1895 when he first appears in connection with the Fisheries Museum and in 1896 when he undertook a fur-seal inquiry in the Bering Sea. Halkett only appears intermittently in the archives in the critical period between 1895 and 1903 when he was making the transition from clerk to naturalist. After 1903, when he was appointed curator, Halkett's activities are more regularly represented in departmental records, but even after this date there are gaps. There are no records, for example, for his visit to Europe in 1910-11, which included a tour of museums and few about the museum's operations between 1914 and 1918.

The only account of Halkett's career is contained in a letter he wrote in 1917 seeking job re-classification and a pay increase; this document is helpful, but also contains significant gaps. Halkett, for instance, passes over his transition from clerk to curator-naturalist in 1895-96 and his European trip. Apart from RG 23, the only other significant sources for Halkett's views are his contributions to the Department of Marine and Fisheries annual reports and *The Ottawa Naturalist*. The former routinely included museum reports penned by Halkett and contain significant detail about the museum collection and his views about its state. *The Ottawa Naturalist* was another rich source:

Halkett contributed articles, most notably about his expedition experiences to the Arctic and Pacific Oceans, which reveal his attitudes about his role and his relation to natural history. Apart from an obituary in *The Canadian Field-Naturalist* in 1939, I have had to reconstruct Halkett's career by triangulating departmental correspondence and reports with material gleaned from his contributions to *The Ottawa Naturalist*.

I also consulted records from the Department of Agriculture, RG 17; the Colonial Office, RG 25; the Civil Service Commission, RG 32; and the Privy Council Office RG 2. Other museum archives provided some important insight into the museum and Halkett's career. I consulted the archives of the Museum of Canadian Nature in Aylmer, Quebec, where I examined correspondence between Andrew Halkett and Victoria Memorial Museum officials; the Royal Ontario Museum in Toronto, where I looked at other fisheries exhibits materials; the American Museum of Natural History in New York, where I read correspondence between the museum and Canadian fisheries officials; and the Natural History Museum in London, which provided a small lot of correspondence between Andrew Halkett and its fish curator, C. Tate Regan.

Two magazines were particularly vital sources. *The Canadian Fisherman*, which began publication in 1914, became the official organ for the Canadian Fisheries Association, which represented fishing companies and wholesalers. This publication and *The Canadian Grocer* provided valuable materials and insights for chapter six, "Consuming." Ottawa and Toronto newspapers particularly the *Globe* provided material about Samuel Wilmot's Newcastle hatchery and the London fisheries exhibition as did the *Illustrated London News*, which provided detailed coverage about this event.

1.5 Conclusion

Although I have situated this dissertation at the intersection of museum studies, environmental and fisheries history, state formation analysis, and gender studies, I appeal to the reader to consider this dissertation as a contribution to Canadian environmental history. The Fisheries Museum, as I show, was not just a place that produced ideas about Canada's aquatic nature, but also sought to alter it through acclimatization or non-native species introductions. In both cases—as a site of representation and as agent of environmental change—the Fisheries Museum constitutes what Michael Chiarappa calls an “environmental threshold.” Chiarappa was thinking primarily of fish-processing infrastructure and challenged environmental historians to consider the environmental interactions and “environmental imaginings” that processing plants and fish markets mediated and produced. The Fisheries Museum was such a place: it too processed fish—not into filets or salted product—but into ideas about Canadian fish fisheries, the place of state fisheries administration, and the construction of masculine authority.⁶²

⁶² Michael J. Chiarappa, “Dockside Landings and Threshold Spaces: Reckoning Architecture's Place in Marine Environmental History,” *Environmental History* 18 (2013): 12-28.

Chapter Two: Administering Fish

When the Great International Fisheries Exhibition opened in London on May 12, 1883, the *Illustrated London News* devoted its front page to the event. A full-page engraving portrayed the Prince of Wales standing at attention as uniformed buglers sounded the exhibition's official opening. "The International Fisheries Exhibition at South Kensington," the periodical claimed, "promises to be the most striking novelty of the London season, and a formidable rival of the art galleries."¹ Beyond the glittering royal pageantry, the *News* also recognized the exhibition's focus on the emerging role of science in fisheries administration. "Scientific fisheries" were in their infancy, the *News* reported, and the exhibition would bring them to maturity by solving a paradoxical problem: making productive the "practically inexhaustible" fisheries.² The 1883 fisheries exhibition has been widely cited as a critical moment in western fisheries as it marked the public emergence of science as an administrative tool in the fisheries. Joseph Taylor describes fisheries exhibits as "didactic dioramas of the power of science and technology." In vast exhibition spaces, Taylor writes, "[o]rganizers arrayed aquaria, fishing devices, scale models, and fish culture tools to create a sense of technical proficiency."³ Exhibitions were more than emblems of progress, however; they were also political representations that made fisheries visible as a conceptual domain, an

¹ *Illustrated London News*, May 19, 1883, 486.

² *Ibid.*

³ Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (Seattle: University of Washington Press, 1999), 95.

administrative object of political and scientific calculation.

In arranging nature's bounty—cod, salmon, lobster—among the weirs, nets, and traps that materialized these creatures into marketable commodities, fisheries exhibits also arranged visitors' perceptions about nature and their relation to it, particularly of the nation's role in governing seas, the fish in them, and the people who worked upon them. As a large-scale material and conceptual model of the fisheries, the London fisheries exhibition thus posed questions and proposed answers about the proper relationship between nation and nature: What constituted the fisheries? Who and what belonged under this rubric? How were these elements to be managed and made productive? How was science to be applied to the fisheries?

These were questions that the Canadian Court, as Canada's display in London was known as, attempted to answer. It was first Canadian display in a fisheries-specific exhibition, and the Canadian Fisheries Museum's material and conceptual foundation. When the London exhibition closed in late 1883, the Canadian exhibit was returned to Canada and re-organized as a public exhibit in Ottawa in 1884. A history of the museum must therefore begin not just with the London exhibition, but also with the emergence of Canadian fisheries administration in the mid-nineteenth century. I frame this emergence in terms of Philip Corrigan and Derek Sayer's state formation approach, which defined English state formation as a liberal cultural revolution that consolidated male bourgeois rule and privilege. This analytical approach is also useful in the Canadian context as English reforms in governance and administration were implanted in colonial British North America in the 1840s. In this chapter I consider fisher state formation through colonial fisheries inspection, and the work of two key inspectors, Moses Perley and

Pierre Fortin, who exemplified the male, middle-class articulation of state power as they modeled fisheries into a political object. Their work provided a foundation for fisheries administration after Confederation, which was further intensified and extended by another middle-class man, Samuel Wilmot. Wilmot elaborated fish culture in Canada from a private enterprise into a state one; he also exploited fish culture's exhibitionary potential, which led to his role in organizing Canada's display in London. The chapter concludes with the Canadian exhibit itself, assembled and shaped by Wilmot, and bearing the visible traces of Perley and Fortin. I argue that the fisheries exhibition constituted fisheries as a legible object in which male prerogative was exhibited in seen and unseen ways: in plain view, in the exhibition's exclusion of women and denigration of native fisheries and more subtly in the exhibition's constitution of fisheries as a rational, state-administered enterprise.

2.1 Fisheries Administration

Observers were surprised by the scope of Canadian fisheries at the London exhibition. "That Canada, with its grand coast-line, its magnificent lakes and rivers, must possess very valuable fisheries is patent to all," remarked Frederick Whympers in *The Fisheries of the World*, his exhaustive visual and textual survey of the 1883 London fisheries exhibition. "But her foremost position in the practical working of the same was none the less a surprise."⁴ By the time of the London exhibition, however, Canada's federal Department of Marine and Fisheries was a large and growing bureaucracy. Established in 1868, and the first federal fisheries administration in North America, the

⁴ Frederick Whympers, *The Fisheries of the World: An Illustrated and Descriptive Record of the International Fisheries Exhibition, 1883* (London: Cassell & Company, 1884) 273.

department had an annual budget of \$114,000 and a staff of more than 650 inspectors and officers. The department was responsible for freshwater and marine fisheries, and policed Canadian waters in the Great Lakes and on both coasts with a fleet of fisheries patrol vessels. The department also maintained eleven fish hatcheries that annually produced millions of fish for stocking in Canadian lakes and rivers. American fisheries and museum administrator George Brown Goode heaped praise on Canada's fisheries administration, calling the Department of Marine and Fisheries "one of the most valuable organizations in the world."⁵

This administrative system was the historical product of the British colonization of North America and can be traced to the imposition of English forms of government, law, and property in the late eighteenth century. English common law established a legal order that facilitated and governed possessive individualism in colonial fishing. Common law's basic assumption was that fish were a free resource, available to all for capture. The right to fish on non-navigable waters, however, was determined by property ownership; a landowner controlled access to fishing and could also sell or lease that right. In navigable or public waters, the right to fish was guaranteed, a principle applied to tidal waters in England, but which in British North America came to include non-tidal waters. On the sea, fishing was not subject to such property considerations; fishing was theoretically free to any territorial subjects who chose to fish. Land tenure, however, affected the location of shore-based processing while community and kin relations shaped entry into fishing

⁵ Canada, "Report on the Fisheries of Canada for the year 1883," *Sixteenth Annual Report of the Department of Marine and Fisheries* (Ottawa: Queen's Printer, 1884) lxv; Quoted in Samuel Wilmot, *Canada at the Great International Fisheries Exhibition, London, 1883* (Ottawa: A.S. Woodburn, 1884) 34-35.

employment.⁶

English common law enabled a fundamental re-allocation of fishing rights in the colonial period. Drawing on the right of public fishing, settlers ignored native fishing property and regulation, based on usufruct and kinship, and enacted what legal historian Douglas Harris called, in the context of nineteenth-century British Columbia, the “capture” of native fisheries.⁷ This process accelerated as land surrenders and treaties opened native territories to settler fishing. The institution of English law and government also established a framework for settler laws, which, in the late eighteenth and early nineteenth centuries, mainly consisted of local responses to increases in the scale and intensity of fishing that colonization inaugurated. The regulation of fishing across colonial territories varied and responded to local circumstances and traditions, and reflected an intensifying if uneven liberal order as fish and fisheries were differentiated. In Nova Scotia, legislation focused on supporting cod export fisheries with bounty payments for fishing vessels and cured fish, and regulations on fish quality and shipping. In Upper Canada, the increasing exploitation of Lake Ontario salmon initiated discussion of regulatory measures in the late 1790s, with the first law passed in 1807. Typical of colonial fisheries legislation, “An Act for the Preservation of Salmon” was locally focused, banning the use of nets, weirs “or other engines” at river mouths in two districts of the colony. Sea-run salmon in Lower Canada, New Brunswick, and Nova Scotia were subject to similar types of regulation. Regulatory enforcement was weak, however, and when prosecutions proceeded, local magistrates and juries were reluctant to prosecute

⁶ Mark D. Walters, “Aboriginal Rights, Magna Carta and Exclusive Rights to Fisheries in the Waters of Upper Canada,” *Queen’s Law Journal* 23 (1998): 301-368; Douglas C. Harris, *Fish, Law, and Colonialism. The Legal Capture of Salmon in British Columbia* (Toronto: University of Toronto Press, 2001).

⁷ Douglas C. Harris, *Fish, Law, and Colonialism: The Legal Capture of Salmon in British Columbia* (Toronto: University of Toronto Press, 2001) 15-17.

their peers.⁸

Under British colonial rule, fishing was culturally and geographically varied. Working for subsistence and domestic and export trades, settlers pursued different fish in different environments. Over time, settlers developed vernacular fisheries with characteristic types of boats, gear, and preparation methods, though they also shared similar techniques, such as spearing, net fishing, and salt curing, and sometimes the same fish species. In Upper Canada, fishing was limited to freshwater fish: colonists took landlocked Atlantic salmon, whitefish, and lake trout from shore-based fishing stations and salted fish in barrels for domestic consumption and export. In Lower Canada, fisheries developed around a different set of fish available in the St. Lawrence valley, including tom-cod, eels, sea-run Atlantic salmon, and further east, cod, and marine mammals such as seals and beluga whales. On the east coast, fishing was already shaped by centuries of seasonal cod fishing on the offshore banks and shore-based processing of the catch. With colonization, maritime fishing became fixed around port communities and intensified with fishermen capturing a range of species that shifted over time to include such species as haddock, herring, halibut, mackerel, shad and others.⁹

In the nineteenth century, the English “governmental revolution” invested British North America after representative government was granted in the 1840s.¹⁰ As in

⁸ Gough, *Managing Canada's Fisheries*, 24-38.

⁹ Margaret Beattie Bogue, *Fishing the Great Lakes: An Environmental History, 1783-1933* (Madison: University of Wisconsin Press, 2000) 23-24; Darin Kinsey, “Fashioning a Freshwater Eden: Elite Anglers, Fish Culture, and State Development of Quebec's 'Sport' Fishery,” (Ph.D., Université du Québec à Trois-Rivières, 2008) 86. Joseph Gough, *Managing Canada's Fisheries: From Early Days to the Year 2000* (Sillery: Septentrion, 2005) 24-38.

¹⁰ Oliver MacDonagh, “The Nineteenth-Century Revolution in Government: A Reappraisal.” *The Historical Journal* 1, no. 1 (1958): 53; Bruce Curtis, “Class Culture and Administration: Educational Inspection in Canada West,” in *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*, edited by Alan Greer and Ian Radforth (Toronto: University of Toronto Press, 1992) 109.

England, colonial state formation in British North America was characterized by, and enacted in, increasingly centralized forms of administration—the “apparently mundane, routine, workaday facets of state activity.”¹¹ Administration regularized the legal and legislative valorization of bourgeois norms, concretizing them in “laws, judicial decisions...registers, census returns, licenses, charters, tax forms” that also authorized, as Corrigan and Sayer argue, “what is to count as reality.”¹² The act of inspection was key to administration because it made political territory and subjects legible as objects of rule that state administrators could grasp and regulate. Inspectors gathered intelligence about local conditions that enabled central authorities, as Bruce Curtis notes, “to monitor local provision, identify centers of opposition and resistance to its policy, and intervene to resolve menacing disputes or contain threatening practices.”¹³ Moreover this was a “masculine enterprise,” as Curtis describes it, “an expansion of the sphere of political action of men of property and the collapse of the political will of society into the disciplined will of these men.”¹⁴

Inspection in the Canadas established regular connections “between centre and locality” which were absent in the 1840s. Casual commissioners and overseers had initially provided some intelligence, but they did not travel and their activities lacked routine. “This limited the capacity of central government,” argues Curtis in respect to the inspection function, “to form a general view of the comparative development of local improvements, or to implement colony-wide policy.” Inspection in fisheries began in the

¹¹ Philip Corrigan and Derek Sayer, *The Great Arch: English State Formation As Cultural Revolution* (Oxford: Basil Blackwell, 1985) 187.

¹² *Ibid.* 197.

¹³ Bruce Curtis, “Representation and State Formation in the Canadas, 1790-1850,” *Studies in Political Economy* 28 (1989): 80.

¹⁴ Bruce Curtis, “Representation and State Formation in the Canadas, 1790-1850,” *Studies in Political Economy* 28 (1989): 62.

late 1840s, when colonial legislatures appointed traveling inspectors and commissioners to gather intelligence about fish and fishermen. As in other fields of government such as education, respectable middle-class, propertied men were chosen to conduct tours to collect “standardized information about different localities:” these men were the exemplars of the emerging liberal social order and thus had the correct disposition to determine inefficiencies, judge conduct, and propose solutions.¹⁵

In colonial British North America, this work fell to men such as Moses Perley and Pierre Fortin, the vanguard of Canada’s fisheries inspectorate. Perley was a lawyer who served New Brunswick’s colonial government in various capacities: as emigrant agent; as commissioner of Indian affairs who helped draft New Brunswick’s Indian Act of 1844; and as a fishery commissioner. Fortin was a doctor and stipendiary magistrate, and was appointed in 1852 to patrol and protect fisheries in the Gulf of St Lawrence; he later served as a member in the Quebec legislative assembly and in the federal House of Commons. Both men traveled through their respective colonies and produced detailed reports about fishing communities, fishing activities, and fish, compiling among the first faunal surveys produced by settlers. In addition to making fish and fisheries legible for government action, Perley and Fortin also articulated a critique of fishing, accusing fishers, especially native ones, of wasteful and inefficient practices which prevented the fisheries from realizing their true value. “Inspection was,” as Curtis notes, “an instrument of governance whereby respectable men of property sought the cultural, moral, and political reformation of the population.”¹⁶

¹⁵ E.P. Hennock quoted in Corrigan and Sayer, *The Great Arch*, 124.

¹⁶ Bruce Curtis, *True government by choice men?: inspection, education, and state formation in Canada West* (Toronto: University of Toronto Press, 1992) 189.

2.2 Moses Perley

Born in New Brunswick in 1804, Perley was trained as a lawyer whose recruitment into the colonial inspectorate began in 1837 when he was appointed as New Brunswick's Indian Commissioner. His first report, the 1842 *Reports on Indian Settlement*, exemplifies the moral regulation that characterizes nineteenth-century state inspection. Appointed to resolve conflicts about white squatters on native reserves, Perley recommended in his report that the native Maliseet residents be relocated to two reserves and adopt a settled agricultural life. Their children would be placed into white schools, the costs of which would be met by revenues from leases of land on native reserves and thus, as L.F.S. Upton put it, pay the cost of their own "civilization."¹⁷

In 1848, Perley became a fisheries commissioner, the first such post in British North America. Traveling by canoe and schooner, Perley logged hundreds of miles on the water as he surveyed the colony's fisheries from the Gulf of St. Lawrence in the north to the Bay of Fundy in the south. He produced three reports: *Report on the Fisheries of the Gulf of Saint Lawrence* (1849); *Report on the Sea and River Fisheries of New Brunswick, within the Gulf of Saint Lawrence and Bay of Chaleur* (1850); and *Report upon the Fisheries of the Bay of Fundy* (1851). These inquiries combined descriptive accounts, letters, memos, statistical tables, and a faunal survey, gathering the colony's scattered local fishing endeavours into a singular synoptic view of New Brunswick's fisheries.¹⁸

Perley's reports also detailed inefficiencies in production and conduct that Perley

¹⁷ L. F. S. Upton, "Indian Affairs in Colonial New Brunswick," *Acadiensis* 3, no. 2 (1974): 12-14.

¹⁸ W.A. Spray, "Perley, Moses Henry" in *Dictionary of Canadian Biography Online*, edited John English and Réal Belanger, http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652 accessed 15 January 2013; L.F.S. Upton, "Indian Affairs in Colonial New Brunswick," *Acadiensis* 3, no. 2 (1974): 12-13.

claimed impaired the colony's productivity. Problems included a general disregard for fisheries regulations, American encroachment on the colony's waters, and failure by fishermen to properly cure their catch. Perley found widespread environmental problems as well: dams and sawdust harmed rivers, and prevented salmon, shad, and gaspereau from swimming upstream to spawn. Perley was most dismayed by settler fishing practices, which to him lacked industry and rigour. In several communities he found fishermen who lackadaisically processed their catch and inadequately prepared fish for preservation. Perley took a particularly dim view of fishing practices on Grand Manan Island. "That the people of Grand Manan conduct the admirable fisheries in their vicinity very inefficiently, and with but little profit," Perley claimed, "is undeniable."¹⁹

In Perley's view, New Brunswick fishermen lacked market discipline: their poor preservation methods, for example, prevented them from selling their catch in the lucrative Mediterranean markets. These lost opportunities wasted the colony's precious fishing resources "either from ignorance, neglect, or laziness, or all combined."²⁰ Perley recommended several measures to make New Brunswick's fisheries more efficient and competitive. One set of recommendations focused on improving state supervision of the fisheries. Perley proposed "a general inspection law" that would establish inspectors in every New Brunswick county and a comprehensive "general law for protection of sea and river fisheries." His other recommendations focused on citizens and fitting them to the task of exploiting New Brunswick's resources. "The people of New Brunswick must be incited, and encouraged, to enter into the deep sea and coast Fisheries," urged Perley.

¹⁹ Moses Perley, *Report upon the fisheries of the Bay of Fundy* (Fredericton: Queen's Printer, 1851) 22.

²⁰ Moses Perley, *Reports on the Sea and River Fisheries of New Brunswick*, 2nd edition (Fredericton: Queen's Printer, 1852) 166.

“[I]f the people were better taught and possessed greater knowledge of the world, they would readily perceive the numerous advantages of their position, and quickly avail themselves of the profits to be derived from it.” Perley thus recommended the establishment of a fisheries school to train fishermen as self-actualized producers, and the building of improved housing for fishing families and fishing infrastructure such as piers and harbours.²¹

Perley’s focus on increased productivity underlay what was to become one of his most important recommendations, which was to lease the colony’s salmon rivers which ran through Crown lands. An angler himself, Perley lauded salmon angling, which was already popular with British officers stationed in New Brunswick.²² In his role as Indian Commissioner Perley had earlier scrutinized native fisheries and criticized them as inefficient—indeed as lacking “industry” altogether. Perley, for example, described the native salmon fishery in the Maliseet community of Tobique, as a form of idle sport:

it struck me that they prized much more highly the dash and excitement of the sport in taking the fish, than the profit arising from the sale of them...the day was spent by the Indians in almost listless idleness; but so soon as night fell, the torch was lit, the Spear lifted, the canoe launched, and all became life, bustle and activity. The sport was pursued the whole night, and day-light exhibited heaps of glittering Salmon on the bank, and the Indians languidly creeping off, to sleep away another day of total idleness.²³

Corrigan and Sayer have argued that “[e]ssential relations of bourgeois order are experienced and expressed as personal inadequacy.”²⁴ This is clear in Perley’s description of fishing in Tobique. Like other settler-observers of native salmon spearing, some of whom viewed spearing as a picturesque diversion, Perley was unable to credit this type of

²¹ Perley, *Sea and River Fisheries*, 85 and 89.

²² Peter Thomas, *Lost Land of Moses: The Age of Discovery on New Brunswick's Salmon Rivers* (Fredericton: Goose Lane Editions, 2001) 14.

²³ Moses Perley, *Reports on Indian Settlements, &c: Extracts* (Fredericton: J. Simpson, 1842) 2.

²⁴ Corrigan and Sayer, *Great Arch*, 199.

fishing as work. In the case of Tobique—where the Maliseet were protesting the construction of a milldam that threatened to block salmon runs—Perley suggested that blocked runs would force the natives into occupations such as farming that fit settler conceptions of economic production. “The destruction of the Salmon Fishery,” Perley argued, “would perhaps induce the Indians to adopt more settled habits of industry, and pay more attention to the cultivation of the soil than they do at present.”²⁵ These views shaped Perley’s recommendation in 1850 that the colony’s salmon rivers on Crown lands be leased to sport fishermen. This arrangement he argued would “protect” salmon from native fishers, whose fishing was “wasteful and reckless.” Under leases to elite anglers, the salmon would be “rendered profitable.”²⁶

Angling, or sport fishing, was a class-differentiated sport with an elaborate literary pedigree rooted in seventeenth-century English writer Izaak Walton. Walton’s *The Compleat Angler* (1653) established a pastoral discourse about angling as a genteel and spiritual past-time. In the nineteenth century, this discourse shifted to emphasize angling, and especially fly-fishing, as a distinctive bourgeois sport that buttressed gendered, classed and racial identities. Anglers claimed that their sport was a better use of fish and lobbied for tighter regulation of game fish, particularly Atlantic salmon and trout. Anglers, and officials such as Perley who enjoyed angling, have been credited as being among the first conservationists as they recognized and protested against declines in fish, but their advocacy privileged their exploitation over other forms of fishing.²⁷

Bill Parenteau’s work on eastern Canadian salmon fisheries has documented the

²⁵ Ibid.

²⁶ Perley, *Sea and River Fisheries*, 89.

²⁷ William Washabaugh and Catherine Washabaugh, *Deep Trout: Angling in Popular Culture* (Oxford: Berg, 2000) 29; William Knight, “‘Our Sentimental Fisheries:’ Angling and State Fisheries Administration in 19th century Ontario,” (MA thesis, Trent University, 2006) 19-24.

impact of conservation and leased salmon fisheries, which were first introduced in Quebec in 1858 and in New Brunswick in 1863. As Parenteau has shown, native fishers in eastern Canada were deemed to be inefficient commodity producers who threatened the growing sport-fishing industry through spearing. The leasing of salmon rivers on Crown land enclosed salmon for elite anglers who instituted close policing of their rivers, in the name of conservation, to prevent natives and settlers from salmon fishing. Native men were then reincorporated in the new economy of angling as waged fishing guides. For elite anglers who wrote about their fishing experiences, the presence of native guides also authenticated the experience as romantic and primitive—a new version of the picturesque that replaced the old one of native men spearing salmon by torch light. The implementation of leasing opened public lands to private development and converted the public right to fishing into a private privilege.²⁸

In addition to his fisheries reports Perley also surveyed the fish and compiled a catalogue of the fish of New Brunswick and Nova Scotia. Appended to Perley's Bay of Fundy report, the "Descriptive Catalogue of the Fishes of New Brunswick and Nova Scotia" was the first ichthyological catalogue published in British North America. The faunal catalogue was an authoritative bibliographic form developed in Europe; produced during imperial explorations, catalogues plotted animals to territory and made organisms legible in the registers of scientific classification and commercial resource.²⁹ Although Perley denied being a naturalist—he was, he claimed, "simply an occasional observer of

²⁸ Bill Parenteau, "'Care, Control and Supervision': Native People in the Canadian Atlantic Salmon Fishery, 1867-1900," *Canadian Historical Review*. 79 (1998): 1-35; "A 'Very Determined Opposition to the Law: Conservation, Angling Leases, and Social Conflict in the Canadian Atlantic Salmon Fishery, 1867-1914,'" *Environmental History* 9 (2004): 436-463.

²⁹ John V. Pickstone, "Museological Science? The Place of the Analytical/Comparative in Nineteenth-Century Science, Technology and Medicine," *History of science; an annual review of literature, research and teaching* 32, no. 2 (1994): 115-16; Curtis, "Class Culture and Administration, 106.

nature”—the catalogue shows a deep investment and attention to natural history, a practice associated with other forms of Victorian self- and social improvement and thus worthy of a bourgeois man.³⁰ Natural history exercised discrimination and classification, skills that Perley demonstrated in his catalogue which described 55 species of fish, listed in order following French ichthyologist Georges Cuvier’s taxonomic method. The catalogue also reflected Perley’s angling interests: the description of Atlantic salmon and trout were among the longest in the catalogue.

Perley hoped his catalogue would inculcate in fishermen “a more perfect knowledge of the habits, haunts, and seasons of the Fishes of our waters,” which would make them more efficient exploiters of the colony’s fish resources.³¹ Faunal surveys thus supported Perley’s project to make New Brunswick’s fisheries legible and more productive, objectives articulated in his reports and taken up in centralizing projects such as legislation. Perley’s recommendations for the fisheries, for example, were taken up in New Brunswick’s fishery acts of 1851 and 1852, although his recommendation to lease public rivers was not instituted until 1863. When it was, however, it left a lasting impact as Parenteau and, more recently, Darcy Ingram have shown. River leasing privileged upper-class anglers (and their wives who often fished as well) over native and local settlers and created “a state-administered privately regulated system of conservation.”³² Intended to make fisheries more efficient and profitable, and generate revenue from Crown lands, leasing solidified elite white privilege in salmon fisheries and became a foundational element of Canadian fisheries administration after Confederation. Perley’s

³⁰ Carl Berger, *Science, God, and Nature in Victorian Canada* (Toronto: University of Toronto Press, 1983) 10.

³¹ Perley, *Bay of Fundy*, iv.

³² Darcy Ingram, *Wildlife, Conservation, and Conflict in Quebec 1840-1914* (Vancouver: UBC Press, 2013) 18.

efforts were instrumental, as Bill Parenteau has argued, in hastening “the development of a modern administrative apparatus,” one dedicated to the values of masculine possessive individualism.³³

2.3 Pierre Fortin

Pierre Fortin, like Moses Perley, was a middle-class member of British North America’s fisheries inspectorate. Fortin exemplified bourgeois attainment: he was a doctor, a magistrate, a geographer, a politician, and a founder of the Geological Society of Quebec. Fortin was also interested in policing and social order: in 1849 he raised a mounted police unit to help suppress riots in Montreal after passage of the Rebellion Losses Bill. In 1852 Fortin was appointed a stipendiary magistrate, a position established in French Lower Canada after the 1837 rebellion and which Allan Greer has linked to the establishment of a paternalistic liberal order in Lower Canada.³⁴ Between 1852 and 1865, Fortin patrolled the Gulf of St. Lawrence aboard the armed schooner, “La Canadienne,” as an agent of the United Provinces of Canada, embodying the state in multiple roles as customs inspector, police officer, stipendiary magistrate, and coroner. Fortin also surveyed fishing communities, compiled statistics, made natural history observations and collections, and, after 1857, enforced a new comprehensive fisheries act. Canadian administrative historian J.E. Hodgetts considered Fortin to be a model official, whose

³³ Bill Parenteau, “‘Care, Control and Supervision’: Native People in the Canadian Atlantic Salmon Fishery, 1867-1900,” *Canadian Historical Review* 79, no. 1 (1998): 8.

³⁴ Irene Bilas, “Fortin, Pierre Etienne” in *Dictionary of Canadian Biography Online*, edited John English and Réal Belanger, http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652 accessed 15 January 2013; Allan Greer, *Patriots and the People: the Rebellion of 1837 in Rural Lower Canada* (Toronto: University of Toronto Press, 1993) 93-96 and Greer, “The Birth of the Police in Canada.” in *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*, edited by Allan Greer and Ian Radforth (Toronto: University of Toronto Press, 1992) 31-33.

reports, Hodgetts declared, “would form a notable addition to the literature of our country’s development.”³⁵

They also form a notable record of the state formation in the United Province of Canada, the 1840 union of Upper and Lower Canada that Lord Durham had recommended in 1836. The report and the act sought to ‘modernize’ Lower Canada’s semi-feudal social organization and extinguish French influences that retarded the colony’s progress as a capitalist, market society. This effort was complex, proceeded along many fronts, and met with much resistance. The Fishery Act of 1857 and its subsequent amendments were one element of this project. Like acts in other fields, including education, the Fishery Act consolidated and concentrated state functions, including vesting responsibility for fisheries administration in the Crown Lands department. The act also consolidated piecemeal, local laws into a single text that generalized fisheries regulations across the territory. This shifted enforcement of fisheries regulation from local justices of the peace, who were often reluctant to prosecute neighbours over infractions, to central authorities.³⁶ Praised by another twentieth-century administrative historian as providing “uniformity of practice”—an apt description of its centralizing objective—the act instituted multiple differentiations and partitions that served to valorize bourgeois fisheries interests, including recreational ones. The act, for example, enclosed game fish in seasonal and gear-specific boundaries that marginalized

³⁵ W. Brian Stewart, *A Life on the Line: Commander Pierre-Étienne Fortin and His Times* (Ottawa: Carleton University Press, 1997) 115; J.E. Hodgetts, *Pioneer Public Service: An Administrative History of the United Canadas, 1841-1867* (Toronto: University of Toronto Press, 1955) 148.

³⁶ Brian Young, “Positive Law, Positive State: Class Re-Alignment and the Transformation of Lower Canada, 1815-1866,” in *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*, edited by Alan Greer and Ian Radforth (Toronto: University of Toronto Press, 1992) 50-51; Ian Radforth, “Sydenham and Utilitarian Reform,” in *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*, edited by Alan Greer and Ian Radforth (Toronto: University of Toronto Press, 1992) 92.

both Aboriginal and settler subsistence fishers in favour of sportsmen. Atlantic salmon in particular were more strictly protected; the act forbade the traditional Aboriginal technique of spear-fishing by torchlight, reserving salmon for sport fishermen.³⁷

Subsequent amendments increased the Fishery Act's power as an instrument of social regulation. In 1858, the licensing and leasing of exclusive fisheries on Crown lands was introduced. Moses Perley had proposed such measures in New Brunswick in 1850, but they were first instituted in the United Provinces of Canada. In Ontario, or Canada West, these measures advantaged commercial fishermen who acquired fishing stations on the Great Lakes, including those on traditional native fishing territories. In Quebec, or Canada East, licensing and leasing regulated access to salmon rivers on public lands: licensed commercial fishing stations were permitted at river mouths, while upstream the rivers were reserved for anglers and made available to them through exclusive lease-hold. Elite sportsmen, alone and in clubs, acquired these which led, as Darcy Ingram has shown, to a distinctive regime of "patrician" sporting preserves that transformed public lands into private estates for elite male hunters and anglers. Native and subsistence fishers bore the brunt as they were excluded from traditional and local public resources.³⁸

The 1858 Act also established the position of Fishery Overseer, a local inspector position that broadened and intensified surveillance in Canadian fisheries. W.F. Whitcher, the clerk in charge of the Crown Land's fisheries branch, believed that direct fishery supervision was the best means "to ensure the law being carried into effect in all parts of the Province." The Fishery Act of 1865 was needed, however, to clarify the

³⁷ Hansen, "Treaty Fishing Rights," 5-6; Richard S. Lambert & Paul Pross, *Renewing Nature's Wealth* (Toronto: Ontario Department of Lands & Forests, 1967) 113.

³⁸ "The Fishery Act," *Statutes of the Province of Canada*, 1858, 22 Victoria, c. 86; Gough, *Managing Canada's Fisheries*, 74-76; Ingram, *Wildlife, Conservation, and Conflict in Quebec*, 61-2.

Overseer's role and define his powers. Every Fishery Overseer was vested with magistrate powers that included rights to search and seizure; Overseers also swore an oath to "faithfully, honestly and impartially fulfill, execute and perform the office and duty of such Overseer, according to the true intent and meaning of the Fisheries Act."³⁹ The ranks of Overseers came to include men such as John Kerr—figures of middle-class substance—who diligently patrolled their assigned territories, administering the act. As Bruce Curtis has shown, inspection proceeded unevenly in the colonial Canadas as it lacked routine and standardization. The flow of intelligence between locality and centre was imperfect. John Kerr, for example, patrolled western Lake Ontario, and directed a constant flow of information concerning southern Ontario's fisheries to department headquarters in Ottawa; he learned of regulatory changes, however, by reading of them in Toronto newspapers. Overseers also included men such as Frederick Fraser, who was continually sanctioned for ignoring his duties, such as failing to collect fishing license fees from a prominent Lake Huron fish dealer.⁴⁰

Fortin, however, was a diligent agent of this new administrative order as evidenced in his reports. These reveal Fortin conducting a census in which he enumerated humans and non-humans—fishing places, boats, crews, navigation hazards, and fish—at the same time as he policed them. Structured loosely as a diary of his expeditions, the reports combine log entries detailing sailing itineraries and passage times, longer descriptive texts of places and people visited, and quantitative material arranged in lists and tables.

³⁹ W.F. Witcher, "Practical Results of Fish Culture in the Dominion of Canada," *Forest and Stream* 20 (1883): 408.

⁴⁰ John W. Kerr, 8 September 1865, *Journals 1865-1870*, 4 volumes in microfiche, collection of Dr. Tom Whillans Trent University, Peterborough, Ontario; Nancy B. Bouchier and Ken Cruikshank, "'Sportsmen and Pothunters': Environment, Conservation, and Class in the Fishery of Hamilton Harbour, 1858-1914," *Sport History Review* 28 (1997): 1-18; John Tilton to Frederick Fraser, April 17 1884, F 1034, Frederick George Mackenzie Fraser fonds, Ontario Archives, Toronto.

Fortin usually left Quebec in May and made the rounds of the Gaspé peninsula, the Bay of Chaleurs, the Magdalen Islands, Anticosti Island, and the North Shore of the St. Lawrence. Physically robust and imposing, Fortin enforced the Fishery Act in his person and in literal displays of the letter of the law. In one restless community, Fortin claimed that “my presence in the place was the means of restoring order and tranquility for the remainder of the season.” In 1858, at River St. John, he boarded an American schooner, “and showed the captain the Fishery Act.” This episode and others support Curtis’s observation that inspection connected centre to locality through the distribution of publications and “propaganda at the local site.”⁴¹

In 1861, Fortin undertook the most active and productive of his expeditions. Fortin biographer W. B. Stewart calculated that Fortin covered 6,000 nautical miles and stopped at 300 fishing stations, issuing 264 salmon fishing licenses over the course of the 186-day patrol.⁴² The expedition began with a visit to a native village at Godbout River to enforce its closure to public fishing after it was leased to Ottawa timber merchant Allan Gilmour.⁴³ Fortin’s report of the incident evidences the tone of moral regulation and instruction that inhered in fisheries enforcement:

I assembled the few Indian families then at Godbout, and after giving them communication of the principal clauses of the Fisheries Act, which I required them to observe, I showed them that they ought to be more interested in the preservation of salmon and trout than any one else, since these fish during the season of trapping in the interior, become one of their principal means of subsistence.⁴⁴

⁴¹ Pierre Fortin, *Annual Report of Pierre Fortin, Esquire, Magistrate* (Toronto: John Lovell, 1858) 9-15; Bruce Curtis, “Representation and State Formation in the Canadas, 1790-1850,” *Studies in Political Economy* 28 (1989): 80.

⁴² Stewart, *A Life on the Line*, 53.

⁴³ Ingram, *Wildlife, Conservation, and Conflict in Quebec*, 50-51

⁴⁴ Pierre Fortin, *Annual Reports of Pierre Fortin, Esq. 1861 and 1862* (Quebec: Hunter, Rose & Lemieux, 1863) 1.

Increasing supervision was accompanied by increasing enumeration, although it, like inspection, lacked standardization. In 1859, Fortin inspected salmon-fishing stations in the Gaspé where he collected license fees and gathered data about fishing. For one station, he represented his findings in a table with columns for the occupant of the station, the number of men employed, and the number of boats. At another, Fortin collected information on each vessel's home harbour, its master, the size of crew, the number of boats it carried, and the size of its cargo of cod.⁴⁵ In his 1862 report, Fortin provided more standardized tables that covered the entire Gulf region, and which registered vessel type, ownership, tonnage, and cargo capacity for each type of fish. A column for "observations" also permitted notes to capture export information. For the barque "Nameless," for example, Fortin made this note: "Transporte de la morue séchée en Italie, Brezil, etc."⁴⁶

Enumeration also involved surveying nature. Fortin, like Perley, made faunal surveys of the territories under his eye and his 1861-62 report includes a description of the Gulf of St. Lawrence's marine fauna. This faunal list appears in the appendix immediately following a series of tables enumerating Gaspé's merchants: their contiguity creates a conceptual unity with the other census information. Unlike Perley's "Descriptive List," which followed Cuvier's systematic division of fish, Fortin described only commercially valuable species. Beginning with marine mammals—whales and seals—and moving through the Gulf's commercially valuable fish starting with cod, Fortin commented briefly on each animal's geographical distribution and their value to

⁴⁵ Pierre Fortin, *Annual Report of Pierre Fortin Esq. 1859* (Quebec: Queen's Printer, 1860), 107-110.

⁴⁶ Pierre Fortin, *Rapports Annuels de Pierre Fortin, Ecr., 1861 et 1862* (Quebec: Hunter, Rose et Lemieux, 1863) 82-83.

economic production.⁴⁷ While Fortin's enumeration and reportage were not part of the census in the Canadas, his work was homologous to their construction of "authoritative representations" that permitted central authorities to register and rule distant localities.

Like Perley, Fortin helped make fisheries legible as an object of rule by identifying opportunities for regulation and education, which increased "the possibilities for intensive administration."⁴⁸ As Stéphane Castonguay points out "the extension of administrative capacities" allowed the state to fashion "new social relationships to nature."⁴⁹ Inspecting and policing constituted "the fisheries" as an object of rule and were thus characteristic of "the unprecedented expansion of state institutions" in nineteenth century British North America.⁵⁰

2.4 Samuel Wilmot and fish culture

The constitution of fisheries administration under the paternalist supervision of middle-class men continued after Canada's Confederation in 1867. Fisheries administration consolidated under a federal fisheries administration, the Department of Marine and Fisheries of Canada, the first national fisheries administration in North America. The department was responsible for a federal fisheries act, passed in 1868, that reiterated the fishery act already in force in the United Canadas. Measures introduced during colonial rule—inspection, fishery overseers, leasing and licensing—were applied

⁴⁷ Fortin, *Annual Report 1859*, 113-128.

⁴⁸ Bruce Curtis, *The Politics of Population: State Formation, Statistics, and the Census of Canada, 1840-1875* (Toronto: University of Toronto Press, 2001) 3-5.

⁴⁹ Stéphane Castonguay and Darin Kinsey, "The Nature of the Liberal Order: State Formation, Conservation, and the Government of Non-Humans in Canada" in *Liberalism and Hegemony: Debating the Canadian Liberal Revolution* (Toronto: University of Toronto Press, 2009) 225.

⁵⁰ Allan Greer & Ian Radforth, eds. *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada* (Toronto: University of Toronto Press, 1992) 13.

across the new federal territory.⁵¹ The federal system sought to promote and protect capitalist expansion: fisheries administration, wrote one official, “systematizes the fishing business...promotes investment of capital, and gives permanence and security to fishing industries, enhancing the value of fishing privileges to both individual fishermen and the public.”⁵²

It was, however, a regime with uneven power and jurisdiction. On the seas, Canada’s fisheries rule was limited by its constrained sovereignty. Confederation conferred incomplete autonomy from Great Britain, which retained responsibility for external or diplomatic relations, including the negotiation and ratification of fisheries treaties. Fisheries administration after Confederation was also complicated by intensifying commercial and recreational fisheries, declines in fish populations, increasing environmental degradation of fish habitats, and internal jurisdictional disputes over inland waters. In the late 1860s, a promising technology appeared that promised to mitigate if not solve such problems: fish culture.

Fish culture was developed in France in the 1840s. There, experimenters developed techniques for reproducing fish, particularly salmon and trout, under closed or contained conditions. While raising fish in ponds was an ancient practice, nineteenth-century fish culture was a new approach that assumed control over reproduction. It involved capturing fish during the spawning season, stripping them of eggs and sperm, which were then mixed to begin fertilization. Fish culturists then used a variety of apparatus to reproduce the natural conditions necessary for egg development. Once fish were hatched, they were raised in hatchery buildings until ready for release. In 1852, the French government under

⁵¹ Gough, *Managing Canada's Fisheries*, 86-87.

⁵² Quoted in Gough, *Managing Canada's Fisheries*, 93.

Napoleon III established the first government fish hatchery, a huge complex in Alsace that was called a “piscifatoire” or fish factory. Fish culture was hailed as an improvement over nature because it increased the rate of egg hatching by eliminating several risks for mortality, including predation. Disseminated through books, periodicals, and personal contacts, fish culture was quickly adopted in North America with the first fish hatcheries established in the United States as private enterprises in the 1850s.⁵³

North American governments took notice of the practice as well. In the United States, state fisheries commissions—established to inquire into and settle conflicts among fishermen over diminishing fish runs—adopted the practice in the mid 1860s. In 1868, the Canada fisheries department was the first to adopt fish culture at the federal scale with the United States following in 1871. State fish hatcheries were described as “machines for increasing the supply of food-fishes” and produced millions of fish for stocking in lakes, rivers, and tidal waters for both commercial and recreational fisheries.⁵⁴ State fish culturists also facilitated the importation and exchange of exotic species; they introduced non-native species of fish into new waters, refashioning aquatic ecosystems throughout North America, and around the world, to suit both commercial and recreational fishers. By the end of the nineteenth century, fish culture was the technological and institutional keystone of North American fisheries administration. These interventions required interlocking networks of hatcheries—operations of a complexity and scale that only state administrations could facilitate.⁵⁵

⁵³ Darin Kinsey, “‘Seeding the Water As the Earth:’ the Epicenter and Peripheries of a Western Aquacultural Revolution.” *Environmental History* 11 (2006): 535-36.

⁵⁴ “The American Exhibit at the London Fisheries Exhibition” *Science* 1, no. 15 (May 18, 1883): 418.

⁵⁵ Stephen Bocking, “Stocking the Great Lakes: Fish Culture in the 19th Century,” *Inland Seas* 57, no. 1 (2001): 64-74; Jerry C. Towle, “Authored Ecosystems. Livingston Stone and the Transformation of California Fisheries,” *Environmental History* 5: 1 (2000) 54-74.

Fish culture can be counted among the forms “of experimental and engineering practice” that Patrick Carroll argued characterizes modern state formation. Carroll argues that the incorporation of scientific and technological expertise into government in the nineteenth century helped states extend their rule over people, territory, and environments, and invigorate capitalist development.⁵⁶ As a technology adopted by the state, fish culture shared similarities with other government measures designed to maximize exploitation of natural resources under nineteenth-century liberal modes of government. H.V. Nelles has shown in the case of Ontario, the state was a client for capitalist interests, managing public lands and resources for private exploitation by corporations. In forestry, for example, the provincial government subsidized capitalist timber operations through favorable licensing and taxation schemes. Fish culture aimed to support commercial fisheries, but it was harder to determine its economic impact—or indeed if it helped at all. In the absence of proof, but yet enjoying full support from most fisheries constituencies, fish hatcheries served rather as an ideological subsidy. Fish culture was a warrant for expanding capitalist fisheries “without interrupting existing patterns,” as Arthur McEvoy has argued, as increasing exploitation and environmental degradation threatened fish stocks. “It was more politic to give than to deny,” McEvoy noted in regard to American fish culture, “to subsidize rather than police.”⁵⁷

The adoption of fish culture in Canada, and its articulation as a state technology, also evidences the class and gender dimensions that characterized the emergence of fisheries inspection. Fish culture was dominated by men, especially upper- and middle-

⁵⁶ Patrick Carroll, *Science, Culture, and Modern State Formation* (Berkeley: University of California Press, 2006) 13-25

⁵⁷ Arthur F. McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980* (Cambridge: Cambridge University Press, 1986) 106-08.

class men with income to dispose on a practice that required access to land, water, and specialized equipment. Some men were drawn to fish culture as a business opportunity: American Seth Green, for example, established a thriving private fish hatchery in New York that sold, at profitable rates, eggs and fish. Some were drawn to fish culture because it offered to sustain their angling, a primarily masculine sport that became popular in the nineteenth century. Fish culture also attracted supporters of acclimatization, an interest that intersected with natural history. The acclimatization movement began in France in the 1850s and included aristocrats and prominent naturalists interested in exchanging and naturalizing exotic organisms, a form of ecological imperialism.⁵⁸ Their goals were economic—varying “our supplies of food,” as one supporter put it—and recreational, and publicized them at lavish dinners at which exotic animals were consumed in elaborate meals. Whatever their individual interests these men also agreed that fish culture would create “cheap and wholesome food, as well as individual and general wealth.”⁵⁹ Fish culture thus had a bourgeois constituency, one that shared interests in masculine pursuits such as business, recreation, and natural science—and in man’s ability to control and dominate nature for economic purposes.

This constituency was also responsible for fish culture’s integration into state fisheries administrations. Such was the case with Samuel Wilmot, an enterprising Ontario resident who became the administrative head of Canada’s nineteenth-century fish-culture system. Wilmot, like Moses Perley and Pierre Fortin, was part of an emerging middle-class colonial elite in British North America. Born in 1822 in Upper Canada, Wilmot was

⁵⁸ Greg Gillespie, *Hunting for Empire: Narratives of Sport in Rupert's Land, 1840-70* (Vancouver: UBC Press, 2007) 75-77; Michael A. Osborne, “Acclimatizing the World: A History of the Paradigmatic Colonial Science,” *Osiris* 15 (2000): 135-151.

⁵⁹ Samuel Wilmot, “Aquaculture and Fish Protection,” *Transactions of the American Fisheries Society* 4 (1875): 23.

the son of a Loyalist land-surveyor who had emigrated from New Brunswick. Wilmot was educated at Toronto's Upper Canada College, a training ground for the colony's elite, and inherited the family farm near Newcastle, east of Toronto. Wilmot was active in commerce and municipal government, serving in various offices including county reeve, warden, and justice of the peace. He also defended the colony's political and social order, reportedly taking part in the suppression of the 1837 rebellion in Upper Canada.⁶⁰

In the 1860s, Wilmot became interested in fish culture and experimented with the propagation of Lake Ontario salmon at his farm. Lake Ontario then contained a population of landlocked Atlantic salmon; these fish had been a staple of native and settler fisheries, but by the 1850s were in decline because of changes in land use including agriculture, dam-building, and deforestation. In 1867, Wilmot built a hatchery on the stream that flowed through his property. Characterizing his project as a "private enterprise commenced by...an amateur for experiment and amusement," Wilmot dammed the stream in several places to create holding ponds; he also constructed a "Reception House," a building that controlled the flow of salmon into the hatchery and which provided space to hatch fertilized fish eggs. The entire facility cost more than \$2,000—a substantial sum in 1867—and allowed Wilmot to capture and retain salmon as they journeyed upstream from Lake Ontario to spawn.⁶¹

In 1868, Wilmot's efforts attracted the interest of the federal fisheries department. Fisheries officers visited Newcastle and enthused about its potential to create a "cheap and immediate increase, capable of almost indefinite extension, in the supply of [fish] to

⁶⁰ "Mr. S. Wilmot dead," *The Globe*, May 19, 1899, 10.

⁶¹ Bogue, *Fishing the Great Lakes*, 19-27; Canada, *Report of Fish-Breeding in the Dominion of Canada for the year 1879* (Ottawa: Queen's Printer, 1880) 6.

our markets.”⁶² On their recommendation, Wilmot was appointed a salaried federal fisheries officer and granted state funds to continue his fish-culture work. The hatchery property, however, remained in Wilmot’s hands which gave him leverage over a nascent federal fish-culture system. Wilmot was technically and administratively adept. He developed patented devices that automated the tedious labour of egg sorting and cleaning, and devised propagation techniques for other species of fish, including whitefish and lake trout, the two most valuable fish in the Great Lakes fisheries. In 1876, Wilmot was promoted to superintendent of fish culture and in that post developed a network of government hatcheries that stretched across Canada, and which annually produced millions of fish for stocking. In 1881, Wilmot was elected to the executive committee of the American Fish Cultural Association, an association of private and state fish culturists, and the precursor to the American Fisheries Society. By the time of the London fisheries exhibition in 1883, the fisheries department apportioned from one third to one quarter of its annual budget to Wilmot’s office.⁶³

Wilmot’s rise to this position and power depended in part on his status as a landed proprietor and his relative wealth. Indeed, fundamental to fish culture’s capture of piscine natural reproduction were two key elements of the liberal order: private property and the individualistic pursuit of profit. Wilmot recognized this feature of fish culture and noted that it was a potentially lucrative enterprise based on private control of water resources:

⁶² Canada, “Special Report of Messrs. Whitcher and Venning, On Fish Breeding at Newcastle, Ontario,” Appendix 3, “Seventh Report of the Select Committee on Fisheries Navigation,” *Journals of the House of Commons* (Ottawa: 1869) 3; Order-in-Council Number 1868-0538, 27 May 1868, RG2, Privy Council Office, Series A-1-a, LAC.

⁶³ “Samuel Wilmot,” *Dictionary of Canadian Biography*, (Toronto: University of Toronto Press, 1990) 1106-1107; “Fish Culture,” *Forest and Stream* 16 no. 10 (1881): 192; Canada, “Report on the Fisheries of Canada for the year 1883,” *Sixteenth Annual Report of the Department of Marine and Fisheries* (Ottawa: 1884) xv.

“much profit,” he wrote, “has been realized by utilizing springs and small streams of water on private properties.”⁶⁴ Federal fisheries officers recognized this as well. When they first considered sponsoring Wilmot’s work, the government also contemplated another arrangement which would grant Wilmot an exclusive license to catch the salmon he produced. The blurring of private and state interests in Wilmot’s hatchery generated considerable friction and resistance in the local area. The Newcastle hatchery was attacked twice in its first years of operation on the suspicion that Wilmot was attempting to engross Lake Ontario’s remaining Atlantic salmon for private gain. In the last incident in 1871, a party of “fifteen vagabonds, with blackened faces and otherwise disguised,” attempted to set fire to the hatchery. They failed, but succeeded in slaughtering all the salmon in the holding ponds.⁶⁵ Attacks occurred elsewhere too for other reasons. People vandalized and torched fish hatcheries in eastern Canada and New England, fearing that hatcheries would create an over-supply of fish and reduce fish prices.⁶⁶

Fisheries officials also began to question fish culture when it became apparent that it did not boost fish populations as promised. In the 1870s, W.F. Whitcher, the fisheries official who had recommended that Wilmot receive state support, cautioned that fish culture could not overcome the environmental impacts of settlement. Throughout North America fish habitats had “undergone a total change,” Whitcher observed, and it was “very doubtful whether, under these altered circumstances, they can ever be restored,

⁶⁴ Samuel Wilmot, “Aquaculture and Fish Protection,” *Transactions of the American Fisheries Society* 4 (1875): 23.

⁶⁵ Samuel Wilmot, “Appendix H to the Report of the Department of Marine and Fisheries,” *Canada Sessional Papers*. 8 (1873) 65. Margaret Beattie Bogue remarks that “nowhere on the Great Lakes... did local residents so clearly show their contempt for fishery regulation and hatchery policies than at Wilmot’s hatchery sites.” Bogue, *Fishing the Great Lakes*, 211.

⁶⁶ Richard W. Judd, *Common Lands, Common Peoples: The Origins of Conservation in Northern New England* (Cambridge: Harvard University Press, 1997) 158.

even were the costly experiment of restocking them by artificial culture tried.”⁶⁷ Wilmot himself recognized the limits of fish culture under changed environmental conditions. By 1879, salmon numbers in Wilmot Creek had declined; in 1881 only half a dozen adult fish returned despite Wilmot’s efforts. “I confess I have little or no faith,” admitted Wilmot, “for I fear that the time is now gone by for the production and growth in the frontier streams of Ontario of the salmon.”⁶⁸

Despite this setback, Wilmot stoutly defended fish culture. Continuing to contend that fish hatcheries “may be made to produce inexhaustible supplies of food and riches,” Wilmot developed the Newcastle hatchery into an exhibitionary site that did not just promote fish culture: it also promoted the fusion of his expertise with the state’s, and their combined power to construct, and reconstruct, fish populations to sustain economic development.⁶⁹ At Newcastle, Wilmot showcased fish culture and his power as a practical bourgeois male—endowed with land, technical acumen, and entrepreneurial energy—that validated the state’s involvement in fish culture.

2.5 Exhibiting Fish Culture

It is not known when Wilmot starting welcoming visitors to the Newcastle hatchery, but by 1877 it was represented in contemporary images as a picturesque public attraction. Easily accessible by railway from Toronto, the hatchery had landscaped grounds through which visitors could wander and observe adult salmon in the holding ponds, “dotted here and there with miniature islands.” The hatchery’s “Reception

⁶⁷ Quoted in Gough, *Managing Canada’s Fisheries*, 96.

⁶⁸ Samuel Wilmot, “Introduction of California salmon into Ontario,” *Bulletin of the United States Fish Commission 1881* (Washington: Government Printing Office, 1882) 3

⁶⁹ Samuel Wilmot, “Aquaculture and Fish Protection,” *Transactions of the American Fisheries Society* 4 (1875): 23.

House”—where eggs were developed and hatched—was also open to public inspection and showed Wilmot’s fish cultural apparatus at work. A natural history museum, located on the Reception House’s top floor, rounded out the hatchery’s exhibitionary charms. “It is doubtful, indeed,” Wilmot boasted, “whether in any other part of the world a more wonderful or pleasing exhibition can be enjoyed at one sight, of such number of large salmon as were enclosed within this small space.”⁷⁰

As Darin Kinsey has pointed out, fish culture and exhibitions emerged in the same decade in the nineteenth century. This congruence was fortuitous: fish culture displays became a regular feature of international exhibitions, making a natural fit with their celebration of technological progress afforded by capitalism. Fish-culture exhibits, according to Kinsey, “fueled more extensive state participation in fish culture” as well as increasing interest “in fish keeping and breeding as a hobby for the wealthy.”⁷¹ As such fish culture displays showcased the merging of interests between the state and its bourgeois supporters, reflecting interests in economic development, natural history, and fisheries administration. If, as Joseph Taylor argued in *Making Salmon* (1999), fish culture exhibits were “didactic dioramas of the power of science and technology to improve society and nature,” they were also representations of bourgeois investment in those goals.⁷²

The representational power of fish culture exhibits is evident in a contemporary of Wilmot’s, English fish-culture supporter Frank Buckland. Buckland’s career parallels Wilmot’s, including their exploitation of fish culture’s exhibitionary potential. Buckland,

⁷⁰ Canada, *Report of the Commissioner of Fisheries* (Ottawa: Queen’s Printer, 1878) 24-25.

⁷¹ Kinsey, “Epicenter,” 539.

⁷² Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (Seattle: University of Washington Press, 1999) 95.

the Oxford-educated son of cleric, geologist, and *Bridgewater Treatise* author William Buckland, became interested in acclimatization and began experimenting with fish culture. Buckland quickly achieved a reputation as a fish culture expert and used fish-cultural techniques to conduct long-distance introductions, including trout to Australia. Like Wilmot, Buckland's private expertise in fish culture led to a state appointment as a fisheries official, charged with investigating England's declining salmon fisheries. While he never ran a state hatchery system as Wilmot did, Buckland promoted and popularized fish culture in books, the periodical press, and through live demonstrations of fish-culture apparatus at public events.⁷³

In 1865, Buckland received permission from the South Kensington Museum to install a fish culture exhibit. Buckland's personal collection, which he called the "Museum of Economic Fish Culture," included plaster casts of fish and a working fish hatchery. These provided both instruction and entertainment. As Buckland had earlier discovered, fish culture displays that included live fish—"pretty silver-coated little creatures"—drew throngs of curious observers. A fish culture exhibit at a dog show in London "afforded pleasure and amusement to many thousands of people," reported Buckland, "who have certainly never seen a salmon alive before."⁷⁴ In the museum, Buckland's display took class instruction as its goal and shifted attention to fish as a cheap food for labourers. His displays were gendered and emphasized fish as a source of masculine bodily strength and labour power. "One pound of whiting [a popular English fish], if digested and oxidized in the body," noted the collection's catalogue, "will

⁷³ George C. Bompas, *Life of Frank Buckland* (London: Smith, Elder, & Co., 1885) 103-4; Roy M. MacLeod, "Government and Resource Conservation: The Salmon Acts Administration, 1860-1886" *Journal of British Studies* 7, no. 2 (1968): 126-30; Michael A. Osborne, "Acclimatizing the World: A History of the Paradigmatic Colonial Science," *Osiris* 15 (2000): 146-48.

⁷⁴ Bompas, *Frank Buckland.*, 1885) 127.

produce a force equal to 491 tons raised one foot high.” And while fish were not as digestible or productive as “butcher’s meat,” fish nevertheless contained muscle-building compounds, which led Buckland to urge that fish “be introduced into all dietaries.”⁷⁵

Buckland’s paternalistic approach to fish as food exemplifies how nineteenth-century museums undertook the public education of the lower classes. This goal was, as Tony Bennett argues, an attempt to reform their morals and habits and make them more self-governing—and productive—within liberal capitalist society. The Newcastle hatchery likewise framed fish as “cheap and wholesome food.”⁷⁶ In Ontario, which was undergoing increasing urbanization and immigration, the production of fish by artificial means offered to meet the food needs of a growing population and industrial workforce. As I have argued elsewhere, Wilmot viewed fish culture as primarily a support for commercial fisheries. This was particularly evident in Ontario where Wilmot focused on the production of the two most commercially valuable fish species, whitefish and lake trout. These fish were under increasing pressure in the Great Lakes during 1870s with catches growing every year. In 1871 Wilmot began producing whitefish at the Newcastle hatchery and lake trout in 1872; in 1875 he supervised the construction of a whitefish hatchery on the Detroit River at Sandwich, Ontario.⁷⁷

At Newcastle, however, Wilmot’s exhibitionary focus was less on fish culture’s quantitative contributions than its qualitative values. The hatchery was presented as a site of bourgeois “rational recreation,” a hybrid of zoological garden and industrial exhibition

⁷⁵ *Inventory of the Food Collection Arranged in Alphabetical Order*, Science and Art Department of the Committee of Council on Education. (London: Her Majesty’s Stationery Office, 1869) 4.

⁷⁶ Samuel Wilmot, “Aquaculture and Fish Protection,” *Transactions of the American Fisheries Society* 4 (1875): 23.

⁷⁷ William Knight, “Samuel Wilmot, Fish Culture, and Recreational Fisheries in late 19th century Ontario.” *Scientia Canadensis* 30 (2007): 81-82.

that provided instruction and entertainment. A set of eleven illustrations, which Wilmot commissioned for the fisheries department's annual report, showed the hatchery from a variety of perspectives. Several views emphasized Wilmot's technological innovations with views of fish-breeding equipment and a schematic drawing of his patented "Self-picking and cleaning apparatus." Other views brought the park and the hatchery ponds into closer focus as a genteel setting for respectably dressed men, women and children to view salmon and observe their previously hidden reproductive cycle. A view depicting the museum showed similarly decorous visitors inspecting Wilmot's collection of mounted fish and mammals. Two large illustrations completed the set. One plan view revealed the hatchery's rational layout, while an oblique 'bird's eye' view showed Wilmot's large residence looming over the hatchery.⁷⁸ (See figure 1).

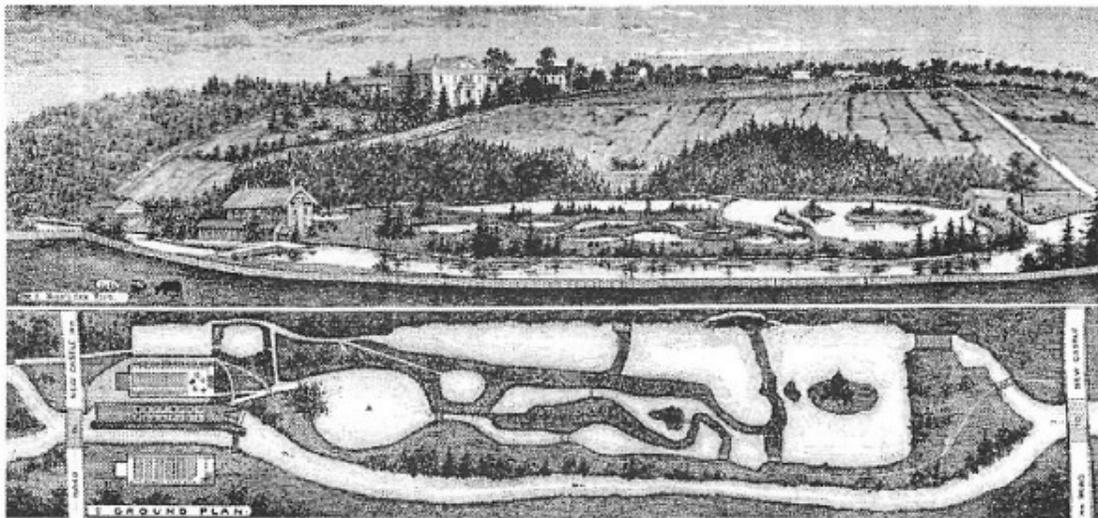


Figure 1: Bird's-eye and plan views of Samuel Wilmot's Newcastle hatchery. Source: Canada, *Report of Fish-Breeding in the Dominion of Canada 1877* (Ottawa: MacLean, Roger & Co., 1878) 24-26.

⁷⁸ Canada, *Report of Fish-Breeding in the Dominion of Canada 1877* (Ottawa: MacLean, Roger & Co., 1878) 24-26.

These views no doubt idealized the hatchery. A contemporary newspaper account, however, supports the general impression of the Newcastle hatchery as a public attraction. A Toronto *Globe* reporter visited the hatchery and found both entertainment, education, and proof of Wilmot's entrepreneurial skill at what the reporter called the "model school of the continent." The reporter found several impressive displays: the fish-hatching apparatus, for example, demonstrated Wilmot's skill in industrializing fish culture. His patented egg-cleaning apparatus reduced labour: what had once taken "forty little boys and girls to do can be attended by one."⁷⁹ Displays of apparatus however could also be enjoyed in their own right as displays of technical ingenuity or mechanical aptitude apart from their economic or scientific utility.⁸⁰ Aquarium exhibits provided similar possibilities for education and entertainment. Wilmot set up aquarium tanks to educate visitors about fish species and behaviour: several tanks displayed commonly misidentified fish species to clear up confusion, while another was kept purposely cold to demonstrate the torpidity of fish during winter. To the reporter, this behaviour had more of a mesmerizing than educational effect. "There is a bass, and during the writer's stay, two hours, that fish never moved a fin," the correspondent reported.⁸¹

The museum collection provided similarly entertaining objects. The collection was eclectic: it included spectacular specimens of fish and animals, including a 600-pound tuna, a ten-foot long Greenland shark, "an immense moose," and the "Pickering Ox," a mounted local prize-bull—none of which had any connection to fish culture.

These specimens, however, offered the lure of the gigantic and exotic, forms of spectacle

⁷⁹ *The Globe*, Thursday, 15 December 1881, 5.

⁸⁰ Martin Hewitt, "Science As Spectacle: Popular Scientific Culture in Saint John, New Brunswick, 1830–1850," *Acadiensis* 18 (1988): 106.

⁸¹ Canada, *Report of the Commissioner of Fisheries* (Ottawa: Queen's Printer, 1878) 24-25; *The Globe*, Thursday, 15 December 1881, 5.

that both museums and popular side-shows exploited. The collection also marked Wilmot as a natural history collector, a role associated with male bourgeois distinction. The *Globe* noted Wilmot's central role, describing him as a wide-ranging connoisseur of natural history. "Besides having a special taste for ichthyology," the correspondent reported, "he is likewise on a general scale a naturalist, and a taxidermist as well."⁸²

Indeed Newcastle demonstrated Wilmot's mastery several different forms of contemporary natural history display, including the zoological garden, the museum, and the aquarium. All of these became popular in the nineteenth century and have been associated with bourgeois "rational recreation," the distinctive form of Victorian middle-class self-improvement.⁸³ Zoological gardens, museums, and aquariums instructed and delighted, offering a moral, enlightened form of amusement. Displays of dead and live animals suggested bourgeois self-confidence in "taming the natural order"—and regulating the human one.⁸⁴ Museums and exhibitions inculcated norms for respectable public behaviour and citizenship, as well as faith in national progress and capitalism. An impresario of these bourgeois modes of cultural schooling, Wilmot demonstrated facility as he built his public profile, and attracted support for fish culture's integration into Canadian fisheries administration. Representations of the hatchery blurred the distinction between Wilmot the private bourgeois entrepreneur and Wilmot the state fisheries official, something that Wilmot himself cultivated. On one hand the hatchery's "handsome and commanding appearance" helped demonstrate that fish culture was, according to Wilmot, a "national enterprise." At the same time, the exhibition was a

⁸² "The Fish Nursery," *The Globe*, Thursday, 15 December 1881, 5.

⁸³ Peter Bailey, *Leisure and Class in Victorian England: Rational Recreation and the Contest for Control 1830-1885* (Toronto: University of Toronto Press, 1978).

⁸⁴ David Blackburn quoted in Nigel Rothfels, *Savages and Beasts: The Birth of the Modern Zoo* (Baltimore: The John Hopkins University Press, 2002) 22.

testament to Wilmot's own abilities, "proof throughout," he argued, "of the exercise of practical ingenuity and personal industry."⁸⁵

Wilmot's capacity for self-promotion was large. In the journal of the American Fish Culturists' Association, Wilmot wrote with blithe self-importance about his work: "Reference being made here to the Newcastle fish breeding works in Ontario, it will not be taken in the light of self-laudation for me, the sole originator of that institution, to state that from it has sprung all of the national and State fish breeding establishments on this continent."⁸⁶ Promoting himself, Wilmot also promoted the political and social order that sustained his hatchery and which fish culture proposed to support with endless supplies of fish. Fish culture was an ideological technology: developed and disseminated in male bourgeois milieu, it aimed to sustain capitalist fisheries and produce cheap food for the working classes without clear proof it accomplished either goal and against some resistance. Wilmot elaborated a private hatchery into an extensive state fish-culture system that materialized and extended fisheries administration as technological infrastructure. At Newcastle, Wilmot's mastery of technology and nature was also part of the exhibition.

Wilmot's self-promotional and exhibitionary skills came to have wider application in 1882. That year the Canadian government received an invitation to participate in the London fisheries exhibition in 1883 and turned to Wilmot for advice. Wilmot became the chief organizer of Canada's display, which marked the Canadian fisheries department's first appearance at an international fisheries exhibition. Wilmot's

⁸⁵ Canada, *Report of the Commissioner*, 25.

⁸⁶ Samuel Wilmot, "Aquaculture and Fish Protection," *Transactions of the American Fisheries Society* 4 (1875): 25.

skills, developed at Newcastle, helped the department mount a large-scale model of Canadian fisheries administration. Fish culture was front and center, given Wilmot's role, but so too were regulation and protection. Canada's display at the London Fisheries Exhibition became an index to the bourgeois constitution of fisheries as a male-dominated, state-administered object. In the following sections I turn to the London fisheries exhibition and its conceptual ordering of fisheries and, in turn, Samuel Wilmot's material modeling of Canadian fisheries administration.

2.6 The "systematics of fisheries"

The London fisheries exhibition, self-styled the "Great International Fisheries Exhibition," was the latest in a series of fisheries-specific exhibitions. Between 1861 and 1883, fisheries exhibitions were staged in the Netherlands, France, Norway, Germany, and Italy—countries (with the exception of Italy) that were engaged in the intensifying fisheries of the northeast Atlantic Ocean. Industry-specific exhibitions were similar to "universal" fairs, which celebrated progress in displays of consumer goods, industrial wares, and cultural productions. Canadians had been regular participants in exhibitions since before Confederation, most notably at the 1851 Crystal Palace exhibition where Geological Survey director William Logan had won awards and accolades for his display of minerals. These exhibitions, as Elizabeth Heamen argues, "helped establish a discourse about Canada which praised its economic resources and its bustling, practical populace, and claimed a place for it in the 'confederacy of nations.'"⁸⁷ While universal exhibitions enrolled visitors in a multi-sensory celebration of capitalism and the nation-state,

⁸⁷ E.A. Heamen, *The Inglorious Arts of Peace: Exhibitions in Canadian Society during the Nineteenth Century* (Toronto: University of Toronto Press, 1999) 180.

industry-specific fairs invited observers to scrutinize one aspect of modern production within capitalism.⁸⁸

Fisheries exhibitions modeled fisheries at the scales of the nation and capitalism, exhibiting the “productive and co-ordinating powers of capital and the state” and projecting the rightness of both as organizing principles.⁸⁹ In the last half of the nineteenth century, European and North American fisheries underwent profound change as state administration, scientific investigation, and capital investment intensified. Steam technology extended the range and catching capacity of fishing fleets. Fishing gear also changed: larger trawl nets, adapted for steam vessels, could capture more fish. State administration, as I have shown for Canada, expanded through inspection, statistical investigation, fish culture, and commissions which investigated specific problems, including the impact of steam trawlers. States also dealt with international conflicts which heightened as fishing fleets scouted for fish farther abroad. Governments supported scientific expeditions and established marine biological stations to investigate the dynamics of ocean life and the causes of sudden collapses in fishing stocks. New questions were posed: what factors determined marine productivity and fluctuations in catches? How could catches be maintained as fishing effort increased? In 1883, the London fisheries exhibition provided a nexus, a “centre of calculation,” where new questions and new technologies could be revealed and tested.⁹⁰

⁸⁸ Paul Greenhalgh, “Education, Entertainment and Politics: Lessons From the Great International Exhibitions,” in *The New Museology*, edited by Peter Vergo (London: Reaktion books, 1989) 75; Paul Greenhalgh, *Ephemeral Vistas: The Expositions Universelles, Great Exhibitions and World's Fairs, 1851-1939* (Manchester: Manchester University Press, 1988) 77.

⁸⁹ Bennett, *Birth of the Museum*, 81.

⁹⁰ Callum Roberts, *The Unnatural History of the Sea* (Washington: Island Press/Shearwater Books, 2007) 147; W. Jeffrey Bolster, *The Mortal Sea: Fishing the Atlantic in the Age of Sail* (Cambridge: Harvard

Before any nation could be solicited to participate, or any object sent to exhibit, however, the exhibition required a conceptual framework, an exhibitionary order, which would render the fisheries into a coherent object for public consumption. At the London Fisheries Exhibition, this was the work of the exhibition catalogue. Exhibition catalogues have received little attention from scholars who have focused on people and exhibits. Catalogues, in contrast, are bulky ephemera and appear dull and lifeless. Robert Harbison, however, contends that catalogues are the “intellectual superior of the exhibition.” “A catalogue’s largest function,” Harbison proposes, “is to create subjects, to give names, or to put topics in touch with a supply of particulars, to bring data to a generalization.”⁹¹ Catalogues call exhibitions to order and shape their physical manifestation. And once the exhibition is installed, the catalogue offers a synoptic view unavailable to the observer strolling among its displays.

American fisheries and museum administrator George Brown Goode recognized this dual value. Classifications and catalogues served “as guides for forming as well as for viewing the collections.” Goode, who had experience assembling both catalogues and classifications, also acknowledged the contingency of classifications. No rules governed their arrangement and no system could “ever be fully satisfactory to all.” But it was nevertheless necessary to establish categories that provided “a certain logical sequence of ideas,” as Goode put it, which illuminated relationships and similarities. This was the practice of systematics, the identification and description of biological life according to observable similarities, which was the core of eighteenth and nineteenth-century natural

University Press, 2012) 165-67; Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Milton Keynes, UK: Open University Press, 1987) 237.

⁹¹ Robert Harbison, “Contracted World: Museums and Catalogues,” in *Eccentric Spaces*, edited by Robert Harbison (New York: Alfred Knopf, 1977) 157.

history. Exhibition classifiers like Goode, who were also natural historians, sought to likewise systematically organize industries.⁹²

The fisheries exhibition classification consisted of six classes: “Fishing;” “Economic Condition of Fishermen;” “Commercial and Economic;” “Fish Culture;” “Natural History;” and “History and Literature of Fishing—Fishery Laws—Fish Commerce.” These identified the ideas and objects called to the exhibition; they also validated the network of actors which produced them, which were primarily national governments and those with interests in capitalist fisheries. The classification was also important for what it excluded, particularly women. As gender historians have recognized, the absence of women was crucial to structuring male power. The classification constructed the fisheries as a male enterprise that was carried on without female participation, although they were critical to shore-based processing and marketing. Women appeared only once in the catalogue with a reference to “fish wife,” a term that only hinted at those important roles women played. Class II, “Economic Condition of Fishermen,” for example, focused on the gendered material and textual boundaries of a fisherman’s life in categories such as “Apparel and Personal Equipment” and “Contracts of Partnerships, Insurances of Life.”⁹³

It is also notable how the classification dealt with fish, the material basis of fisheries. The classification, for example, did not recognize fish until Class III—“Commercial and Economic,” a category that defined fish as a variety of commodity.

⁹² *The Smithsonian Institution 1846-1896. The History of Its First Half-Century*, edited by George Brown Goode (Washington: Government Printing Office, 1897) 727; George Brown Goode, *First draft of a system of classification for the World’s Columbian Exposition* (Washington: Government Printing Office, 1893) 649.

⁹³ Kathryn M. McPherson, Nancy M. Forestell, Cecilia Louise Morgan, eds. *Gendered Pasts: Historical Essays in Femininity and Masculinity in Canada* (Toronto: University of Toronto Press, 2003) 3.

This category preceded the classification's later recognition of them as live animals in Class V, "Natural History. It was only in Division 51 of this class—"FISH OF ALL KINDS"— that were fish accorded a separate if emphatic category to themselves. Even this category, however, was not exclusive to fish as it also contained creatures whose inclusion in the fisheries was predicated on the harm they posed. This included birds "hostile to fish or fishing" and mammals, like otters, that were "detrimental to fish." The classification was thus not a neutral representation, but a political one, which modeled the fisheries within certain limits defined by governmental, economic, and scientific interests. As a "systematics of fisheries," this pattern of classification reflected the interests of bourgeois men including Moses Perley, Pierre Fortin, and Samuel Wilmot.

2.7 Canada at the London Fisheries Exhibition

In June of 1882 the Canadian government received its invitation to participate in the London fisheries exhibition. Prime Minister John A. Macdonald forwarded it to his fisheries minister A.W. McLelan with a scrawled request for an "immediate report."⁹⁴ McLelan turned to Samuel Wilmot who, on the strength of his exhibitionary work at Newcastle, was appointed to estimate the costs of Canada's participation. Wilmot warned that a considerable sum would be required to mount an exhibit that met "the legitimate scope of the exhibition." The major obstacle was that Canada did not possess a fisheries collection such as the United States possessed at the Smithsonian. While the United States could draw on that institution's "inexhaustible resources," "much labour" and significant funds would be needed for Canada to participate in the London fisheries

⁹⁴ "Circular," 6 May 1882, Order-in-Council #1882-0896 E, RG2, Privy Council Office, Series A-1-a, LAC.

exhibition.⁹⁵

Factoring in shipping costs and expenses for managing the exhibition in London, Wilmot estimated that \$35,000 would be needed to mount a display. Fisheries minister McLelan was unabashed by the sum, which amounted to more than a third of the fisheries department's annual budget. McLelan argued the cost was trifling in comparison to the annual value of Canada's fisheries, which he estimated at \$20-million. An exhibition would also serve other purposes: it would attract migrants and assert Canada's stake in "any question of International Fishery relations that may arise." McLelan recommended to Macdonald that the government participate in the London exhibition; Macdonald agreed and appointed Samuel Wilmot "to prepare with all diligence and with proper economy for an exhibit that will do justice to the fishery of Canada."⁹⁶

Although he complained that he was not given enough time to prepare a proper display, Wilmot began gathering objects. Wilmot drew on several masculine networks, including the fisheries department's corps of inspectors and overseers, to assemble the Canadian collection. This included past members, notably Pierre Fortin, who supplied specimens of deep-sea fish and a Gaspé fishing dory. Wilmot also solicited collections from Canadian natural historians, including Dr. David Honeyman, curator of Nova Scotia's provincial museum; McGill University president George Mercer Dawson; and notable entomologist William Saunders, who lent a collection of insects "harmful to fish." Sportsmen also donated objects: a former military officer loaned a model of a beaver lodge and oil paintings of Indians spearing fish. Wilmot, who also gathered

⁹⁵ A.W. McLelan, memorandum, 22 July 1882, Order-in-Council #1882-0896 E, RG2, Privy Council Office, Series A-1-a, LAC.

⁹⁶ John A. Macdonald, memorandum, 26 July 1882, Order-in-Council Number 1882-0896 E, RG2, Privy Council Office, Series A-1-a, LAC.

specimens, assembled a large collection and in April 1883 shipped its 500-ton bulk to London aboard the fisheries steamer “Newfield.” Wilmot accompanied the collection and supervised its installation in a 10,000-square-foot rectangular gallery on the fisheries exhibition’s grounds at South Kensington.

The International Fisheries Exhibition opened in London on May 12, 1883 and proved to be popular, attracting more than three million visitors to its 22-acre grounds over the course of six months. Inside the pavilions, visitors could browse displays of fish and fishing technologies from 37 nations or attend a fisheries congress where fisheries officials debated regulation and fish culture. Outside, on the exhibition grounds, visitors could inspect a phosphorescent whale skeleton or gather around a pond to watch a diver who “worked under water daily with a telephone attached to his helmet.”⁹⁷

Organizationally, exhibitions were masculine affairs. Women attended fairs, but their participation as exhibitors was limited until the latter part of the nineteenth century. At the fisheries exhibition, women appeared in domestic roles or as decorative objects; in the latter role, young women dressed in national folkloric costumes appeared at the exhibition’s opening ceremonies. Serving as allegorical representations of the nations in attendance, they were, as the *Illustrated London News* remarked, “the observed of all observers.” Such displays emphasized that, as Elizabeth Heaman argues, “the power and privilege of vision was vested in men.”⁹⁸ Women were also present in the exhibition restaurant, where they served fair-goers fish dinners prepared under the supervision of the

⁹⁷ *The Great International Fisheries Exhibition of 1883*, edited by Arthur Trendell (London: William Clowes and Sons, 1883) xlix.

⁹⁸ Heaman, *Inglorious Arts*, 263; *Illustrated London News*, May 19, 1883, 486.

“Lady Superintendent” of the National School of Cookery.⁹⁹ Women in this case were present in their rightful sphere, the domestic space of food preparation and serving. Men, meanwhile, prepared the exhibits and in the conference debated and discussed the importance of fisheries and their management of them.

The Canadian exhibit, known as the Canadian Court, was dominated by representations that emphasized the male-dominated world of production and administration. The Canadian Court was captured in London by a photographic company that produced a souvenir album, a copy of which was presented to a fisheries official upon his retirement in 1894 and which is now in Canada’s national archives. The album contains 12 images taken from several different perspectives that, showing how and what objects were displayed. Positioned prominently at the front of the Court stood Wilmot’s miniature working fish hatchery. Beyond this were long rows of specimens of dead fish, mounted in individual cases. Large specimens of sturgeon, shark, and halibut, and marine mammals were scattered around the exhibit, displayed on the floor or mounted on poles. Fish were also presented in commodity form: frozen, dried, salted, and tinned. In addition, the Canadian display contained numerous models of fishing boats and dioramas of fishing villages, along with full-size objects, including a Gaspé fishing dory fully rigged with its sails. In an exterior passage, the Ontario Canoe Company displayed its canoes propped up against the court’s exterior wall. Between the canoes were display cases exhibiting fisheries-related texts. The Canadian exhibit also extended outside to exhibition pond where Maliseet fishing guide Gabriel Auquin demonstrated fishing and canoe-paddling techniques, demonstrating “the rude appliances for the capture of fish, as

⁹⁹ *The Great International Fisheries Exhibition of 1883*, edited by Arthur Trendell (London: William Clowes and Sons, 1883) xlix and xxxix.

used by the Indians in this country.”¹⁰⁰

As George Brown Goode later noted “[a] unit of classification is not necessarily a unit of installation.”¹⁰¹ Lacking the clear order of the classification, the spatial corralling of exhibits required visual and textual cues that reinforced Canada as the administrative unit responsible for the collection. At the south end of the hall, the words “Dominion of Canada” stretched across the wall above a gigantic map of Canada that measured 15 by 30 feet. Flags hanging from the rafters also marked the display as Canadian. If visitors missed these cues, paper signs reading “The Dominion of Canada” were affixed to cases and sometimes directly on exhibits throughout the court. And while marking objects seemed obvious, Samuel Wilmot noted that the American exhibit lacked signage that unified the objects under a national rubric. There was no mistaking the national import in the Canadian Court: “[t]he whole of the exhibits in the Canadian court were entered and shown in the name of the ‘Dominion of Canada,’ thus presenting to the exhibition visitors and jurors, but one name, or one exhibitor from Canada.”¹⁰²

Standing in the center of the Canadian Court stood a spectacular focal point: a towering trophy, a pyramid of tinned fish, fishing gear and nets, surmounted with the flags of Canada and topped by a stuffed 50-pound beaver. A trope of Victorian exhibition and retail display, the trophy marked Canada as an exporter and symbolized the state’s power to organize and administer the fisheries. In Susan Stewart’s conception, the gigantic is a mode suited to public history, a symbolic form that serves to buttress state

¹⁰⁰ *Illustrated London News*, 19 May 1883, 509, xxii.

¹⁰¹ Goode, *First draft of a system of classification*, 650.

¹⁰² Canada, “Canada at the Great International Fisheries Exhibition, London,” xxxii.

authority.¹⁰³ Supplementing this trophy was a smaller “scientific trophy,” which presented a variety of alcohol-preserved fish and marine animals. These specimens demonstrated Canadian ability to identify its fish fauna and understand fish as objects of science as well as commerce. Commerce, however, was never far off. Surrounding the scientific trophy were barrels of dried salt cod, open for inspection. Both represented Canadian ability to differentiate and standardize fish according to scientific and commercial rationales, as the exhibition classification demanded.¹⁰⁴

Miniatures and dioramas also played a role in representing the administrative modeling of Canadian fisheries. The Canadian Court contained numerous scale models, including ship models and dioramas of fishing villages. Dioramas are scale-model scenes, often of historical human activities. Marzia Varutti argues that dioramas reduce not just size but complexity: they enable viewers to look down on scenes from a position of “comfort and control.” Such miniatures can also be used to support “national narratives of unity, harmony and progress.”¹⁰⁵ These exhibits miniaturized Canadian fisheries into a form that was at once quaint and graspable, arranging them for close inspection much as Perley and Fortin had earlier presented fisheries in textual form. Ship models also showed that Canadians were able to adapt ship design to meet the specific requirements of different fisheries. A model of a Lake Ontario steam tug, for example, demonstrated that capital-intensive technology was being applied to Canada’s inland fisheries. Dioramas of villages, hatcheries, and processing plants pointed to infrastructural organization and suggested to viewers that Canadians had rationally ordered their landscapes to support

¹⁰³ Susan Stewart, *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection*, paperback ed. (Durham: Duke University Press, 1993) 71.

¹⁰⁴ “Fisheries Exhibition,” *The Globe*, 24 May 1883, 5.

¹⁰⁵ Marzia Varutti, “Miniatures of the Nation: Ethnic Minority Figurines, Mannequins and Dioramas in Chinese Museums,” *Museum and Society* 9, no. 1 (2011): 3, 12.

large-scale production of fish.¹⁰⁶

The pride of place in the Canadian Court, however, was reserved for Samuel Wilmot's miniaturized working fish hatchery (figure 2). The display was prominently situated near the Court's south entrance and drew such crowds that one official claimed that it made the Canadian Court "impassable." The model hatchery consisted of a scaled-down presentation of the fish culture apparatus Wilmot had invented and installed in his Newcastle hatchery. It included a trough containing 50,000 salmon eggs that were washed by a continuous stream of running water. Beside it stood Wilmot's patented



Figure 2: Samuel Wilmot's miniature fish-hatchery exhibit at the 1883 International Fisheries Exhibition. Source: LAC, accession number 1975-271 NPC.

¹⁰⁶ For a recent discussion on fishing infrastructure see Michael J. Chiarappa, "Dockside Landings and Threshold Spaces: Reckoning Architecture's Place in Maritime Environmental History," *Environmental History* 18 no. 1 (January 2013): 16.

“Self-Picking and Self-Cleaning Canadian Fish Egg Incubator,” a device that automated the tedious labour of sorting and cleaning fish eggs. Beside the miniature hatchery apparatus stood a scale-model of Wilmot’s Reception House, the structure that contained the hatchery operation and Wilmot’s natural history museum. The model house resembled a doll’s house and duplicated in exquisite detail the building’s board-and-batten siding and decorative gingerbread gables.¹⁰⁷ The display, which won a gold medal for the “Best and most complete fish-breeding establishment in the Exhibition,” represented Canada’s ability to biologically control its fish. Within the Canadian model of fisheries—one shared by many western nations—nature could be supplanted by a machine that more efficiently conducted the task of reproduction.¹⁰⁸

Canada’s model of fisheries was not just articulated through material objects. Canadian officials, including Wilmot, actively participated in the fisheries exhibition’s conference, a masculine arena where Wilmot and other men engaged in debates about the material model of fisheries proposed in the exhibition and in the Canadian Court. In an address to the conference in July 1883, Wilmot offered a progressive history of Canadian fisheries administration, emphasizing the benefits of centralization and inspection, the work that Perley and Fortin had pioneered:

At the time of the Confederation...when the seven Provinces were brought together, it was deemed so important that the fisheries should receive protection that a Cabinet was formed for the purpose which had been of vast service in bringing about many tidings which otherwise would not have been accomplished. Statistics were obtained from the fishermen, the fishery officers, and various other resources, which were collected and submitted to Parliament annually, and Parliament legislated on any improvement which might be required for the

¹⁰⁷ Canada, “Canada at the Great International Fisheries Exhibition, London,” xxix.

¹⁰⁸ *Ibid.*, 43-44; Taylor, *Making Salmon*, 91-92.

purpose of advancing the general interests of the fisheries or the fishermen.¹⁰⁹

Other congress delegates recognized Canada's preeminence in fisheries administration and saw it embodied in the presence of Canada's fisheries minister, A.W. McLelan, at the exhibition. To Sir Francis Philip Cunliffe-Owen, member of the exhibition committee, McLelan "shed lustre on the Exhibition by his presence and active assistance, [and] was, he believed, the only Minister of Fisheries throughout the civilized world."¹¹⁰

Although praise for Canadian fisheries administration appeared universal, Wilmot found it necessary to defend it against criticism. During the fisheries conference Wilmot confronted the imminent British scientist Thomas Henry Huxley on the question of fisheries regulation. Huxley, who had proclaimed the inexhaustibility of ocean fisheries, argued a corollary idea: that the fisheries did not require legislative protection because fishing's impact was negligible compared to natural predation. "The multitude of these fishes is so inconceivably great," Huxley explained in the exhibition's inaugural address, "that the number we catch is relatively insignificant; and secondly, that the magnitude of the destructive agencies at work upon them is so prodigious, that the destruction effected by the fisherman cannot sensibly increase the death rate."¹¹¹ Styling himself as a "practical man," Wilmot claimed that Huxley's ideas contained "too much theory and too much science without practical knowledge at the bottom of it."¹¹²

Although Huxley had qualified his claim about the ocean's inexhaustibility and was not in fact attacking fish culture—he replied that fish culture was better than

¹⁰⁹ Samuel Wilmot, *Canada at the Great International Fisheries Exhibition, London, 1883* (Ottawa: A.S. Woodburn, 1884) 51-52.

¹¹⁰ Wilmot, *Canada at the Great International Fisheries Exhibition*, 34-35.

¹¹¹ Thomas Henry Huxley, "Address by Professor Huxley, F.R.S." *The Fisheries Exhibition Literature*, vol. 4 (London: William Clowes and Sons, 1884) 14.

¹¹² Wilmot, *Canada at the Great International Fisheries Exhibition*, 38-39.

“inefficient protection”—Wilmot was defensive because of increasing attacks on fish culture in Canada. In London, Wilmot had to refute the criticism of fellow Canadian fisheries official W.F. Whitcher. Whitcher had raised doubts about fish culture in the 1870s and continued his attack just as the exhibition opened. Whitcher, writing in the American publication *Forest and Stream*, did not doubt that fish culture produced fish far exceeding “the produce of natural operations;” he doubted, however, that hatched fish survived and “re-appeared in commercial and industrial channels as a commodity of trade and an article of supply.” Whitcher compared hatchery production to commercial landings and concluded that fish culture had made no impact. He noted that fish culturists were then gathered at the London exhibition and hoped they would “give assurance to the public tax-payer that we are reaping or shall sooner or later reap the fruits of so much zealous and expensive labor.”¹¹³ Whitcher went so far as to prepare and distribute an off-print of the article, a “circular” that was much discussed by fish culturists present at the exhibition, including George Brown Goode, the prominent American fisheries administrator who noted during the exhibition “that certain documents had been distributed from Canada” that cast doubt on fish culture.¹¹⁴

Wilmot attempted to deflect the attack by calling Whitcher a “well-known official grumbler in Canada.” With Whitcher attacking propagation with “under the belt” attacks on one hand, and Huxley undermining protection on the other, Wilmot rallied to defend Canadian fisheries administration in London.¹¹⁵ He received support from another Canadian delegate, Louis-Zéphirin Joncas. Joncas was a Gaspé lawyer, politician,

¹¹³ W.F. Whitcher, “Practical Results of Fish Culture in the Dominion of Canada,” *Forest and Stream* 20 (1883): 408.

¹¹⁴ George Brown Goode quoted in Wilmot, *Canada at the Great International Fisheries Exhibition*, 44.

¹¹⁵ Wilmot, *Canada at the Great International Fisheries Exhibition*, 47.

journalist, and fishing-company manager and, like Perley, Fortin, and Wilmot, a member of the middle-class.¹¹⁶ In his address, Joncas extolled Canada's strict regulatory regime and hearkened back to its foundation by recognizing Fortin's contributions. Joncas had previously served as Fortin's personal secretary and succeeded him in the House of Commons; Joncas borrowed long passages from Fortin's work in his address as he questioned, as Wilmot had done, Huxley's inexhaustibility thesis. Both freshwater and marine fishes required protection "specially when they come near to the coast for the purpose of spawning." Canada, however, had already recognized the value fisheries and protected them. "[O]ur legislators have acted very wisely, I think, in subjecting them to strict regulations," Joncas declared. Joncas praised Fortin's role in bringing administrative order to Canada's fisheries, citing his "energetic efforts" to establish measures such as a national maritime telegraph service, represented in the Canadian Court by a map and sample telegraph bulletin. This telegraph service connected the federal fisheries department with fishing ports to relay "immediate information given of the appearance of fish at any locality."¹¹⁷

In recalling Fortin, Joncas also re-circulated Fortin's ideas and recalled his formative role in fostering the fisheries inspectorate. Fortin was also embodied in the Canadian Court exhibit in several material models. In addition to the full-size Gaspé fishing dory, Fortin contributed specimens of aquatic creatures that he collected during his inspectorate expeditions in 1860s. Also on display was a model of "La Canadienne," the patrol vessel that afforded Fortin's supervision of the St. Lawrence's fisheries. These

¹¹⁶ Marc Desjardins, "Joncas, Louis-Zéphirin" in *Dictionary of Canadian Biography Online*, edited John English and Réal Belanger, http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652 accessed 15 January 2013.

¹¹⁷ L. Z. Joncas, *The Fisheries of Canada* (London: William Clowes and Sons, 1883) 31-44.

material objects materialized Fortin and his role in articulating fisheries as an administrative domain in colonial Canada in the 1850s and 1860s. In London they were conceptual resources—and material testaments—that rallied to sustain Wilmot’s defense of Canadian fisheries administration.

Moses Perley was also present in London. It is not clear whether his reports for New Brunswick figured among the Canadian Court’s exhibit of fisheries texts—Division 55 of the classification—which appeared amid the canoe display. Perley was implicated, however, through a native fishing display. “An Indian chief, Gabe Acquin, in full costume, fresh from the Dominion of Canada, who has his birch-bark wigwam in the grounds,” reported exhibition observer Frederick Whympier, “illustrates daily, in his birch-bark canoe, over eighteen feet in length, the aboriginal modes of spearing and catching fish.”¹¹⁸ Ethnographic displays at international exhibitions, as Robert Rydell and Paige Raibmon have pointed out, demonstrated to fair-goers “the distance between the modern and the traditional—an opposition rooted in racial difference.”¹¹⁹ Live performances of primitive cultures “served to illustrate the political and moral necessity of government policies such as removal, reservation, religious conversion and assimilation through education.”¹²⁰ At the fisheries exhibition, Acquin’s performance materialized in an indirect way the partitioning of New Brunswick’s salmon fisheries that Moses Perley had helped institute.

Gabriel Acquin was a Maliseet man who lived in a native community opposite to Fredericton on the St. John River in New Brunswick. There he gained a reputation as a

¹¹⁸ Whympier, *Fisheries of the World*, 98.

¹¹⁹ Paige Raibmon, *Authentic Indians: Episodes of Encounter from the Late 19th Century Northwest Coast* (Durham: Duke University Press, 2005) 3.

¹²⁰ *Ibid.*, 36.

hunting and fishing guide among the British military garrison. His presence in Fredericton and his work as a guide can be traced to Perley's work as an Indian and fisheries inspector. In 1841, Moses Perley recommended that Maliseet people be moved from their traditional settlements and consolidated in one reserve; this displacement resulted in Acquin's settlement in St. Mary's, across the river from Fredericton.¹²¹ Perley also shaped Acquin's career as a guide. As British North America's first fisheries commissioner, Perley recommended leasing the colony's salmon rivers to sportsmen. Instituted into law in 1863, this measure effectively excluded native fishermen from their former fishing places in favor of elite white anglers. Salmon rivers in New Brunswick became a refuge for white urban elites, who built rustic lodges along their wooded banks and instituted strict supervision over their leased angling waters. Perley also supported a ban on salmon spearing, an Aboriginal fishing technique. Within this new moral economy of sport, based on the enclosure of salmon rivers, native men such as Gabriel Acquin were reincorporated as waged fishing guides.¹²²

Acquin's performances at the London fisheries exhibition thus played out the capture of Aboriginal fisheries that Perley had helped institutionalize. The performance also illuminated what Bill Parenteau calls the "contradiction between the code of the sportsman and the cult of wilderness" generated when European sportsmen fished under native guidance.¹²³ The *Illustrated London News* presented two engravings that depicted Acquin at the exhibition: one represented Acquin paddling his canoe, a salmon spear

¹²¹ Karen Perley, *Gabe*, New Brunswick Manuscripts in Archaeology 41 (Fredericton: New Brunswick Culture and Sport Secretariat, 2005) 9-10. See also Andrea Bear Nicholas, "Acquin, Gabriel" in *Dictionary of Canadian Biography Online*, edited John English and Réal Belanger, http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652 accessed 15 January 2013.

¹²² Bill Parenteau, "'Care, Control and Supervision': Native People in the Canadian Atlantic Salmon Fishery, 1867-1900," *Canadian Historical Review* 79 (1998): 9-10; Perley, *Gabe*, 9-10.

¹²³ Parenteau, "Care, Control and Supervision," 34.

beside him, in a pond before an audience of top-hatted men and gowned women. The other image depicted Acquin standing beside his wig-wam in a grove of trees, holding a bow and arrows with salmon spears at rest nearby.¹²⁴ The display conformed to previous European representations of spearing fish as a picturesque, primitive spectacle. H.B. Small, author of *The Canadian Handbook and Tourist's Guide* (1865) called spearing fish “a romantic and exciting sport” likening it to a work of art. “The wild shores of a dark lake,” Small wrote, “with the broad glare of the torch...form a contrast of light and shade that Rembrandt might have envied.”¹²⁵

To sportsmen who owned leases on salmon rivers, however, spearing threatened their angling sport. As I showed earlier, Perley considered spearing an “idle” form of production that discouraged native people from pursuing agriculture. Acquin’s performance of spearing thus juxtaposed contradictory European views of native fisheries as picturesque and romantic and as morally and economically suspect. Anglers, who denigrated spearing, however, also valorized their sporting experiences with native guides as an authentic encounter with the primitive. New Brunswick lieutenant-governor Arthur Gordon, who hired Acquin as a guide during his tenure, described Auquin as “the pet guide and huntsman of the garrison” in his 1864 book, *Wilderness Journeys in New Brunswick*. In this account and others like it, native guides appeared to have just stepped out of James Fenimore Cooper’s fiction. In the late nineteenth century an encounter with the primitive wilderness promised to recover masculine vitality and self-possession through strenuous outdoor experience—a counter to the effeminizing effects of

¹²⁴ “The International Fisheries Exhibition,” *Illustrated London News*, 2 June 1883, 571.

¹²⁵ Henry Beaumont Small, *The Animals of North America. Series II. Fresh-water Fish* (Montreal: M. Longmoore, 1865) 136.

bourgeois, urban life. This experience was heightened—and made possible—through contact with native guides such as Acquin.¹²⁶

Acquin's agency, however, cannot be discounted. His decision to perform in London can be viewed as a continuation of his guiding career, itself a product of the choices available to Acquin under colonial rule.¹²⁷ Guiding was an occupational strategy that staked out a position in the salmon fisheries for people excluded from them as harvesters. In London, Acquin renewed personal acquaintances made while guiding, and was fêted by his former military clients who “took him to their ancestral estates and did everything they could to show their great pleasure in meeting again their former companion and guide in the New Brunswick wilderness.”¹²⁸ Acquin's presence in London thus embodied a set of complex historical relations. His performances theatricalized the exclusion in salmon fisheries that Moses Perley had helped institute and Acquin's approach to negotiating that exclusion. Observers watching Acquin demonstrate salmon-spearing fish may not have been aware of its connection to colonialism or to the Canadian Court display. But of all the displays staged in Canada's name, Acquin's was perhaps the one that best outlined the contours of Canadian fisheries administration: a domain inaugurated through colonialism and articulated by a vanguard of bourgeois men intent on observation, supervision, and regulation.

2.8 Conclusion

In 1884, Pierre Fortin—long retired from his fisheries inspector position and sitting

¹²⁶ Arthur Gordon, *Wilderness Journeys in New Brunswick, in 1862–3* (Saint John: J. & A. M'Millan, 1864) 464; Raibmon, *Authentic Indians*, 9.

¹²⁷ Raibmon, *Authentic Indians*, 3.

¹²⁸ Quoted in Perley, *Gabe*, 15-16.

as a member of Canada's parliament—stood in the House of Commons to praise the London international fisheries exhibition just then concluded. It was, he said,

worthy of the object for which it was got up, which was to put in a central place, where they could be seen and studied by persons who are in the fishing business, and by commissioners and representatives of different governments, articles of all kinds relating to the fisheries...and all that with a view to advance the fishing interest, or, in other words, to render fishing prosperous and abundant.¹²⁹

The London fisheries exhibition had indeed been a central place, a “centre of accumulation” as Bruno Latour would put it. The exhibition's displays and debates had articulated a systematics of fisheries, a model that the Canadian Court buttressed in detail and in depth with gigantic displays of mounted fish and miniature models of fish hatcheries. This display, called forth by the exhibition's classification, was the product of more than 30 years of effort to consolidate and centralize fisheries as a state practice, one dominated by middle-class men.

Moses Perley, Pierre Fortin, and Samuel Wilmot—men of the middle-class vanguard—had been instrumental in establishing the fisheries as an administrative object: Perley and Fortin as inspectors and Wilmot as fish culture practitioner and administrator. Their work pioneered fisheries administration in Canada and in doing so actively contributed to the process of state formation in Canada. The work of Perley and Fortin was not unique: in the United States, a similar arc from fisheries inquiries to administrative formation is apparent in Richard Judd's study of mid-nineteenth century New England.¹³⁰ As Corrigan and Sayer have noted, state formation was also cultural revolution and in fisheries administration that revealed itself in critiques of

¹²⁹ Canada, *House of Commons Debates*, 31 January 1884 (Pierre Fortin) 80-82.

¹³⁰ Richard W. Judd, *Common Lands, Common Peoples: The Origins of Conservation in Northern New England*. (Cambridge, MA: Harvard University Press, 199) 147.

“unproductive” fishermen, Aboriginal and settler alike. It was the task of fisheries administration to guide conduct and reform practices so that fishermen could better suit themselves to capitalist production and efficiency. In the nationally themed spaces of the London fisheries exhibition, Canada’s exhibit naturalized the state’s administrative assumption of fisheries, drawing a link between nation and the nature it managed.

Chapter Three: Exhibiting Authority

In 1884, Samuel Wilmot boasted of Canada's grand success at the Great International Fisheries Exhibition in London. The exhibit, under his guidance, had modeled Canada's fisheries as a national resource that gave "a favourable publicity to Canada as a nation and yet greater confidence in her internal resources and growing institutions among capitalists and others of the old world."¹ As Wilmot recognized, the London Fisheries Exhibition validated fisheries as a political and administrative domain structured by capitalism and the nation-state. Canada's display evidenced the state formative role of fisheries and the work of middle-class men such as Wilmot who elaborated state fisheries administration in nineteenth-century Canada, part of the "governmental revolution" in Europe and North America. Canada's exhibit also reflected the liberal nature of this revolution: fisheries administration—particularly fish culture—aimed to sustain private production and increase national wealth and power. This was also conceived of as a male domain that sought to marginalize women and native fishers, although native men such as Gabriel Acquin were re-integrated as waged guides in the leisure economy of angling.

This large-scale material model of Canadian fisheries was granted another life after the conclusion of the London Fisheries Exhibition. Installed as a permanent exhibit in Ottawa, the exhibit became a popular attraction and part of a nascent exhibitionary complex that projected the federal government's power over natural resources. The

¹ Canada, "Canada at the Great International Fisheries Exhibition, London," *Sessional Papers No. 9* (Ottawa: Canada, 1885) xxxiv.

collection also continued to serve Wilmot's personal interests: in 1890, a full-scale fish hatchery was added to the exhibit, which reproduced the multi-layered exhibitionary site that Wilmot had created in Newcastle. By 1894, the collection was decaying and temporarily closed. The museum then became a site of conflict as Wilmot defended the museum's legacy against Edward Prince, an English fisheries researcher appointed in 1892 to integrate science into Canadian fisheries administration. Prince sought to transform the exhibit into a "scientific" museum and recruited a fisheries clerk and self-trained naturalist, Andrew Halkett, to curate the collection. In 1895, Wilmot retired and the museum came under Prince's control who gradually withdrew the collection from international circulation and focused on its domestic role as a national Fisheries Museum.

This chapter focuses on this period of establishment and transition in the Fisheries Museum. Different visions of fisheries administration were contested within the context of the Fisheries Museum through competing models of male professionalism and authority, which pitted Wilmot's "practical" entrepreneurship against Prince's theoretical and scientific authority. These two models of authority was not clear cut and frequently overlapped with each other. This is particularly evident in the career of Andrew Halkett, the clerk-naturalist that Prince appointed to carry out the museum's scientific reform.² Halkett was self-trained, and established a career as a government naturalist when professionalization in natural sciences, museum curatorship, and civil service was beginning to curtail opportunities for middle-class men who lacked academic qualifications. Halkett however negotiated this changing terrain and managed to secure a

² Gail Bederman, *Manliness and Civilization: A Cultural History of Gender and Race in the United States 1880-1917* (Chicago: University of Chicago Press, 1995) 11-12; Mark A. Liddle, "State Masculinities and Law," *British Journal of Criminology* 36, no. 3 (1996): 365.

measure of authority for himself and the museum.

3.1 The Whitcher-Wilmot Dispute

The London Fisheries Exhibition had been a critical event for Samuel Wilmot. As chief organizer of the exhibit, Wilmot had used the exhibitionary skills developed at his Newcastle hatchery to model Canadian fisheries on a large scale. Wilmot exploited the exhibition to his own advantage, placing his own fish-culture technology front and centre in the Canadian Court. The exhibit won Wilmot a gold medal for “best apparatus;” it also implicitly recognized his ability to leverage riparian land-ownership and private interest in fish culture into a position of authority within Canadian fisheries administration. This fusion of private and public interest, however, was a source of friction within the fisheries department and was vented in an epistolary battle that drew on Victorian understandings of male competency and authority. These efforts are worth examining in more detail as they show how changing ideas of manhood inflected the material integration of fish culture—and the importance of the fisheries exhibit—as elements of Canadian state formation.

As noted in chapter two, fisheries official W. F. Whitcher had criticized Canadian fish culture just as it was being promoted during the London exhibition. He circulated a reprint of his *Forest and Stream* article that embarrassed Wilmot as it exposed divisions and uncertainty in Canadian fisheries administration, and undermined Wilmot’s exhibit in the Canadian Court. Whitcher had not just raised doubts about Canada’s fish-hatchery system—and more broadly fish culture—but also critiqued Wilmot’s aggrandizement through state administration and by extension his manliness. In a letter to Prime Minister

John A. Macdonald, Whitcher defended his decision to launch his public critique. “The misfortune,” Whitcher wrote Macdonald, “is that fish breeding in Canada should be something more than an experimental hobby and source of fame and employment for Mr. Wilmot.” Whitcher also criticized Wilmot’s displays in London in which Whitcher saw an unrestrained egotism and boastfulness. “Mr. Wilmot,” Whitcher wrote, “displays his process as the parent of all the fish products displayed there.” The only person to benefit, Whitcher implied, was Wilmot himself. As long as the Canadian fisheries department was “satisfied with fish eggs and young fry on paper, and the money is forthcoming, and the Newcastle hatchery flourishes, with its rents and profits, no practical results will be sought after.”³

While Whitcher targeted fish culture, he did so by publicly questioning Wilmot’s independence and character, the moral foundations of Victorian manliness. Wilmot lacked self-restraint, a key element of bourgeois character; he was also dependent on the state which supported his hatchery and paid his salary. Moreover, Wilmot failed to achieve “practical results,” a charge that directly challenged Wilmot’s self-conception as a “practical man.” This figure embodied a form of Victorian middle-class manhood that valorized the combination of enterprise and technical skill. The practical man was a self-made man, independent and self-directed—the embodiment of liberalism, which as John Tosh notes, “elevated manly independence to be a vital prerequisite of responsible political agency.” Challenging Wilmot’s practicality thus also challenged his male

³ W.F. Whitcher to John A. Macdonald, 1883, Mg 26-A, Sir John A. Macdonald Papers, volume 316, reel C-1699, LAC Ottawa.

authority.⁴

Whitcher's critique can be related to debates about patronage and civil service reform in nineteenth century Canada. In the 1880s the Canadian government instituted reforms that attempted to diminish the influence of political parties on administration and shift the basis of hiring from patronage to "professional" skills and knowledge assessed through examination. As David Banoub has recently shown, this shift was an integral element of liberal state formation in Canada, and the intensification of government, and drew on gendered conceptions of political agency. Patronage—and the distribution of government posts with secure salaries—was increasingly considered unmanly as it threw men into a state of dependence. Patronage nevertheless remained important to hiring and Banoub examines how letter-writers and pamphleteers both challenged patronage, and sought it, in terms of liberal ideals. As Banoub notes, drawing on Patrick Joyce's governmentality study of urban England, there was "an element of performative liberalism and masculinity" in pamphlets and letters. Their writers invoked Victorian ideals of rationality, respectability, and personal honour—elements of conduct that underwrote the liberal order—which they used to buttress their cases for justice, defend their manly characters, and assert their political agency.⁵

Pamphlets in particular provided a medium for aggrieved public servants to air their complaints and challenge the place of patronage in a masculine democratic society. This

⁴ David Banoub, "The Patronage Effect: Civil Service Reforms, Job-Seeking, and State Formation in Victorian Canada," (PhD, Carleton University, 2013) 52-3; John Tosh, *Manliness and Masculinities in Nineteenth-Century Britain: Essays on Gender, Family and Empire* (Harlow UK: Pearson Longman, 2005) 96. For a discussion of the "practical man" see Michael Roper, *Masculinity and the British Organization Man Since 1945* (Oxford: Oxford University Press, 1994) 47-49 and D. C. Coleman, "Gentlemen and Players," *Economic History Review* 26, no. 1 (1973): 102.

⁵ Banoub, "The Patronage Effect," 91. He draws on Patrick Joyce, *The Rule of Freedom: Liberalism and the Modern City* (London: Verso, 2003), 124.

was the form that Wilmot turned to after the London fisheries exhibition. In a privately printed 83-page pamphlet, Wilmot directly and indirectly addressed Whitcher's critique as he sought to publicize his recent success in London. The pamphlet consisted of two parts: commendatory letters to Wilmot from "eminent men" and extracts from Wilmot's speeches and responses during the fisheries exhibition conference. These served to defend fish culture and assert Wilmot's abilities as a "practical man" who served the state. At the same time, Wilmot's pamphlet used forms of deference and appeal that characterized patronage.

This is most evident in Wilmot's presentation of letters from exhibition officials and aristocratic patrons. These included men of "high distinction and practical knowledge," such as the Marquis of Hamilton and Canada's former Governor-General, Lord Dufferin. Their letters praised Wilmot's fish culture display and lauded him for "the triumphant part played by Canada" in the exhibition:

The excellence of the arrangements, as well as the interest and splendour of the contents of the Canadian Department, have excited universal admiration. A great number of people have spontaneously remarked to me that they considered it the best Court in the building. I have been naturally very much pleased at such results, which must be equally satisfactory to yourself, who have taken such pains and trouble to secure them.⁶

Epistolary praise from notable men conferred legitimacy by virtue of their higher social status—and not by any particular expertise in fish culture. The letters attested to Wilmot's fidelity and loyalty to public service and thus his solid bourgeois character. This appeal to social betters was also characteristic of patron-client relations in which character recommendations played an important role in securing civil service positions.

⁶ Samuel Wilmot, *Canada at the Great International Fisheries Exhibition, London, 1883* (Ottawa: A.S. Woodburn, 1884) 4.

In this case, however, the praise of “eminent men” were used to buttress Wilmot’s already secured position in the fisheries department, even if they inadvertently confirmed Whitcher’s critique that Wilmot was only concerned with putting on an “attractive show.” The second half of Wilmot’s pamphlet shifted Wilmot’s defense from an appeal to his social betters to an appeal to his “practical” peers with extracts from speeches and debates from the fisheries conference proceedings. These texts served as an evidentiary record of Wilmot’s contribution to the fisheries exhibition and documented his stout defense of Canada’s national fisheries administration.

Like the letters, the extracts demonstrated Wilmot’s validation by other men and marshaled the good opinion of Wilmot’s peers, the “practical men” who worked in fish culture. One extract in particular addressed Whitcher’s critique of fish culture and its reception in London. Wilmot chose to quote George Brown Goode, the influential American fisheries administrator who supported Wilmot’s vision of state fish culture. “*Public fish culture* is only useful when conducted upon a *gigantic scale*,” the extract read, “its statistical tables must be footed up in tens of millions.”⁷ Goode, like Wilmot, was protecting an institutional investment in fish culture, evidenced in long annual reports with statistical tables detailing the profusion of fish from state hatcheries. These reports were moreover taken as authoritative representations of the truth. “[O]fficial documents,” Goode averred, “proved that fish culture had not been in any sense a failure, but a decided success.”⁸ While Whitcher warned the Prime Minister about accepting such “on paper” evidence, Goode’s reputation as an efficient administrator—and the special status accorded statistical knowledge as a practice of “rational government”—confirmed

⁷ Ibid., 67. Italics are Goode’s.

⁸ Ibid., 45-6.

the validity of such reports.⁹

At the heart of Wilmot's efforts were notions of honor and propriety and he based his most pointed attacks on Whitcher on these grounds. Wilmot "regretted very much that Mr. Whitcher...should have thought proper to issue circulars amongst the Commissioners" and so undermined Wilmot's authority. Whitcher had displayed a character that lacked the self-restraint becoming a respectable, bourgeois man:

It was painful indeed to be obliged at this Conference to refer to the circular issued by this well-known official grumbler in Canada, who, to gratify personal spleen, had wantonly attacked an industry of world-wide beneficial reputation; more especially as the Canadian Minister at the head of the Fisheries Department, and himself, were here on behalf of that country advocating the importance of fish-cultural operations in the Dominion, the practical display of which, at this great International Fisheries Exhibition, had gained for itself great popular favour, and also materially aided in the general exhibit, and placed Canada amongst the foremost of the nations for efficiency and completeness in the science of artificially propagating fish. From the gratifying way in which Professor Goode's remarks and his own had been received on this subject, it was clearly unnecessary to refer further to this "under the belt" stab in the circular, feeling assured that similar conduct is always frowned down by the manly English public.¹⁰

The Whitcher-Wilmot exchange was a debate about Wilmot's place in fisheries administration as much as it was about fish culture. Framed in the terms of manliness, their dispute connected to contemporary debates about civil service reform and patronage, which themselves revolved around conceptions of liberalism and political agency. Their conflict was also a debate about the changing nature of state formation in fisheries, which was indexed in Wilmot's repudiation of his administrative patron.

Whitcher had been a key architect of Canadian fisheries administration: he had established "protection" and supported "propagation," recommending Wilmot's

⁹ Bruce Curtis, "Textual Economies and the Presentation of Statistical Material: Charts, Tables and Texts in 19th Century Public Education," *Scientia Canadensis* 29, no. 1 (2006): 5-6; Vittorio M. G. Vecchi, "Science and Scientists in Government, 1878-1896 — Part I," *Scientia Canadensis* 8, no. 2 (1984): 122.

¹⁰ Wilmot, *Canada at the Great International Fisheries Exhibition*, 47-8.

appointment as a fisheries officer and supporting the Newcastle hatchery, a private operation, with public funds. By the time of the London fisheries exhibition, it was clear that Whitcher regretted his earlier support. Wilmot, in Whitcher's view, was a farmer of government subsidies and had amassed unreasonable power in the fisheries department through fish culture. While they both appealed to the discourse of Victorian manhood to argue their respective cases, Wilmot trumped Whitcher who continued to expand the state's reliance on fish culture. By the time of his retirement in 1895, Wilmot had added four hatcheries and increased production to more than 294 million fish even as evidence mounted of fish culture's failure to sustain fisheries.¹¹

More immediate was Wilmot's success in another endeavour: establishing a permanent home for the fisheries collection. As Wilmot argued on his return to Canada, the fisheries collection, "now in hand," formed "a creditable nucleus for a museum in this branch of natural history." The pamphlet may have advanced this goal. Accepting Wilmot's view that such a museum would make "one of the permanent objects of interest at the Capital," and perhaps also wanting to protect its \$50,000 investment, the federal government approved the plan. In March 1884, the Fisheries Museum opened to public view in Victoria Hall in downtown Ottawa, consolidating Wilmot's exhibitionary vision that Whitcher had tried to discredit.¹²

3.2 Repatriation to Ottawa

The fisheries collection's conversion into a permanent exhibit or museum marked

¹¹ Canada, *Twenty-Eighth Annual Report of the Department of Marine and Fisheries, 1895* (Ottawa: Queen's Printer, 1896) 201. Whitefish and lobsters accounted for the bulk of this number with 272 million.

¹² Canada, "Canada at the Great International Fisheries Exhibition," xxi.

Wilmot's and fish culture's ascendant position. Its evolution from an exhibition collection to a museum was patterned after similar transitions, including the U.S. Fish Commission's display. Assembled by George Brown Goode for the 1876 Philadelphia Centennial Exposition and displayed again at the 1880 Berlin fisheries exhibition, the collection was installed as permanent exhibit in the U.S National Museum in 1881. The transformation of industrial exhibitions into national museums was part of the nineteenth-century boom in natural history exhibits and museums. Between 1869 and 1914, hundreds of natural history museums were established in North America, Europe, and in colonial outposts around the world. Large purpose-built museum structures—distinguished by grand architectural designs—were constructed in metropolitan centres; these included notable museums such as the Smithsonian in Washington (1856), the American Museum of Natural History in New York (1869), and the Natural History Museum in London (1881).¹³

This boom has been associated with both imperial expansion and nation-state building. Public natural history museums first opened in Europe in the late eighteenth century after private collectors, who had previously only admitted a select few, opened their doors to a wider public. In England, private collections became publicly-owned through donation or purchase and grew quickly as explorers and naturalists returned with specimens for identification and cataloguing. Natural history collections served as inventories of resources, actual and potential, and both marked and rationalized colonial expansion. In North America, natural history museums followed a similar trajectory from private to public, registering territorial possession and internal colonization through

¹³ Edward P. Alexander, *Museums in Motion: An introduction to the History and Functions of Museums* (Nashville: American Association for State and Local History, 1979) 55.

systematically ordered inventories of natural resources. Natural history museums framed the consolidation of territorial power and the conquest of nature as part of the progressive narrative of liberal bourgeois societies. Natural history museums also naturalized the nation by cultivating associations between natural characteristics, such as fauna or geology, and the nation-state.¹⁴ Bruce Braun argues that natural history museums not only naturalized state possession of environments, but also incited citizens to capitalist production by making nature intelligible as natural resources.¹⁵

In Canada the boom—if measured by purpose-built museums—was muted with only two such structures built, the Redpath Museum in Montreal in 1882 and the Victoria Memorial Museum in 1912. The urge to collect and display natural history, however, had already been well established in colonial Canada. Private collections, or “cabinets,” had appeared in Quebec in the 1820s; these were followed by natural history society museums and university and college museums around the middle of the century. Following the establishment of these small institutions was what Raymond Duchesne called a third wave: “des musées d’État.” These included the museum of the Geological Survey of Canada, established in Montreal in 1844 and the Ontario Provincial Museum in Toronto in 1855. After Confederation, provincial governments followed suit with provincial museums in Nova Scotia in 1868 and British Columbia in 1886.¹⁶

In Ottawa, the fisheries exhibit’s collection of fishing gear and commercially

¹⁴ Jens Andermann, *The Optic of the State: Visuality and Power in Argentina and Brazil* (Pittsburgh: University of Pittsburgh Press, 2007) 7; Karen Wonders, “Habitat Dioramas and the Issue of Nativeness,” *Landscape Research* 28, no. 1 (2003): 89-100.

¹⁵ Bruce Braun, “Producing Vertical Territory: Geology and Governmentality in Late Victorian Canada,” *Cultural geographies* 7, no. 1 (2000): 28.

¹⁶ Raymond Duchesne and Paul Carle, « L’ordre Des Choses : Cabinets Et Musées D’histoire Naturelle Au Québec (1824-1900) » *Revue d’histoire de l’Amérique française* 44, no. 1 (1990): 4-6; Herve Gagnon, “The Natural History Society of Montreal’s Museum and the Socio-Economic Significance of Museums in 19th-Century Canada,” *Scientia Canadensis* 18, no. 2 (1994): 103-135.

valuable fish continued to model “the productive and co-ordinating power of capital and the state.”¹⁷ It fixed what had been a temporary exhibit into a permanent display of Canadian fisheries at the centre of political power. The fisheries exhibit also contributed to modeling the nation as part of a nascent national exhibitionary complex. In 1881 the Geological Survey of Canada had moved to Ottawa in a controversial relocation from Montreal and brought with it the largest natural history collection in Canada. The Survey’s collection, housed in a former hotel, was a material acknowledgement of Ottawa’s role in administering the nation’s natural resources, which the Survey had labored to reveal and inventory. In 1886 the Central Experimental Farm, which conducted plant- and animal-breeding research, was established on Ottawa’s rural edge. The farm was a model operation that demonstrated agricultural propriety and efficiency in its carefully tended grounds and buildings. With a herbarium and arboretum, it was an exhibition of bourgeois respectability and industry. These institutions formalized Ottawa as the nation’s central repository and registry of natural history knowledge; they also consolidated collections in a variety of exhibition spaces that marked the capital city as Canada’s “symbolic core.”¹⁸

The fisheries collection’s installation in Ottawa also marked the power of bourgeois men such as Samuel Wilmot to fashion representations of the state and its dominion over nature. The fisheries collection’s home, Victoria Hall, was a “strong and substantial” building designed for public meetings and performances, that materialized

¹⁷ Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London: Routledge, 1995) 81.

¹⁸ W.A. Waiser, *The Field Naturalist: John Macoun, the Geological Survey, and Natural Science* (Toronto: University of Toronto Press, 1989) 116-142; Julie Harris and Jennifer Mueller, “Making Science Beautiful: The Central Experimental Farm, 1886-1939,” *Ontario History* 84 no. 2 (1997): 103-123.

Wilmot's power to represent the fisheries.¹⁹ Featuring a mansard roof, dormer windows, and a decorative front porch, Victoria Hall exemplified Second-Empire style, a European architectural form that dominated federal government architecture during Ottawa's building boom after Confederation (figure 3). Buildings such as Victoria Hall were "intended to impress upon the observer the stability, performance, and wealth of the new nation."²⁰ In 1887, the federal government bought the building and renamed it the Fisheries Building. With a purchase price estimated at \$10,000, the total cost expended on the fisheries collection since its inception in 1883 amounted to \$65,000. Given that the fisheries department's total annual budget ranged between \$116,000 and \$164,000 in this period, the building's purchase demonstrated Wilmot's ability to harness the department's parliamentary appropriations for his exhibitionary purposes.

Wilmot extended his control over representations of Canadian fisheries in 1890 when he installed a full-scale fish hatchery in the Fisheries Building cellar. He had first proposed a hatchery in 1885 soon after the fisheries exhibit first opened. Not content with a collection of mounted fish, Wilmot wanted to unite "dead and living specimens of the products of the waters of Canada" in one place and so create "a great National Fisheries Museum for the Dominion of Canada."²¹ The hatchery, the fourteenth in Wilmot's national fish-culture system, differed from other hatcheries in its explicit exhibitionary

¹⁹ David Ewart to Thomas Fuller, 12 April 1887, Privy Council Minutes, RG 2, Series 1, volume 362, LAC; Alain Miguélez, *A Theatre Near You: 150 Years of Going to the Show in Ottawa-Gatineau* (Newcastle ON: Penumbra Press, 2004) 27.

²⁰ Christina Cameron and Janet Wright, *Second Empire Style in Canadian Architecture, Canadian Historic Sites, Occasional Papers in Archaeology and History*, No. 24 (Hull, Quebec: Canadian Government Publishing Centre, Supply and Services Canada, 1980) 8-14; Janet Wright, *Crown Assets: The Architecture of the Department of Public Works, 1867-1967* (Toronto: University of Toronto Press, 1997) 108.

²¹ Canada, *Report on Fish-Breeding in the Dominion of Canada 1885* (Ottawa: Queen's Printer, 1886) 16.



Figure 3: The Fisheries Building. Source: LAC, accession number 1966-090 NPC.

purpose. Wilmot viewed the hatchery as a didactic showcase that would expose federal politicians to “both ocular and practical demonstrations of the *modus operandi* of propagating and rearing fish by the artificial methods.”²² Such demonstrations would also protect his funding and power. Unlike other hatcheries, which secured eggs from wild fish, the Ottawa hatchery was supplied eggs from other fish-culture stations. Spared the difficulties of egg collection, the hatchery was thus free to focus on exhibition and on distributing fish, including exotic game-fish species such as rainbow trout from western

²² Canada, *Report on Fish-Breeding in the Dominion of Canada 1889* (Ottawa: Queen’s Printer, 1890) 6.

North American. With the addition of the hatchery to the exhibit, Wilmot had reproduced all the elements of his Newcastle hatchery—an exhibitionary nexus of fish culture and natural history—in the heart of the national capital.²³

There were limits to Wilmot's ability to command the fisheries department's resources. While the Fisheries Building was a dignified building, it was not intended as a museum. With less than 2,000 square feet on the ground floor, it was a fraction of the size of the Canadian Court in London. Moreover the exhibit was denied the building's most impressive room: the upstairs hall, which featured a soaring 22-foot ceiling pierced by skylights, was reserved for the Royal Canadian Academy of Arts' collection and renamed the National Art Gallery.²⁴ The addition of the hatchery, however, may have made up for the loss of the upstairs hall, especially as Whitcher's criticisms of fish culture had continued to circulate after the Fisheries Museum had been established. "[Fish culture] has been going on for some fifteen or sixteen years," declared one anonymous Toronto writer, "and if it were not so thorough a sham the results must by this time have been prodigious." The only beneficiaries were fish culturists who "get an easy or a luxurious living at the public expense."²⁵ In 1887, the Toronto *Globe* reminded readers of Wilmot's failure to restore Lake Ontario salmon and pointed out that fish-culture efforts elsewhere were also failing. "Pisciculture has cost a considerable amount in Canada," the writer of "Is Fish Culture a Failure?" pointed out, "and very many think that it has been of very little practical benefit to our fisheries."²⁶

²³ Canada, *Thirty-Fifth Annual Report of the Department of Marine and Fisheries 1902* (Ottawa: King's Printer, 1903) 249.

²⁴ Rebecca Sisler, *Passionate Spirits: A history of the Royal Canadian Academy of Arts 1880-1980* (Toronto: Clarke Irwin & Co., 1980)

²⁵ "Fish and Fishing," *The Globe* March 8, 1884, 8.

²⁶ "Is Fish Culture a Failure?," *The Globe* April 30, 1887, 8.

The Ottawa hatchery, like the Newcastle hatchery, helped counter these critiques by making fish culture a public spectacle. As both Wilmot and Frank Buckland had earlier discovered, displays of live fish attracted crowds of people. In 1891, the year after the hatchery opened, more than 50,000 people visited the Fisheries Building, the most visitors it had ever received. “This nursery and Fishery Exhibit connected with it, has become an acknowledged educator not only for the general public,” Wilmot reported in 1891, “but specially for the citizens of Ottawa and the inhabitants of the surrounding districts.”²⁷ The large number of visitors was due in part to the opening of the National Art Gallery upstairs, but the *Ottawa Daily Free Press* speculated that the art gallery was the beneficiary as it was located “alongside the better-known and more popular fisheries exhibit.”²⁸ Even the fisheries exhibit, and its displays of dead fish, may have suffered in comparison with the basement fish hatchery. One Ottawa tourist guide listed the fisheries exhibit, but directed visitors to the hatchery. “[W]hat will most interest the many,” the guide suggested, “is The Ottawa Fish Hatchery, especially if the ‘many’ come while the millions of little fish are busy getting ready for the rivers, brooks, and lakes of the Dominion.”²⁹

Whatever people were most drawn to, the Fisheries Building’s separate exhibitions overlapped. A visitor might have started in the cellar to view hatching fish eggs; climbed the stairs to compare them to mounted dead fish; and ended his or her visit on the top floor to view the National Art Gallery’s collection. There visitors could inspect

²⁷ Canada, *Report on Fish-Breeding Operations in the Dominion of Canada 1890* (Ottawa: Queen’s Printer, 1891) 16.

²⁸ Canada, *Report on Fish-Breeding Operations in the Dominion of Canada 1891* (Ottawa: Queen’s Printer, 1892) 18; *Ottawa Daily Free Press*, March 10, 1888, 5.

²⁹ Anson A. Gard, *The Hub and the Spokes or, The Capital and its Environs* (Ottawa and New York: The Emerson Press, 1914) 34.

landscape paintings such as Henry Sandham's "On an Eastern Salmon Stream" and Allan Edson's "Trout Stream in the Forest," both of which celebrated wilderness angling and hinted at its gendered and racial exclusivity—elements that Canadian fisheries administration had helped structure through licensing and leasing.³⁰

The fisheries collection's installation in Ottawa also enabled it to function in another role: as a repository for international exhibitions. The fisheries collection traveled to several notable nineteenth-century exhibitions, including the 1886 Colonial and Indian Exhibition in London, and the 1893 Columbian Exposition in Chicago. At these fairs, the collection continued to model fisheries as a domain administered by the nation-state for capitalist production. In London, the fisheries collection was subsumed to a larger display of Canadian products and resources that promoted emigration and affirmed Canada's link to Britain. Indeed the collection might have been overshadowed by a large display of trophy heads of big game, which modeled Canada as a sportsmen's paradise.³¹ The fisheries collection nevertheless contributed to this representation of Canada as a bountiful dominion of, and over, nature and was shipped in its entirety to London, leaving the museum shuttered in Ottawa for the duration of the exhibition. The same objects—fish specimens, models of ships and fishing gear, fish products, and a small-scale model fish hatchery "in running operation"—were on view. The identification of nature and nation was subtly figured in its exhibition classification, which used Linnaeus' broad division of nature into three "Kingdoms"—Animal, Vegetable, and Mineral—to classify Canadian objects. The Linnaean categories elided the distinction between natural

³⁰ Lynda Jessup, "Landscapes of Sport, Landscapes of Exclusion: The "Sportsman's Paradise" in Late-Nineteenth-Century Canadian Painting," *Journal of Canadian Studies* 40, no. 1 (2006): 71-123.

³¹ George Colpitts, *Game in the Garden: A Human History of Wildlife in Western Canada to 1940* (Vancouver: UBC Press, 2002) 70; Elizabeth Heamen, *The Inglorious Arts of Peace: exhibitions in Canadian society during the 19th century* (Toronto: University of Toronto Press, 1999) 202.

wealth and human production by classifying manufactures, arts, and education under the “Mineral” Kingdom. The classification of fisheries also conflated nature and industry. Fisheries, categorized under the “Animal Kingdom,” were divided into four classes, placing “apparatus and products” and “fish as food,” alongside the systematic orders of “fishes” and “marine mammals.” The classification thus blurred the edges of natural order and human exploitation, suggesting that Canada was itself part of the natural order.³²

The Indian and Colonial Exhibition also marked an important milestone for the collection, the publication of its first catalogue. As argued in the previous chapter, catalogues were critical textual tools that shaped exhibition displays. For the Colonial and Indian Exhibition, the fisheries department compiled the *Catalogue of Canadian Pinnipedia, Cetacea, Fishes, and Marine Invertebrata* which appeared in the authoritative form of other ichthyological catalogues, particularly those published in the 1880s by the U.S. Fish Commission and the Smithsonian Institution. The catalogue staked Canada’s claim to ichthyological knowledge with more than 380 specimens systematically arranged. But its authority was more apparent than substantive. Many specimens lacked vital location data. A specimen of a purported Atlantic salmon was annotated with the entry, “Female, species doubtful; locality not stated.”³³ Others came with inaccurate information: a stuffed paddle-fish was described as captured near Sarnia on Lake Ontario, a geographical error that cast doubt on an unusual record of a fish uncommon in Canada. The catalogue’s commentary was also incomplete. The entry for

³² Heamen, *Inglorious Arts*, 192; *The Colonial and Indian Exhibition, London, 1886. Official Catalogue of the Canadian Section* (London: McCorquodale & Co., 1886) 15 & 106.

³³ J. F. Whiteaves, *Catalogue of Canadian Pinnipedia, Cetacea, Fishes and Marine Invertebrata* (Ottawa: 1886) 10.

Sebastes ruber, or “Red Rock-fish,” noted that it was “one of the finest food-fishes” of British Columbia, “little if at all inferior to the Cod for salting.”³⁴ In contrast, no comment was made about the Atlantic cod or Pacific salmon, the two most valuable fishes captured by Canadian fishermen. Catalogue editor J. F. Whiteaves, a natural historian and curator with Canada’s Geological Survey assigned to catalogue and organize the collection, admitted that the catalogue was “provisional.”³⁵

The collection nevertheless continued to project confident representations of Canada’s fisheries on broad scale. In Chicago, the fisheries collection had a higher profile, appearing in a pavilion dedicated to fisheries. Located in the White City opposite the Women’s Pavilion, which emphasized that fisheries were a masculine domain—the fisheries pavilion also represented progress in racial terms. As Robert Rydell and Gail Bederman have shown, the Columbian Exposition presented a “utopian vision” of progress as a white male achievement. On one side lay the “White City,” with its exhibits of technological progress in the halls of Machinery, Electricity, Mines, Manufactures and Liberal Arts, and others. On the other was the Midway Plaisance, the fair’s entertainment zone, which featured living exhibits of “primitive” people that allowed people to measure progress against the White City’s displays of western technology. This transferred, as Tony Bennett notes, “the rhetoric of progress from the relations between stages of production to the relations between races and nations.”³⁶

Within this exhibitionary order, the fisheries were presented as another arena of white male ingenuity. The fisheries pavilion contained 60,000 square feet of displays and

³⁴ Ibid. 17.

³⁵ Ibid. 4.

³⁶ Bederman, *Manliness and Civilization*, 33; Robert W. Rydell, *All the World’s a Fair: Visions of Empire at American International Expositions, 1876-1916* (Chicago: University of Chicago Press, 1984) 40; Bennett, *Birth of the Museum*, 82.

aquariums, and showed “side by side...the primitive apparatus of the savage, and the most approved appliances and methods evolved by many cycles of scientific progress.”³⁷ The Canadian fisheries collection supported this representation: its display was one of the largest, occupying 8,000-square feet on two levels. Models of fishing vessels in particular were used to show that native fisheries were “primitive” in contrast to Canada’s modern capitalized fisheries. A model of a Banks fishing schooner, a fast fishing vessel that could travel far offshore, was presented alongside birch-bark and dug-out canoes. “Her sails are set,” noted a guide-book to the fair, “and on every side are groups of fish, with modern implements and gear of every kind, in contrast with which is the primitive fishing apparatus of Canadian Indians.”³⁸

Canadian fisheries officials were well pleased with the fisheries collection’s showing in Chicago. It garnered a slew of medals that demonstrated Canada’s administrative ability, or more accurately, the fisheries department skill at assembling such in exhibitions. L.Z. Joncas, who had represented Canada in London in 1883, boasted that exhibition once again proved that Canadian fisheries were well served by “protection and propagation.” There was “no danger,” he claimed, “of our supply of fish being exhausted by overfishing or by the prevalence of injurious practices.”³⁹ These concerns, of course, had originally led Samuel Wilmot to experiment with fish culture; but in the charmed progressive universe of the exhibition, environmental and human impacts were modeled away.

The Columbian Exposition, however, had material consequences on the fisheries

³⁷ Hubert Howe Bancroft, *The Book of the Fair* (Chicago, San Francisco: The Bancroft Company, 1893) 512.

³⁸ *Ibid.* 532.

³⁹ L. Z. Joncas, “The Fisheries of Canada,” *Bulletin of the United States Fish Commission* 13, no. 1 (1893): 348.

collection. Exposed to damage through travel and display, which had accumulated over previous exhibitions, the fisheries collection returned to Ottawa in a state of disrepair. The damage sustained by several mounted specimens was typical: “the five seals require restuffing also the two large halibut,” reported caretaker Philip Veale, “as they are played out, being exposed all the time to the public.”⁴⁰ For the fisheries department’s recently recruited Dominion Fisheries Commissioner, English fisheries investigator Edward Prince, the damage was not just material: wear and tear also highlighted the collection’s fraying conceptual foundation and its decaying credibility. This decay also exposed the eroding authority of the “practical man,” a model of manhood that had helped secure Wilmot’s authority and competency, and which legitimated the extension of his power.

3.3 Edward Prince

Edward Prince was born in Leeds, England in 1858. A graduate of St. Andrews University in Scotland, Prince worked as a researcher under William McIntosh at the St. Andrews Marine Laboratory beginning in 1885. The lab was the first marine biological station in the United Kingdom and provided facilities for McIntosh’s research into commercial fisheries. As a consultant to Scotland’s Fishery Board, McIntosh was interested in “establishing a scientific basis for legislative control of the fisheries.” Prince became McIntosh’s primary collaborator, producing life histories of commercially valuable fish. Prince then went on to a zoology professorship before being recommended by McIntosh to the Canadian fisheries department. The department recruited him in 1892 to serve as Dominion Fisheries Commissioner, the senior bureaucratic post in the

⁴⁰ Philip Veale to W. Smith, 30 January 1894, RG 23, Volume 129, file 202, Reel T-2742, LAC.

fisheries department.⁴¹

Prince was part an emerging class of male middle-class biologists in the late nineteenth century who assumed positions in universities, museums, and government departments. He represented the professionalization of scientific expertise within government, the shift toward the “rule of experts,” a hallmark of the Progressive movement and state formation in the late nineteenth century. As Patrick Carroll argues, the integration of science into administration “transformed the activities of governing, the processes of capital accumulation, and the relationship between the two.”⁴² Governments became more active in fields such as agriculture and forestry, establishing experimental farms, research stations, offices of “economic ornithology,” and “economic entomology” to support and sustain capitalist production. In Canadian fisheries, Prince cultivated collaborations with university scientists; by 1898 he had established a research board to coordinate fisheries research and in 1899 a floating biological station in St. Andrews, New Brunswick. “Science alone can afford sure ground for advance,” Prince wrote in 1893, laying out his vision of fisheries administration.⁴³

Marine biological stations established a scientific infrastructure for state fisheries administration. First established in France in the 1850s, they enabled investigators to conduct studies into the physical dynamics of oceans and marine life. Researchers addressed new questions about fisheries and the relationship between ocean productivity and fluctuations in fishing catches, questions that emerged with the advent of industrial

⁴¹ Jennifer Hubbard, *A Science on the Scales: The Rise of Canadian Atlantic Fisheries Biology, 1898-1939* (Toronto: University of Toronto Press, 2006) 18.

⁴² Patrick Carroll, *Science, Culture, and Modern State Formation* (Berkeley: University of California Press, 2006) 13.

⁴³ A. G. Huntsman, “Dr. E. E. Prince,” *Nature* 139 (1937): 141; E.E. Prince, “A Marine Scientific Station for Canada,” *Twenty-sixth Annual Report of the Department of Marine and Fisheries 1893* (Ottawa: Queen’s Printer, 1894) cxci; Hubbard, *Science on the Scales*, 18-19; 32-33.

fisheries.⁴⁴ By 1908, Canada had three biological stations: the one in St. Andrews, which had become a permanent shore-based facility, as well stations in Georgian Bay and on the Pacific Coast in Nanaimo, British Columbia. As Moses Perley had done four decades earlier, Prince identified “waste” as a critical problem and sponsored research into areas such as freezing technology and the identification of unexploited fish species. While researchers also undertook biological studies with little or no applied potential, Prince emphasized the “accumulation...of useful scientific knowledge in order to promote the prosperity of our coast and inland fisheries.”⁴⁵ These projects, and Prince’s desire to stimulate “new fishery enterprises,” mark him as a progressive-era conservationist, like American forester Gifford Pinchot, who sought to perfect capitalist production through scientific and state intervention. Such efforts, as Carroll notes, served to both aggrandize the state and invigorate economic development.⁴⁶

If the integration of science and state administration marked a new stage in state formation, it also entailed conflicts in the sources of male authority. Gender historians interested in management have noted how the late nineteenth-century emergence of professionalization in business administration led to competing valuations of manhood. The professional expert established his masculine power and claim to manhood through his ability to deploy rational schemes of management and administration to further

⁴⁴ Eric L. Mills, *Biological Oceanography: An Early History, 1870-1960* (Ithaca: Cornell University Press, 1989) 2; Dean C. Allard, “The Fish Commission Laboratory and Its Influence on the Founding of the Marine Biological Laboratory,” *Journal of the History of Biology* 23, no. 2 (1990): 251-270.

⁴⁵ E.E. Prince, “A Marine Scientific Station for Canada,” *Twenty-sixth Annual Report of the Department of Marine and Fisheries 1893* (Ottawa: Queen’s Printer, 1894) clxxxix.

⁴⁶ Carroll, *Science, Culture, and Modern State Formation*, 13; Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Cambridge, MA: Harvard University Press, 1959).

economic development.⁴⁷ This new valuation of masculinity was in opposition to the figure of the “practical” or self-made man who distinguished himself as a manly breadwinner through entrepreneurial energy and independence. Lee Chalmers argues that professionals countered the ideal of the rugged practical man by emphasizing his “amateurism” and “irrationality,” and by proclaiming themselves as “rational, calculating, tough-minded, [men] of science” who could more efficiently produce wealth. “Such claims to “corporate breadwinning” and “producing for the nation,” Chalmers argues in the British context, “were particularly potent in their appeal given their white, middle-class masculine associations with family provision, virile performance, and imperial greatness.”⁴⁸

These gender dynamics inflected the relationship between Samuel Wilmot and Edward Prince and exemplify how competing constructions of manliness marked changing aspects of state fisheries administration. Their conflict began in 1894 after the fisheries collection returned from Chicago and when the Toronto Industrial Exhibition asked the department to supply an exhibit. Prince questioned the propriety of such loans and advised the minister to decline the request. He did, using Prince’s advice verbatim in his letter: “I do not consider it altogether wise to do so, nor is it a custom,” the minister wrote, “in any country to loan exhibits from Museums especially of such a perishable character as specimens of taxidermy.” This cast Wilmot’s past practices into doubt. Prince questioned too the credentials of the Toronto organizer of the fisheries display: he wrote that the quality of the language seemed to indicate a low standard of education.

⁴⁷ Roper, *Masculinity and the British Organization Man*, 47-49.

⁴⁸ Lee V. Chalmers, *Marketing Masculinities: Gender and Management Politics in Marketing Work* (Westport CN: Greenwood Press, 2001) 47. For earlier associations between masculinity and occupation see Leonore Davidoff and Catherine Hall, *Family Fortunes: Men and Women of the English Middle-Class, 1780-1850* (Chicago: University of Chicago Press, 1987) 229.

Wilmot, however, supported the request and noted that the letter-writer who Prince had doubted was James Noble, a prominent fish merchant in Toronto who belonged to the same class of “practical” men that Wilmot belonged. Wilmot prevailed and the fisheries minister granted the request and sent a small selection of mounted fish and a hatchery display to Toronto.⁴⁹

Prince then turned a more critical eye on the collection and raised tensions with Wilmot. Touring the collection after the disagreement over the Toronto exhibition, Prince found it shop-worn and damaged in a space “too small to properly display the exhibit.” Such complaints were common-place in museums: curators struggled constantly to protect collections against insect pests and secure adequate storage and display space.⁵⁰ Prince proposed to renovate the exhibit and drew up a sketch of a layout that “would display the fish to better advantage and also economize space.”⁵¹ He also heeded advice from the exhibit’s care-taker Philip Veale to use display cabinets purposely built and used for the Chicago exhibition. But before the plan could proceed, Veale suddenly died. Compromised by travel and exhibition exposure, and without a caretaker, the fisheries exhibit was closed by Prince.

While Wilmot protested the exhibit’s closure, Prince viewed it as an opportunity to reform it into a “scientific” museum. When job-seekers opportuned the fisheries department immediately after Veale’s death (one applied the day after, having read Veale’s obituary in the newspaper) Prince recommended instead that the caretaker’s

⁴⁹ E.E. Prince, memorandum, 4 July 1894, RG 23, volume 232, file 1353, Reel T-3150, LAC.

⁵⁰ Herve Gagnon, “The Natural History Society of Montreal's Museum,” 126

⁵¹ E.E. Prince, memorandum, 8 June 1894, RG 23, volume 158, file 497, LAC.

position be left vacant.⁵² As Prince saw it,

the opportunity now occurs for making such arrangements as will vastly increase the value and interest of the Fisheries Exhibit. The Exhibit should rank as one of the most attractive and interesting to the public, especially visitors from all parts of the Dominion and from other countries and should have a real educational and scientific value.⁵³

Prince later enumerated in more detail his frustrations with Wilmot's collection. "[N]one of the stuffed fish in the Museum have ever been properly and scientifically labeled," noted Prince. "The names are in many cases scientifically erroneous, and the localities which were placed on the cases some years ago are manifestly wrong."⁵⁴ These included the wrongly located stuffed paddle-fish previously described. Such a collection could not, in Prince's eyes, "adequately represent the Fisheries of Canada or to have such educational and scientific utility as it ought to possess."⁵⁵

To Wilmot, close to retirement after a 27-year career, the exhibit's closure and Prince's criticism was a repudiation of his work. Although Wilmot acknowledged the exhibit's disrepair—the collection was "lying about the room in the most confused state from receiving much injury"—he nevertheless challenged the exhibit's closure.⁵⁶ Wilmot alluded to Prince when he noted that the exhibit "seems to have passed into other hands" and that they deemed it "not sufficiently scientific." Science was immaterial, however, in the face of peer recognition which Wilmot had secured at international exhibitions. The collection had "stood foremost as against the whole world" at the London and Chicago exhibitions and "received the highest awards." Closing the exhibit was understandable

⁵² John Walker to Sir Charles Tupper, 17 August 1894, RG 23, volume 260, file 1708, LAC.

⁵³ Memorandum, 25 August 1894, RG 23, volume 260, file 1708, LAC; E.E. Prince to L.H. Davies, 23 August 23 1894, RG 23 v260 file 1708, LAC.

⁵⁴ E.E. Prince, memorandum, 11 December 1895, RG 23, volume 260, file 1708, LAC.

⁵⁵ Memorandum, 25 August 1894, RG 23, volume 260, file 1708, LAC; E.E. Prince to L.H. Davies, 23 August 23 1894, RG 23, volume 260, file 1708, LAC.

⁵⁶ Samuel Wilmot, memorandum, 10 January 1895, RG 23, volume 158, file 497, LAC.

“[i]f the exhibits at this building were of an inferior character.” But Wilmot’s peers in the international fisheries community had decided otherwise: there was thus no “reasonable excuse,” Wilmot claimed, “why this institution should not be opened to the Canadian public.”⁵⁷ As with Wilmot’s conflict with Whitcher, the conflict with Prince was grounded in the warrant of an older form of masculine authority: an appeal to character and experience, validated by peers, was as valuable as an appeal to facts or science.

As noted earlier, Wilmot considered himself a “practical man,” who operated from tacit knowledge and epitomized the commercial virtues of ingenuity and enterprise. These, he believed, explained his success in establishing fish culture as a state-craft and as an exhibition, although it also left him vulnerable to charges that he was dependent on the state. The “scientific man” was a bookish, theory-focused figure, exemplified by fisheries officials with university educations, men such as Edward Prince and Thomas Henry Huxley. While Canadian fisheries administration was shifting toward a scientific and professional approach under Prince, Wilmot’s authority still carried weight and retained enough influence that the fisheries exhibit was re-opened. The era of the “practical man” in fisheries administration and exhibition, however, was coming to a close. While Wilmot had managed to re-open the exhibit, Prince argued that it required a renewal of its authority to represent Canadian fisheries—and a different type of man “having some scientific knowledge” who could warrant the exhibit’s credibility. Fending off patronage-seeking applicants for the vacant caretaker’s position, Prince appointed a candidate close at hand: a fisheries clerk who was also a self-trained naturalist. Two months before Wilmot’s retirement in April of 1895, Prince issued a simple

⁵⁷ Ibid.

announcement: “Mr. Andrew Halkett is responsible for the care of the Fishery Collection.”⁵⁸

3.4 Andrew Halkett

Andrew Halkett represents the transition from the “practical” regime of Samuel Wilmot to the “scientific” regime of Edward Prince in Canadian fisheries administration. This transition, however, was uneven: the integration of science into fisheries administration was a drawn out process, as were the processes of professionalization in the natural sciences, the Canadian civil service, and museum curatorship.⁵⁹ Changing notions of authority and competency in fisheries administration, and more broadly government, were entangled with changing ideas of male authority. These shifts became visible in the fisheries exhibit, and in Andrew Halkett’s career, as Prince sought to reform the fisheries exhibit into a credible scientific museum.

Andrew Halkett is crucial to the history of the fisheries collection: after 1895, the histories of both are entwined. Born in Scotland in 1854, the son of a Scottish clergyman and a Canadian mother, Halkett emigrated to Canada in 1872. Halkett joined the fisheries department in 1878 and retired in 1929 at age 75 as a zoologist after a 51-year career.⁶⁰ Halkett served as the fisheries collection’s first and only curator; he collected and catalogued fish specimens, corresponded with collectors and other curators, and designed and supervised exhibits. Entrusted with the collection’s initial reform, he was present when the museum was demolished in 1918. In addition to curatorial duties, Halkett

⁵⁸ E.E. Prince, memorandum, 14 February 1895, RG 23, volume 260, file 1708, LAC.

⁵⁹ Vittorio G. M. Vecchi, “Science and Scientists in Government, 1878-1896 — Part II,” *Scientia Canadensis* 9, no. 2 (1985): 109.

⁶⁰ “Recommendation for Promotion,” 24 October 1918, RG 32, volume 119, file 391, LAC.

served as the fisheries department's naturalist. This overlap patterned Halkett's career with constantly shifting responsibilities; it also positioned the exhibit as a site where the fisheries were not only represented, but also observed, investigated, and transformed, a process that I explore in the next chapter.⁶¹

A self-taught naturalist lacking advanced education, Halkett fit neither the emerging model of the curator as a professional man nor Prince's conception of the scientific fisheries researcher. He was, however, a diligent and disciplined man, a model of bourgeois propriety. Beginning in 1895 Prince invested Halkett with increasing responsibilities, assigning him to more complex tasks, including the fisheries collection's curatorship as well as field-studies to investigate fisheries problems. Under Prince, Halkett not only began to reshape the fisheries collection, but also to reshape himself as a naturalist-curator who in turn legitimized the museum as an authoritative institution. Halkett forged his career as a government curator and naturalist, however, as professionalization reshaped the construction of authority within Canada's civil service, fisheries administration, and museum-keeping. To ask how Halkett weathered changing models of authority and competency also requires considering how Halkett negotiated professionalization.

Professionalization describes the late-nineteenth-century process through which occupations and disciplines came to acquire and assert "exclusive jurisdiction" over specialized expertise, warranted by educational credentials and other guarantees of

⁶¹ Hoyes Lloyd, "Andrew Halkett, Naturalist, 1854-1937," *The Canadian Field-Naturalist* 53, 3 (March 1939): 31-32.

competency.⁶² Connected to specialization in labour and organizations under industrial capitalism, professionalization has been linked to state formation and what Jeff Hearn calls “public patriarchies.”⁶³ As Donald Wright has shown with respect to the discipline of Canadian history, professionalization was fundamentally gendered: it proceeded through men’s associations that established credentials, standards, and institutions that served to protect members’ economic and social privilege while excluding women. Professionalization, however, was by no means complete or hegemonic: it was incomplete and provisional, and was characterized by the policing of discipline boundaries through a gendered discourse of “professionals” and “amateurs.”⁶⁴

The distinction between “professional” and “amateur” hinged on notions of the presumed male capacity for objective inquiry and mapped, as Carolyn Korsmeyer notes, to “a venerable system of opposites” that defined masculinity and femininity through such oppositions as “public-private, mind-body, reason-emotion.”⁶⁵ The professional was marked masculine: rational, impersonal, and impassive. The amateur was feminine: irrational, personal, and emotional. The professional-amateur discourse operated across a spectrum of activities, including music, art, academic disciplines in the arts and sciences, museum curatorship, business management and administration. It did not just serve to extend masculine domination over women, but also permitted some men to dominate others.

⁶² Harold L. Wilensky, “The Professionalization of Everyone?” *American Journal of Sociology* 70, no. 2 (1964): 137-158.

⁶³ Jeff Hearn, *Men in the Public Eye: The Construction and Deconstruction of Public Men and Public Patriarchies* (London: Routledge, 1992) 150.

⁶⁴ Donald Wright, *The Professionalization of History in English Canada* (Toronto: University of Toronto Press, 2005) 4. “Gender was not incidental to professional projects; it was central.”

⁶⁵ Carolyn Korsmeyer, “Amateurs and Professionals” in *Gender and Aesthetics: An Introduction*. (New York & London: Routledge, 2004) 68.

Professionalization thus created a complex terrain for Andrew Halkett to navigate as it variously invested the fields of civil service, science, and museum curatorship. In the sciences, biology and zoology began to coalesce as university disciplines in the 1860s and became increasingly specialized as practitioners shifted from collecting and classification to studying life processes. In Europe and the United States, biology materialized as a profession through a material and intellectual infrastructure of university laboratory buildings, instructors, courses, and degrees, particularly the PhD degree, which guaranteed professional authority.⁶⁶ Professionalization in biology affected museum curatorship in natural history museums as university-educated men with biology degrees began to take up museum posts. Prior to the 1890s, few museum curators in American museums had college degrees: after 1895 the majority of them directing natural history museums did, with many holding PhDs.⁶⁷ Curatorship was also being professionalized through the development of associations and periodicals devoted to museum work. In England, the British Museums Association, established in 1889, sought to professionalize curatorship by defining procedures and recommending standards in such museum practices as exchanging specimens and producing exhibits.⁶⁸ It disseminated these views in annual meetings and through its publication, *The Museums Journal*: an article in its augural issue declared that “amateurism would have to give way

⁶⁶ Lynn Nyhart, “Natural History and the ‘New’ Biology,” in *Cultures of Natural History*, edited by N. Jardine, J. A. Secord and E. C. Spary (Cambridge: Cambridge University Press, 1996) 435; S. L. Star and J. R. Griesemer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907-39,” *Social studies of science* 19, no. 3 (1989): 394; David E. Allen, *The Naturalist in Britain: A Social History*, 2nd ed. (Princeton: Princeton University Press, 1994) 162-3.

⁶⁷ Robert E. Kohler, *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950* (Princeton: Princeton University Press, 2006) 207-08.

⁶⁸ J. Lynne Teather, “Professionalization and the Museum,” in *The Museum: A Reference Guide*, edited by Michael S. Shapiro and Louis V. Kemp. (Greenwood NJ: Greenwood Press, 1990) 301.

to what could best be described as professionalism.”⁶⁹ American curators followed with their own organization, forming the American Museum of Associations in 1906.⁷⁰

The most immediate context of professionalization that Halkett confronted, however, was in Canada’s civil service. Halkett joined the fisheries department at age 25 in 1878; he became a permanent civil servant in 1879, working first as a correspondence clerk and later in the department’s accounting office. In this period civil service reformers within the Canadian government, inspired by British efforts, moved to eliminate patronage in government appointments and professionalize administration by instituting a system of recruitment and promotion on the basis of merit or expertise. Between 1880 and 1908 there were two Royal Commissions on the matter that promoted standardization of civil service recruitment, including qualifying examinations for prospective civil servants. In 1908, these reforms were institutionalized in the Civil Service Commission which instituted standardized competitive testing, hiring, and compensation practices; the Commission also reformed job classifications and set academic qualification for various categories including scientific work. As David Banoub argues, these reforms were an important element of late nineteenth-century Canadian state formation as the government valorized management by experts. These measures were also gendered: they privileged middle-class men with access to education, excluded women, and deprecated men such as Halkett who lacked academic qualifications.⁷¹

Professionalization, however, was incomplete: the boundaries dividing amateur from professional were fluid, as Barbara Gates and others have noted, which created

⁶⁹ Quoted in Teather, “Professionalization and the Museum,” 230.

⁷⁰ Ibid.

⁷¹ Banoub, “The Patronage Effect,” 133-37; J. E. Hodgetts, William McCloskey, Reginald Whitaker, and V. Seymour Wilson. *The Biography of An Institution: The Civil Service Commission, 1908-1967* (Montreal & London: McGill-Queen’s University Press, 1972) 25-35; Hearn, *Men in the Public Eye*, 158.

space for Halkett to forge a career as a government naturalist and curator.⁷² It is unclear exactly how Halkett made the transition from “third-class clerk” to naturalist, however. In 1917, Halkett petitioned for a pay increase and provided a précis of his fisheries career to support his claim; it passed over, however, this transition, moving from a description of his self-directed studies in “general natural history” to his assignment as a naturalist to a government inquiry into fur-seal hunting in the Pacific Ocean in 1896. “Any leisure time I had,” Halkett recounted, “was spent in the fields and woods watching the habits of such living forms as insects and birds, and I followed my out-of-door observations in diligent researches at night, and in this way covered the ground in outline of general zoology.”⁷³ This form of self-education in natural history was common among naturalists and prevailed among Canadian men who took up scientific positions with the federal government. These careers also depended on involvement in natural history networks, particularly natural history societies. To explain Halkett’s shift from the clerking desk to the naturalist’s field, therefore, I draw on his participation in the Ottawa Field-Naturalists Club.

The Ottawa Field-Naturalists’ Club was established in 1879 and emerged from the Ottawa Literary and Scientific Society, itself a successor in 1870 to the Ottawa Natural History Society, established in 1863. These earlier incarnations of the club were critical to the production and circulation of local natural history knowledge and nature appreciation in Ottawa. With a membership drawn from Ottawa’s middle-class elite and civil service, the societies established a museum, a lending library and reading room, and

⁷² Barbara T. Gates, “Ordering Nature: Revisioning Victorian Science Culture,” in *Victorian Science in Context*, edited by Bernard Lightman (Chicago: University of Chicago Press, 1997) 181.

⁷³ Andrew Halkett to G.J. Desbarats, 30 November 1917, RG 32, volume 119, file 391, LAC.

a public lecture series.⁷⁴ Like their counterparts in other Canadian cities, the various incarnations of the Field-Naturalists' Club were part of a wider voluntary society movement that was critical to middle-class and state formation in Canada. As Darren Ferry argues, voluntary societies underwrote "liberal collective identity among the professional classes," and promoted the liberal social order by promoting the dissemination of knowledge, particularly inventory science, which sustained national economic and political development.⁷⁵ Societies also facilitated class cohesion by providing public education and entertainment at soirées and lectures, and inculcating nature appreciation through guided public field excursions and natural history collecting. Natural history societies modeled a bourgeois relationship to nature by proposing it as a scene for personal improvement, pleasure, and possession.

Natural history societies also contributed to the creation of state institutions, including museums and agencies. The Natural History Society of Montreal, for example, proposed and supported the establishment of the Geological Survey of Canada in 1841. Society members staffed such organizations and societies and became important sites for career and professional advancement in the government. As Carl Berger recognized, natural history societies mediated between the practice and organization of natural history at the local level and its elaboration into national forms of professional science integrated into government administration. The relationship of natural history societies to government was also gendered. Voluntary associations were largely male organizations:

⁷⁴ Daniel F. Brunton, "Origins and History of the Ottawa Field-Naturalists' Club," *The Canadian Field-Naturalist* 118, no. 1 (2004): 5.

⁷⁵ Darren Ferry, *Uniting in Measures of Common Good: The Construction of Liberal Identities in Central Canada, 1830-1900*. (Montreal and Kingston: McGill-Queen's University Press, 2008) 10; David A. Sutherland, "Voluntary Societies and the Process of Middle-Class Formation in Early-Victorian Halifax, Nova Scotia," *Journal of the Canadian Historical Association* 5, no. 1 (1994): 237-263.

they gathered upper- and middle-class men together to socialize, discuss current topics in natural history, and construct their scientific reputations in meetings, lectures, and publications.⁷⁶

In Ottawa, the Field-Naturalists' Club played a role specific to its location in the nation's capital: facilitating contacts among male members of the federal civil service who administered Canadian nature. The club, it must be noted, also welcomed women and indeed reserved half the spaces on its executive committee for them. In 1894, the year that Halkett joined, the club's three female executive members also sat on the excursion committee, with one of them listed as an excursion leader in ornithology.⁷⁷ Excursions were important club events: these were public field trips to areas of natural history interest around Ottawa and drew many women participants. Male members, however, enjoyed an additional benefit and that was the opportunity to secure professional advancement through contacts with civil service peers and superiors. For Halkett, the club facilitated contact with members who constituted a who's-who of Canada's natural-resource administration: it included key officials such as Geological Survey of Canada director George Mercer Dawson; assistant director and Survey naturalist John Macoun; Central Experimental Farm director William Saunders, and his colleague Dominion Entomologist James Fletcher (a club founder). These men

⁷⁶ Carl Berger, *Science, God, and Nature in Victorian Canada* (Toronto: University of Toronto Press, 1983) 10; Gagnon, "The Natural History Society of Montreal's Museum," 113; John Tosh, *Manliness and Masculinities in Nineteenth-Century Britain: Essays on Gender, Family and Empire* (Harlow UK: Pearson Longman, 2005) 39.

⁷⁷ *The Ottawa Naturalist*, 8 no. 1 (1894): 2; K. Stephanie A. Smith, "From Ottawa Fields to Canadian Flora," (Undergraduate Thesis, Carleton University, 2011) 14. Lianne McTavish notes that "the first women to gain entry [into natural history societies] were the wives and daughters of long-standing male members." Lianne McTavish, "Strategic Donations: Women and Museums in New Brunswick 1862-1930," *Journal of Canadian Studies* 42, no. 2 (2008): 97. This included Andrew Halkett's wife, Emma, referred to only as Mrs. Andrew Halkett, elected to the club in 1895. "Council Meeting - 1 - 1895-96," Ottawa Field-Naturalists Club Record Book, 1893-1899, MG 28-I-31, LAC.

exemplified the development of male scientific careers in the Canadian government before administrative reforms established educational standards for scientific positions. Appointed to scientific positions in Canada's civil service in the 1880s, these men would have been deemed "amateurs" in the twentieth century as they lacked advanced academic qualifications. Middle-class men with tacit scientific knowledge (save for Dawson who was degreed) they constructed careers in the government based on social and political connections, self-directed studies, practical experience, and the legitimation of their expertise in voluntary societies such as the Field-Naturalists Club.⁷⁸

When Halkett joined the Ottawa Field-Naturalists in 1894, he was thus following an accepted path to civil service advancement. It was also one restricted to men. The Canadian civil service had permitted women to enter its ranks since 1882, but they were restricted to jobs at the lowest level of clerking; only men were allowed to advance to higher positions of authority.⁷⁹ Halkett became an active member, serving in various executive positions, hosting club meetings at his residence, leading excursions and writing articles for the club journal, *The Ottawa Naturalist*. These activities helped him establish a reputation as a skilled naturalist and dependable colleague, a distinctively bourgeois model of manhood as it combined the cultured appeal of natural history and the manly middle-class values of reliability and propriety. At club meetings, Halkett demonstrated his skills in arranging and displaying natural history. At one meeting of the club's entomological branch at his own residence, Halkett exhibited "a neatly mounted

⁷⁸ Brunton, "Origins and History of the Ottawa Field-Naturalists' Club," 1-9; Vittorio G. M. Vecchi, "Science and Scientists in Government, Part II," 99-100; Amber Loydlangston, "Women in Botany and the Canadian Federal Department of Agriculture, 1887-1919," *Scientia Canadensis* 29, no. 2 (2006): 104.

⁷⁹ Banoub, "The Patronage Effect," 67.

collection of conspicuous insects put up on tablets in an original method.”⁸⁰ Halkett also served as an excursion leader on day trips to collect and study Ottawa’s local flora and fauna. These excursions, as noted above, were large public events that attracted non-members who paid a small fee to follow natural-history instructors like Halkett, who became a popular leader because he was eager to share his knowledge of Ottawa’s local wildlife. “Mr. Halkett’s enthusiasm,” *The Ottawa Naturalist* reported, “makes him always a favourite among those who attend the excursions.”⁸¹ Halkett thus established himself as a man capable of leading others into the self-improving world of nature study.

The club also afforded Halkett opportunity to establish himself as an administrator. From his entry into the club Halkett was active in its operations, serving as secretary from 1895 to 1898; vice-president in 1903-04 and 1908-10; and president in 1910-11. He also served on various committees which brought him into close contact with other civil servants. Two connections were particularly important. Through the club Halkett met John Macoun, a fellow Scots emigrant and Geological Survey naturalist. Halkett credited Macoun with directing his attention to ichthyology, which Halkett pursued in the fisheries exhibit. Perhaps the most important contact was with Edward Prince, who was a member when Halkett joined and was club president in 1897 to 1899, overlapping with Halkett’s first term as secretary. Together Prince and Halkett led club excursions and served on soirée committees; they also co-authored an article on the microscopic examination of fish-egg development, Prince’s specialization, in the exhibit

⁸⁰ “Report of the Zoological Branch, 1902,” *The Ottawa Naturalist* 17 no. 2 (May 1903): 35-36; “Meeting of the Entomological Branch,” *The Ottawa Naturalist* 18 no. 3 (March 1905): 222.

⁸¹ Lloyd, “Andrew Halkett,” 31-32; “Council Meeting No. 5, 1895-96,” Ottawa Field-Naturalists Club Record Book, 1893-1899, MG 28-I-31, LAC; “Sub-excursion to Rockcliffe,” *The Ottawa Naturalist* 19 no. 8 (November 1905): 157. One rail excursion into the Gatineau hills north of Ottawa in 1898 attracted 300 participants.

hatchery.⁸²

The presence of Macoun and Prince in the Field-Naturalists' Club suggests how different models of science, civil service, and manhood overlapped in late nineteenth century Canada. Macoun was the model of the independent field-naturalist: a self-taught naturalist who styled himself a "practical science officer," he had assumed a notable position in the Geological Survey on the strength of his reputation as a collector, established through lengthy and arduous field expeditions, and through his natural history contacts.⁸³ Rooted in a generalist tradition of natural history, Macoun scorned theorizing and specialization. He asserted the superiority of the field-collector and a generalist approach to natural history over the man ensconced indoors in a study or lab undertaking specialized studies. "I have learned that the greater always includes the less and 'Naturalist' includes 'Zoologist,'" Macoun argued.⁸⁴ Macoun also placed faith in a model of manly conduct where's one reputation and character guaranteed knowledge. When confronted by someone at a public lecture who doubted Macoun's facts, Macoun responded with a public performance: "I immediately unbuttoned my coat," Macoun related in his autobiography, "and produced my note-book and opened it and read out the remarks from it and told my interlocutor that my statements were convincing to an intelligent man and that, if they did not convince him, I was sorry for his intelligence."⁸⁵

Prince, who had been appointed Canada's senior fisheries administrator on the

⁸² See Ottawa Field-Naturalists Club Record Books, 1893-1899, 1899-1905, 1905-1910, and 1910-1923, MG 28-I-31, LAC. See also list of executives in Brunton "Origins and History," 34; Lloyd, "Andrew Halkett," 31-32; Andrew Halkett to G.J. Desbarats, 30 November 1917, RG 32, volume 119, file 391, LAC; E.E. Prince and Andrew Halkett, "The Eggs of the Fresh-water Ling," *The Ottawa Naturalist* 19 no. 12 (March 1906): 219.

⁸³ Waiser, *The Field Naturalist*, 4-8 and 172.

⁸⁴ John Macoun, *Autobiography of John Macoun* (Ottawa: Ottawa Field-Naturalists' Club, 1922) 255.

⁸⁵ *Ibid.*, *Autobiography*, 182.

strength of his university education and experience in biological work, rejected the “practical” and the appeal to personal experience. “An opinion has prevailed to a lamentable extent that fishery questions are all purely practical,” Prince argued, “and the less that science interferes the better. But no greater error is possible.” Common sense and common opinion were frequently wrong, he averred, and often were “the reverse of actual facts.” And if the field-naturalist labored outside in adverse conditions, proving his masculine endurance, authority could also be constructed by strenuous intellectual work indoors in the laboratory.⁸⁶ “[T]he more important results can be obtained only by laborious and prolonged work,” wrote Prince in 1893, “with the aid of the instruments and books provided in the laboratory itself.”⁸⁷ This view, as Dorinda Outram shows, had currency among scientists who cautioned against valorizing field work over laboratory studies. While field work was a “heroic manly endeavour,” its very mobility precluded an overview obtained through careful comparative analysis that only lab work could provide.⁸⁸

Macoun and Prince also exemplified how different forms of establishing and working within male-dominated networks overlapped. Macoun, for example, characterized how kin relationships shaped government science in Canada. He employed his sons James and William as collectors on expeditions, and both went on to occupy key scientific posts: James joined the Geological Survey as a naturalist and eventually succeeded his father as chief of the Survey’s biological division in 1918. William

⁸⁶ Robert E. Kohler, *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology* (Chicago: University of Chicago Press, 2002) 29.

⁸⁷ E.E. Prince, “A Marine Scientific Station for Canada,” *Twenty-sixth Annual Report of the Department of Marine and Fisheries 1893* (Ottawa: Queen’s Printer, 1894) cxc-cxciv.

⁸⁸ Dorinda Outram, “New Spaces in Natural History,” in *Cultures of Natural History*, N. Jardine, J.A. Secord and E.C. Spary, editors (Cambridge: Cambridge University Press, 1996) 259-261.

Macoun became Dominion Horticulturist at the Central Experimental Farm, where director William Saunders also employed his own son Charles, who gained renown as a plant breeder and crop scientist. Kinship may have also played a role in Halkett's hiring in the fisheries department: his older brother James Brooke Halkett was a second-class clerk who had joined the department in 1873. These relationships were nepotistic, but they were accepted means to hire men of similar class and standing. Whether they also promoted men with ability and talent was perhaps not a question that civil-service reformers sought to answer.⁸⁹

While ongoing Canadian civil-service reform aimed to eliminate the influence of such personal relationships on hiring, and valorize impersonal merit and expertise, the two forms of networks based on these models overlapped. Indeed both played key roles in the formation of Canada's science-state complex. Beginning in the 1890s, Prince constructed a scientific network of university-based researchers to perform fisheries research at biological stations. Men such as A.G. Huntsman, A.P. Knight, Robert Ramsay Wright, and Edmund Walker, among others, had, like Prince, university degrees and formed a male-dominated network that solidified the place of science in fisheries administration. Huntsman, for example, undertook studies at the Georgian Bay biological station before going to British Columbia on Prince's behalf to help establish the Nanaimo biological station in 1908. In 1911, Huntsman became the curator and director of the St. Andrews biological station, a post he held until 1934. But even after 1908 and the establishment of the Civil Service Commission, opportunities for men who developed

⁸⁹ Waiser, *The Field Naturalist*, 62-3; 198; Vittorio G. M. Vecchi, "Science and Scientists in Government, 1878-1896 — Part II," *Scientia Canadensis* 9, no. 2 (1985): 108-9; Canada, *The Civil Service List of Canada* (Ottawa: Queen's Printer, 1890) 133.

scientific knowledge and skills outside universities did not altogether disappear. Percy Taverner, for example, was appointed chief ornithologist to the Geological Survey of Canada in 1911, although he lacked university training. Indeed the Survey had specified a Ph.D. requirement for such scientific positions, as was the case with its hiring of American anthropologist Dr. Edward Sapir. Taverner, in contrast, was like the generation of civil servants hired in the 1880s, who had tacit skills and personal connections developed in North America's networks of natural history. Halkett was among their number.⁹⁰

3.5 Apprenticeship

Halkett's promotion from a clerk to naturalist and curator was thus not unusual; it followed a customary path through Canada's civil service that depended on skills, personal connections and gender developed in voluntary societies like the Ottawa Field-Naturalists' Club.⁹¹ What is noteworthy is that although his mentor Edward Prince was instrumental in the professionalization of Canadian fisheries administration, Prince also relied on older models of personal contacts among men to effect Halkett's promotion in the Fisheries Museum. Indeed Prince emphasized Halkett's middle-class masculine attributes rather than his scientific abilities as the primary basis for his trust in the middle-aged clerk. "[Halkett] is most economical," Prince wrote in support of Halkett, "and no man is more trustworthy in this matter." Halkett evinced propriety, temperance, and

⁹⁰ Hubbard, *Science on the Scales*, 63-65; Waiser, *The Field Naturalist*, 82; M G. Ainley, "From Natural History to Avian Biology: Canadian Ornithology, 1860-1950," (PhD, McGill University, 1985) 104; Andrew Nurse, "The Ambiguities of Disciplinary Professionalization: The State and Cultural Dynamics of Canadian Inter-War Anthropology," *Scientia Canadensis* 30, no. 2 (2007): 41.

⁹¹ The promotion was an apparent one: Halkett remained classified as a "Second Class Clerk in the Inside Service."

diligence, qualities associated with the bourgeois habitus which William Henry Flowers had identified as essential for curatorship.⁹²

Flowers, director of the British Natural History Museum, was a leading proponent of the New Museum movement. New Museum advocates, including George Brown Goode, called for transforming musty and cluttered natural history museums into bright and open centers of research and public education. American ichthyologist and museum administrator George Brown Goode, another New Museum advocate, called on museum curators to clear clutter, apply judicious labels, and rigorously organize displays for public education. “The museum of to-day,” Goode wrote in 1889, “is no longer a chance assemblage of curiosities, but rather a series of objects selected with reference to their value to investigators, or their possibilities for public enlightenment.”⁹³ Purging lingering traces of irrationality and prurient interest in oddities and rarities, the New Museum proposed an orderly depiction of nature that directed visitors’ attention to the progressive movement of western civilization. By disciplining the collection, New Museum advocates hoped to improve the museum’s educative function and, as Tony Bennett argues, intensify its ability to inculcate visitors into voluntary self-regulation, the moral foundation of liberalism.⁹⁴

Marking, as Tony Bennett remarks, a “distinctive phase in the professionalization of museum practice and administration,” New Museum advocates stressed the importance of the curator in this project and called for new standards for the position.⁹⁵

“What a museum really depends upon for its success and usefulness is not its building,

⁹² E.E. Prince, memorandum, c. 1896, RG 23, volume 311, file 2539, LAC

⁹³ G B. Goode, *Museum-History and Museums of History* (New York: The Knickerbocker Press, 1889) 263-64.

⁹⁴ Bennett, *Birth of the Museum*, 63.

⁹⁵ Tony Bennett, *Pasts Beyond Memory: Evolution, Museums, Colonialism* (London: Routledge, 2004) 33

not its cases, not even its specimens,” wrote William Henry Flower, “but its curator.” The curator tamed the museum’s material profusion, disciplined its research and display activities, and brought systematic and instructional order to the collection. This work was conceived in gendered terms with the ideal curator possessing the attributes of the model bourgeois male: “[s]kill, manual dexterity, and good taste,” plus punctuality, manners, and above all training. “His education,” wrote Flower, “in fact, must be not dissimilar to that required for most of the learned professions.”⁹⁶

Until Prince assumed his position as Dominion Fisheries Commissioner, the fisheries exhibit had never had a curator. Prior to Halkett the men assigned to care for the collection were styled “caretaker” or “officer-in-charge” and several had proven undependable while tending the collection at international exhibitions. “In London & Chicago,” Prince later reported, “the men sent by the Dept proved unsteady and in fact were found on several occasions intoxicated.”⁹⁷ Such men were the reason the collection was in such a bad state. As a basis for authority, Halkett’s character was an essential ground for undertaking work in the fisheries collection in 1895. That Prince conceived of Halkett not as a care-taker, but a scientific worker also helped re-conceptualize Wilmot’s collection as a site for research and science. The collection and museum were nevertheless in a state of disrepair and Halkett, under Prince’s direction, undertook what can best be described as an apprenticeship to reform the museum.

The apprenticeship developed Halkett’s skills as a government naturalist and curator; it was a drawn-out process as Halkett was assigned to duties that took him

⁹⁶ W. H. Flower, *Essays on Museums and Other Subjects Connected with Natural History* (London: Macmillan, 1898) 12, 35-36.

⁹⁷ E.E. Prince, memorandum, c. 1896, RG 23, volume 311, file 2539, LAC. The emphatic underlining is Prince’s.

outside the fisheries collection for long periods of time, materially slowing its reform. In 1896, Halkett was sent to the Bering Sea to observe a contentious seal hunt; in 1900, he was appointed to organize Canada's national natural history display at Paris's "Exposition Universelle." These assignments gave Halkett invaluable experience as a "scientific" field-naturalist and as a curator of a natural history exhibit. They helped establish Halkett's reputation as a diligent agent of the state and further burnished his reputation as a popular public naturalist in Ottawa's natural history community. They also show Halkett navigating between scientific and popular modes of natural history—two overlapping and contrasting bases for his authority.

In 1896, Andrew Halkett was assigned to his first field expedition as a naturalist. For four months, Halkett served as an observer aboard a Canadian sealing schooner as it hunted seals on the open waters of the Bering Sea. The sea, part of the northwestern Pacific Ocean, was the site of a valuable seal fishery centered on the Pribilof Islands, which the United States acquired when it purchased Alaska in 1867. The islands were the rookeries or breeding grounds for the northern fur seal, whose coat had become a valuable item in European trade in the eighteenth century. Increased hunting on land and at sea in the late nineteenth century, however, threatened the seal population. The United States banned fishermen from landing on the islands to kill seals in 1869, but seal hunting on the high seas continued. In the 1880s, Americans claimed that Canadian fishermen were killing too many female seals, which fed in the open sea, thus endangering the whelping seal pups that remained on land. In the early 1890s, after American seizures of Canadian vessels, United States, Britain, and Canada entered negotiations to resolve the

issue of pelagic sealing.⁹⁸ An international tribunal ruled in 1893 to allow the United States to establish a 60-mile buffer zone around the islands to exclude Canadian sealers. The tribunal also established regulations for the fishery, including a close season and a ban on firearms.

The ruling, however, did not end the dispute as Britain and Canada challenged the regulations and American claims to jurisdiction in international waters. To resolve the impasse, the American, British, and Canadian governments agreed to a survey of the Bering Sea seal fishery and sent investigators to examine the fishery firsthand. The Canadian “expert and scientific inquiry” comprised Halkett and the Geological Survey’s James Macoun (son of John Macoun), fellow members of the Ottawa Field-Naturalists’ Club. Macoun went to the Pribilof Islands to examine the seal rookeries on land, while Halkett was detailed to examine female seals at sea. His task was to determine the relation of killing female seals to what the Canadian government called “the alleged abnormal mortality of [seal] pups upon the island.”⁹⁹

The assignment allowed Halkett to demonstrate his value as a scientific observer. During the four-month voyage, Halkett kept a log, recording weather, sea conditions, and nautical position. He made detailed observations of the seals taken by the vessel’s crew, logging the number killed, sex, and stomach contents. If the seal was female, Halkett examined the uterus and also noted the condition of the milk. These quantitative observations were the sort made by field ecologists conducting life-history studies: collated into a report, illustrated with charts and tables, they formed an authoritative

⁹⁸ Kirkpatrick Dorsey, *The Dawn of Conservation Diplomacy: U.S.-Canadian Wildlife Protection Treaties in the Progressive Era* (Seattle: University of Washington Press, 1998) 115 and 125.

⁹⁹ Privy Council Minutes, 1 July - 4 July 1896, RG 2, Series 1, volume 693, LAC.

scientific account of the impact of Canadian sealing on seal populations, one that the Canadian government believed vindicated its position. In the end, both Halkett's and Macoun's reports were contradicted by the American studies, which led to a settlement of the dispute by other means. The assignment nevertheless afforded Halkett the opportunity to demonstrate to fisheries officials that he could produce quantitative scientific work and establish his authority as a reliable investigator.¹⁰⁰

The seal inquiry also permitted Halkett to burnish his reputation as a popular and public naturalist. In a series of three articles in *The Ottawa Naturalist* series, which appeared between 1896 and 1898, Halkett gave an account that neither mentioned the seal controversy nor his role as an observer. Instead Halkett provided a natural-history travelogue of his rail journey westward from Ottawa to British Columbia, and the sea voyage north from Victoria to Alaska. The articles were in a style that would have been familiar to readers of the *Naturalist*: a collection of passing observations about nature sightings and, as Carl Berger puts it, “accounts of human activity and anecdotes concerning the observer as well as the observed.”¹⁰¹ Halkett provided descriptions of “heaps of Buffalo bones” on the prairies and “Chinamen making the tin cans” in Fraser River salmon canneries. Halkett also displayed his observational skills and wide familiarity with different species of birds, reptiles, mammals, and plants, and his interest in collecting live animals. On the Prairies he found a garter snake and kept it in his razor case; in Victoria, he collected crabs and tent caterpillars; and on the sea voyage north he briefly captured a jelly-fish, which he placed in a glass vessel “in order to watch its

¹⁰⁰ Andrew Halkett, “Observations as to seal life Behring Sea,” unpublished report, 1896, RG 23, volume 12, LAC; Dorsey, *Conservation Diplomacy*, 127; Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995), viii.

¹⁰¹ Berger, *Science, God, and Nature*, 14; Juan Francisco Ilerbaig, “Pride in Place: Fieldwork, Geography, and American Field Zoology, 1850-1920” (PhD, University of Minnesota, 2002) 13.

graceful motions, and examine its structure.”¹⁰²

This generalist approach to natural history made Halkett a popular excursion leader in the Ottawa Field-Naturalists’ Club, which recognized his talent for sharing his sense of delight and wonder with the public on club excursions. *The Ottawa Naturalist* that “Mr. Andrew Halkett...is never so happy as when his pockets are bulging out with every creeping and crawling insect he can find.”¹⁰³ Emotional enthusiasm for nature’s aesthetic qualities, however, was also seen as evidence of amateurism by some male scientists. As Mark Barrow notes in regards to American ornithology, male “scientific ornithologists” resisted and denigrated aspects of popular ornithology such as bird-watching and the Audubon movement, which drew many women followers.¹⁰⁴ Popular appreciation of nature could veer from the romantic and sentimental to the anthropomorphic, a range marked by a loss of detachment and objectivity, and indulgence in the feminine qualities of sentiment and emotion.¹⁰⁵ As Bernard Lightman has argued, however, popularizers of science and natural history such as Halkett offered different ways of speaking about nature. Using different narrative forms, they focused on personal encounters and experiential knowledge as a way of knowing nature and were probably “more important than the professional in shaping the public image of science.”¹⁰⁶ Although such anecdotal reportage may have been denigrated in some

¹⁰² Andrew Halkett, “An Ottawa Naturalist’s Journey Westward,” *The Ottawa Naturalist* 10 no. 6 (September 1896): 114-115; Andrew Halkett, “An Ottawa Naturalist’s Journey Westward, III” *The Ottawa Naturalist* 12 no. 4 (July 1898): 83.

¹⁰³ “Sub-excursions,” *The Ottawa Naturalist* 20 no. 3 (June 1906): 66.

¹⁰⁴ Mark V. Barrow, *A Passion for Birds: American Ornithology After Audubon* (Princeton: Princeton University Press, 1998) 157 & 180.

¹⁰⁵ Carolyn Korsmeyer, “Amateurs and Professionals” in *Gender and Aesthetics: An Introduction* (New York & London: Routledge, 2004) 67-73.

¹⁰⁶ Bernard Lightman, “‘The Voices of Nature:’ Popularizing Victorian Science,” in *Victorian Science in Context*, edited by Bernard Lightman (Chicago: University of Chicago Press, 1997) 191-96. As the “Nature

quarters, it built authority among a different audience at the same time. Halkett showed that he could speak in both registers: as a scientific investigator and as a popular naturalist.

After his return from British Columbia, Halkett's apprenticeship and Prince's plan to reform the exhibit appeared to stall. In 1897, the fisheries exhibit was again placed under the supervision of a caretaker and Halkett was re-assigned to unspecified duties.¹⁰⁷ In 1899, Andrew Halkett was appointed curator of Canada's natural history display for Paris's "Exposition Universelle." The exhibition resumed Halkett's informal apprenticeship, providing him with valuable experience in assembling and supervising a natural history exhibit. It also gave Halkett a closer look at the fisheries collection as he decided what elements of the collection would be used in Paris. Surveying the collection's mounted and alcohol specimens, Halkett determined that many were unsuitable for international exhibit. The alcohol specimens—fish preserved in glass jars filled with alcohol or formalin—were "costly to transport and very fragile," and so remained in Ottawa. Many of the mounted specimens of both fish and birds were doubtful as well. Halkett warned that they were made using out-of-date methods and styles and would not bear comparison to new types of taxidermy. The museum's collection of aquatic birds, in particular, were in bad shape. "Some of them if removed from the cases and placed on separate stands would be passable as specimens," wrote Halkett, "but others, such as the gulls, are very inferior from an artistic stand point."¹⁰⁸ Halkett turned to other sources to complete the Paris display, and negotiated with a

Fakers" controversy showed popular nature writing--especially animal stories--was also contested. See Ralph A. Lutts, *The Nature Fakers: Wildlife, Science and Sentiment* (Golden: Fulcrum Publishing, 1990).

¹⁰⁷ Deputy Minister of Fisheries to Andrew Halkett, 20 March 1897, RG 23 volume 260, file 1708, LAC.

¹⁰⁸ Andrew Halkett, memorandum, 19 May 1899, RG 23, volume 311, file 2359, Reel T-4007, LAC.

taxidermist in Winnipeg who provided almost 100 specimens of mounted birds. Halkett considered them good enough to include in the permanent collection, an indication he was considering the museum's renovation as he prepared for Paris.¹⁰⁹

Once in Paris, Halkett arranged the display into an exhibit of the "sporting resources of the Dominion of Canada."¹¹⁰ By the late nineteenth century angling and hunting were recognized in Canada as not merely being suitable recreations for members of the bourgeoisie, but also as desirable forms of economic activity that created jobs and generated revenue.¹¹¹ *The Canadian Magazine* noted the prominent place Halkett gave recreation in the exhibit, which was a collection "of just such species...as are most likely to excite the attention and arouse the envy of every lover of rod and gun."¹¹² The most notable element among the displays of fish and birds was a selection of trophy mammal heads. Models of manly prowess, the trophies represented Canada as a sportsmen's paradise that lured potential emigrants and hunters with visions of unlimited game. As supplements to exhibits of animals in zoological or systematic order, such as the fisheries exhibit provided, the trophies intensified the representation of nature as one that sustained a male-dominated political and social order.¹¹³

¹⁰⁹ Andrew Halkett to J.G. Jessup, 2 October 1899, RG 23, volume 311, file 2359, Reel T-4007, LAC; Andrew Halkett, memorandum, 19 May 1899, RG 23, volume 311, file 2359, Reel T-4007, LAC.

¹¹⁰ Canada, *Thirtieth Annual Report of the Department of Marine and Fisheries 1897* (Ottawa: Queen's Printer, 1898) xxxvii-xxxviii.

¹¹¹ William Knight, "'Our Sentimental Fisheries': Angling and State Fisheries Administration in 19th century Ontario," (MA thesis, Trent University, 2006) 103-106.

¹¹² W. R. Stewart, "Canada at the Paris Exposition," *The Canadian Magazine* 25 (September 1900): 391-394.

¹¹³ John M. Mackenzie, *The Empire of Nature: Hunting, Conservation and British Imperialism* (Manchester: Manchester University Press, 1988) 30; Tina Loo, "Of Moose and Men: Hunting for Masculinities in British Columbia, 1880-1939," *Western Historical Quarterly* 32 (2001): 296; Nigel Rothfels, "Trophies and Taxidermy," on *Gorgeous Beasts: Animal Bodies in Historical Perspective*, edited by Joan B. Landes, Paula Young Lee and Paul Youngquist (University Park: Pennsylvania State Press, 2012) 134; Matthew Brower, "Trophy Shots: Early North American Photographs of Nonhuman Animals and the Display of Masculine Prowess," *Society and Animals* 13, no. 1 (2005): 22.

When the Paris exhibition closed, Halkett gained further experience in managing a natural history collection. Supervising its packing and shipment, Halkett accompanied the collection to Glasgow where the same display was installed for that city's exhibition in the spring of 1901.¹¹⁴ On Andrew Halkett's return from Europe in 1901, with fresh international exhibition experience, the fisheries department renewed its intention to reform the fisheries collection. The department declared that "scientific aspects of the fisheries will be given more adequate representation under the skilled superintendence of Professor Prince." Halkett was assigned to carry out the transformation and replace Wilmot's "admittedly incomplete" collection with "a more worthy display."¹¹⁵ After Paris, the fisheries department also began to limit the circulation of the fisheries collection to international exhibitions. Only eight cases of mounted fish were sent to the Pan-American Exposition in Buffalo in 1901. In 1902 the fisheries department declined an invitation to participate in the International Congress of Fisheries and Fish Culture scheduled for St. Petersburg, Russia. The Fisheries Museum collection was in such a state of disrepair that "there would not be time to get up a new and worthy exhibit."¹¹⁶

After Paris, Halkett assumed more responsibility for the museum's operation and renovation before being officially designated as its curator. As Halkett reshaped the museum, he also reshaped himself from a clerk into a professional curator. Halkett's transformation was enacted in a range of activities. It occurred in Halkett's supervision of quotidian duties such as ordering supplies, engaging in correspondence, and overseeing

¹¹⁴ Canada, *Thirtieth Annual Report of the Department of Marine and Fisheries 1897* (Ottawa: Queen's Printer, 1898) xxxviii; Frank Yeigh, "Canada at the Glasgow Exhibition," *The Canadian Magazine* 17 no. 6 (1901): 534.

¹¹⁵ Canada, *Thirty-third Annual Report of the Department of Marine and Fisheries 1900* (Ottawa: Queen's Printer, 1901) xxxvii.

¹¹⁶ E.E. Prince, memorandum, 15 October 1901, RG 23 volume 311, file 2359, LAC.

display-case construction. It was also enacted in Halkett's performance of more critical museological tasks, including collecting specimens, identifying fish, visiting other natural history museums, and developing contacts with other curators.

Particularly important was Halkett's attempts to create a network of curators, collectors, and correspondents. Exchanges of specimens and information among museum curators facilitated the expansion of collections; they also provided opportunities to raise museum and curatorial profiles.¹¹⁷ Acts of exchange and correspondence, as Leanne MacTavish notes, were almost as important as the objects involved as they conferred legitimacy and established relationships.¹¹⁸ Halkett initiated the first such contacts in the collection's history, forwarding fish specimens sent to him by an Ontario doctor to U.S. Fish Commission ichthyologist Barton Evermann for identification. Evermann, who along with David Starr Jordan produced the standard reference *Fishes of North and Middle America*, provided the identification and advised Halkett that he would "always be glad to identify any fishes you have any trouble with."¹¹⁹ Halkett went on to conduct further correspondence with Evermann, turning to him resolve other fish identification problems.

Personal curatorial connections were also developed through museum visits, another technique that established networks and validated reputations. Curators toured other museums to keep abreast of emerging trends and standards in exhibitions,

¹¹⁷ Sally G. Kohlstedt, "International Exchange and National Style: A View of Natural History Museums in the United States, 1850-1900," in *Scientific Colonialism: A Cross-Cultural Comparison*, edited by Nathan Reingold and Marc Rothenberg (Washington: Smithsonian Institution Press, 1987) 167.

¹¹⁸ Leanne MacTavish, *Defining the Modern Museum* (Toronto: University of Toronto Press, 2013) 27-37.

¹¹⁹ Andrew Halkett to Barton Evermann, 3 July 1903, RG 23, volume 321, file 2698, Reel T-4006, LAC; Barton Evermann to Andrew Halkett, 22 August 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC.

collections, and administration, as well as to develop relationships.¹²⁰ Halkett undertook his first museum visits before his return to Ottawa in 1900 with a short tour of museums in England after the end of the Paris exhibition. Instructed to “carry on certain scientific work,” Halkett visited the London Zoological Gardens and the Liverpool Museum. It is unclear what work Halkett carried out or who he connected with in London, where he was invited “to receive a shock from an electric eel,” but in Liverpool the museum’s curator H.O. Forbes gave Halkett two specimens of African lungfish.¹²¹ The gift bound him and the Fisheries Museum to Forbes and the Liverpool Museum through an obligation that “created and reinforced a web of connections.”¹²²

Halkett also set out to develop a network of collectors in the manner of Spencer Fullerton Baird, the Smithsonian director who established a continent-wide collecting network in the mid-nineteenth century. Halkett recruited collectors among his correspondents, including the doctor who had forwarded fish specimens for identification. Halkett asked him to collect more fish and made similar requests, including of a Quebec man who Halkett asked to obtain “first class specimens of Natural History.” Halkett particularly wanted skins of water birds and the bleached skeletons of whales and seals, which “if nicely prepared would add much to the interest of the

¹²⁰ Victoria E. M. Cain, “Nature Under Glass: Popular Science, Professional Illusion and the Transformation of American Natural History Museums, 1870-1940,” (PhD, Columbia University, 2007) 71-72.

¹²¹ F. Gourdeau to Auditor General of Canada, 16 October 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett, “An African Dipnoid Fish,” *The Ottawa Naturalist* (November 1901): 184-187; Andrew Halkett, “Some curious facts about fishes,” *The Ottawa Naturalist* 20 no. 12 (March 1907): 229-235. Halkett accepted a second invitation to receive a shock from an electric fish, this time from a catfish in the Liverpool museum. The fish gave Halkett such a violent shock that he averred that he “would not again care to repeat the experiment.”

¹²² McTavish, *Defining the Modern Museum*, 33.

Museum collection.”¹²³ The man agreed, though it is unclear if he ever forwarded any specimens. Halkett began as well to overhaul the museum’s collection: he ordered several new mounted specimens from a local taxidermist and three large copper tanks to ship dead and live specimens collected from Lake Ontario commercial fishermen. When Halkett heard of fish trapped by ice against a local dam, he went to investigate and returned with live specimens for the hatchery and dead ones for the museum collection. By 1902, Halkett was referring to the collection as “the Canadian Fisheries Museum,” a name that was not in current use by the fisheries department.¹²⁴

In 1903, the fisheries department bestowed the title “Curator of the Exhibit Room and the Hatchery” on Halkett, although technically he remained classified as a clerk.¹²⁵ After his appointment Halkett embarked on a more ambitious renovation of the exhibit. Between February and May, he had the Fisheries Building cleared of “superfluous material,” ordered the construction of new display cases and aquariums, and consulted an architect to determine a layout for an attractive and educational exhibit.¹²⁶ Halkett also began to address more fundamental problems with the exhibit’s specimens, turning first to the exhibit’s wet collection. This collection consisted of fish and other aquatic creatures preserved in sealed glass jars filled with a fluid alcohol or formalin solution. This type of preservation stabilized bodies and preserved morphological characteristics

¹²³ Andrew Halkett to Dr. F.T. Bowlby, 9 October 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett to G.W. Willis, 15 July 1902, RG 23, volume 321, file 2698, Reel T-4006, LAC.

¹²⁴ Andrew Halkett, memorandum, 9 October 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett, memorandum, 1 October 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett, “Tanks for Alcoholics,” n.d, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett, memorandum, 11 November 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett, memorandum, 29 March 1901, RG 23, volume 321, file 2698, Reel T-4006, LAC; Andrew Halkett to G.W. Willis, 15 July 1902, RG 23, volume 321, file 2698, Reel T-4006, LAC.

¹²⁵ F. Gourdeau to Andrew Halkett, 19 February 1903, RG 23, volume 260, file 1708, LAC.

¹²⁶ See “Weekly Reports Fisheries Museum,” 28 February 1903 to 2 May 1903, RG 23, volume 337, file 2948, LAC.

better than mounting. As well, labels were usually attached to wet specimens which gave important data concerning species and capture location, data that mounted fish often lacked. Alcohol specimens were thus more useful, and considered more scientific than mounted specimens because they afforded comparative study and allowed researchers to plot geographic distributions. Halkett's investment in their renovation matched the value he attached to them: he spent several weeks emptying jars, cleaning the specimens, and "putting them up anew" in fresh preservative.¹²⁷ "[I]t is my intention to examine anew every specimen of fish in the museum," he wrote the year after his appointment as curator, "and to rectify, as far as possible any shortcomings of the past."¹²⁸

Halkett's status as a curator was bolstered when the fisheries department hired a labourer and a caretaker to relieve him from mundane work. Halkett would oversee the subordinate staff and ensure the museum was "conducted in such a manner as to leave no cause for complaint from any of the numerous visitors."¹²⁹ Extra staff were needed to protect the collection from unruly visitors: it was expected that the caretaker's time would be absorbed in polishing the brass rail that separated visitors from exhibits and dissuading them from "improperly using their umbrellas" to touch objects.¹³⁰ Halkett's own middle-class propriety guaranteed the museum's respectability and was put to the test when an unnamed hatchery worker arrived one morning apparently intoxicated. Halkett sent the man home and reported that such incidents had "a most demoralizing

¹²⁷ Andrew Halkett, memorandum, 7 March 1903, RG 23, volume 337, file 2948, LAC; Andrew Halkett, memorandum, 23 June 1903 and 25 April 1903, RG 23, volume 337, file 2948, LAC.

¹²⁸ Canada, "Report of the Canadian Fisheries Museum," *Thirty-eighth Annual Report of the Department of Marine and Fisheries 1904* (Ottawa: King's Printer, 1905) 362.

¹²⁹ F. Gourdeau to Andrew Halkett, 19 February 1903, RG 23, volume 260, file 1708, LAC.

¹³⁰ Memorandum, 20 June 1904, RG 23, volume 260, file 1708, LAC.

effect.”¹³¹

The most important initiative, however, was Halkett’s announcement that he had started “making a full systematic list of the fishes” of Canada.¹³² This represented an important change in the conception of the fisheries collection. Samuel Wilmot had built the exhibit collection around a select group of commercially important species of fish with exceptions made for some curious and over-size specimens. As a representation of Canada’s fish fauna, it was incomplete and also rife with mistakes as J. F. Whiteaves’ catalogue of the collection for the 1886 Colonial and Indian Exhibition had revealed. Instead, Halkett proposed a complete zoological fauna, a collection and catalogue of fish that plotted species to political territory regardless of commercial value. It would be a comprehensive inventory, systematically arranged.

3.6 Conclusion

Between 1895 and 1903 Andrew Halkett emerged as an active agent of the fisheries department and began to undertake work in two capacities: as a scientific naturalist and exhibit curator. These two roles were mutually reinforcing: experience and authority gained in one field helped consolidate them in the other, helping to deepen Halkett’s claim to expertise. They also proved his versatility and ability to work in different modes of natural history. Halkett had established himself in fisheries commissioner Edward Prince’s estimation as a trustworthy natural historian, an agent of the state, capable of undertaking politically charged field studies and nationally-themed

¹³¹ F.J. Gourdeau to Andrew Halkett, 19 February 1903, RG 23, volume 260, file 1708, LAC; Andrew Halkett to F.J. Gourdeau, 17 April 1903, RG 23, volume 260, file 1708, LAC.

¹³² Ibid.

exhibition curation. After Halkett's return from Paris, the engagement of the two men deepened when Prince again installed Halkett in the exhibit. As I show in the following chapters, Halkett began the reforms that Prince had earlier articulated: transforming Samuel Wilmot's static collection of damaged objects and mislabeled specimens into a museum and a national institution. This project became the central focus of Halkett's career. It also became a test of the material and conceptual limits of modeling fish and fisheries as part of a national nature.

Chapter Four: Collecting and the Scientific Field Naturalist

After British naturalist William D'Urban made a natural history expedition to the United Provinces of Canada in the late 1850s, he noted the challenges of collecting fish during a field trip northeast of Ottawa. He described “the extreme difficulty of transporting alcoholic specimens across the portages,” which limited his collection to only a few fish specimens. Institutional and bibliographic gaps compounded D'Urban's ichthyological woes. His ability to study the fish was hampered, he lamented, by “the total absence in this country of any collection worth mentioning of North American fish, with which the specimens collected could be compared, and the want of some good and complete work on the subject.”¹ By the late nineteenth century the ichthyological picture remained much the same in Canada: while large collections were available for consultation in American museums, Canadian institutions offered little to naturalists. Provincial and university museums, as well as natural history societies, had small collections of fish, but there was no centralized national collection or catalogue. And while the fisheries museum contained a “nucleus of a collection of Canadian fishes,” it was, Halkett reported, far from being “a thoroughly representative one.” In the early 1900s, Andrew Halkett embarked on a project to renew the museum. The central object was to broaden the

¹ W.S.M. D'Urban, “Observations on the Natural History of the Valley of the River Rouge and surrounding Townships in the Counties of Argenteuil and Ottawa,” *The Canadian Naturalist and Geologist* 4 (1859): 252-276

collection and compile a “full systematic list” of fish found in Canada.²

At the end of the nineteenth century, museum collecting and cataloguing helped consolidate natural history knowledge and national expansion in North America. Collections and catalogues asserted epistemological control over nature: they mapped plants and animals to national territory, expressing the state as the essential container of nature. Collecting and cataloguing did not just establish extensive national museum collections: they also established curatorial identities and authority. Just as Renaissance naturalists had once fashioned their identities through their private collections, state naturalists in the nineteenth century established theirs in the construction of national collections.³ Collecting and cataloguing worked together: collecting was itself a process of self-fashioning with the catalogue providing textual proof of skill and knowledge. As Samuel Alberti notes, catalogues are “imbued with considerable authority;” they permitted collections to circulate and thus build curatorial reputations.⁴ As this chapter shows, however, Andrew Halkett’s effort to build the Fisheries Museum national collection was contingent on access to collecting opportunities; moreover, different forms of collecting produced different forms of authority.

In this chapter, I examine Halkett’s collecting practices in relation to his ongoing

² Andrew Halkett, memorandum, 23 June 1903, RG 23, volume 337, file 2948, LAC; Andrew Halkett, memorandum, 7 March 1903, RG 23, volume 337, file 2948, LAC; Andrew Halkett to F.J. Gourdeau, 17 April 1903, RG 23, volume 260, file 1708, LAC.

³ On Renaissance collectors and catalogues see Paula Findlen, *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy*, (Berkeley: University of California Press, 1996) 36; Arthur MacGregor, *Curiosity and Enlightenment: Collectors and Collections From the Sixteenth to the Nineteenth Century* (New Haven: Yale University Press, 2007) 60-62; E.W. Gudger, "The Five Great Naturalists of the Sixteenth Century: Belon, Rondelet, Salviani, Gesner, Andaldrovandi: A Chapter in the History of Ichthyology," *Isis* 22, no. 1 (1934): 21-40. On collecting and identity see Sharon Macdonald, “Collecting Practices,” in *Companion to Museum Studies*, ed. Sharon Macdonald (Chichester UK: Wiley, 2008) 85; Susan M. Pearce, *On Collecting: An Investigation Into Collecting in the European Tradition* (London: Routledge, 1995).

⁴ Samuel J. M. M. Alberti, *Nature and Culture: Objects, Disciplines and the Manchester Museum* (Manchester: Manchester University Press, 2009) 132.

formation as a government curator and naturalist. Halkett relied on two types of collecting as he labored on his national ichthyological catalogue: opportunistic collecting and expedition collecting. Opportunistic collecting, which relied on gifts and occasional purchases, lacked direction and threatened to turn the museum into a cabinet of curiosities. At the same time, it supported Halkett's identity as a popular naturalist, an expert generalist in local nature study. This form of authority had helped Halkett shift from clerical to naturalist work, but was under pressure as professionalization valorized more specialized expertise. Expedition collecting offered to construct this new type of authority. Expeditions were used to specify nature at the national scale and project sovereignty; they were also masculine enterprises that helped model authority through direct encounters with nature. Halkett's participation in an Arctic expedition in 1903-4 provided an opportunity to identify himself as a "scientific field naturalist," a manly and authoritative figure in service to the state. In 1907 and 1908, Halkett undertook further collecting expeditions to western Canada. At the same time that he was collecting to expand the Fisheries Museum collection, Halkett was also identifying opportunities to introduce non-native species of fish. This acclimatization work shows Halkett and the Fisheries Museum working as agents of ecological change—and how authority could be risked when non-native introductions failed or were opposed.

4.1 Mapping National Fish

Halkett's proposed catalogue belonged to a longer tradition of natural history description and enumeration. Collectors and naturalists had been publishing catalogues of

their private collections since the fifteenth and sixteenth centuries.⁵ In the eighteenth century, catalogues of plants and animals collected during imperial expeditions began to appear. Listing organisms according to the Swedish naturalist Linnaeus' classification system, these catalogues also described plants and animals in relation to geography. The terms “flora” and “fauna” came to mean, respectively, a descriptive catalogue of plants and animals of specific locales.⁶ In the nineteenth century, governments started producing faunal catalogues as they began to assess, and administer, their territorial domains. In North America, American state geological surveys were the first government agencies to inventory zoological resources and publish lists of fish as part of larger reports.⁷ Colonial governments in British North America followed suit with New Brunswick being the first with Moses Perley’s “Descriptive Catalogue of the Fishes of New Brunswick and Nova Scotia” (1851). Catalogues from United Provinces of Canada followed in 1862 and from Nova Scotia in 1866. After Confederation, faunal catalogues in Canada were produced at the provincial scale, including Ramsay Wright’s “Preliminary Report on the Fish and Fisheries of Ontario” (1892) and Philip Cox’s “Catalogue of the Marine and Freshwater fishes of New Brunswick” (1896).⁸

⁵ Findlen, *Possessing Nature*, 36.

⁶ Janet Browne, *The Secular Ark* (New Haven: Yale University Press, 1983) 26-29. “To write a Linnean-style *Flora* or *Fauna*,” writes Janet Browne, “was to describe a self-contained and precisely located assemblage of organisms.”

⁷ George S. Myers, “A Brief Sketch of the History of Ichthyology in America to the Year 1850,” *Copeia* 1964, no. 1 (1964): 33-41. Carl L. Hubbs, “History of Ichthyology in the United States After 1850,” *Copeia* 1964, no. 1 (1964): 42-60; David Starr Jordan, “The History of Ichthyology,” *Science* 16, no. 398 (1902): 241-258.

⁸ J. R. Dymond, “A History of Ichthyology in Canada,” *Copeia* 1964, no. 1 (1964): 2-33; Moses Perley, “Descriptive Catalogue [in part] of the Fishes of New Brunswick and Nova Scotia,” *Report upon the fisheries of the Bay of Fundy* (Fredericton: J. Simpson, Queen’s Printer, 1851); Pierre Fortin, *Annual Reports of Pierre Fortin Esq. Magistrate, in Command of the Expedition for the Protection of the Fisheries in the Gulf of St. Lawrence, during the seasons of 1861 and 1862* (Quebec: Hunter, Rose & Lemieux, 1863); Thomas F. Knight, *Descriptive Catalogue of the Fishes of Nova Scotia* (Halifax: A. Grant, Queen’s Printer, 1866); J. M. Jones, “List of the fishes of Nova Scotia,” *Proceedings and Transactions of the Nova*

Faunal knowledge was not just a matter of chauvinistic pride: it also had political uses. Collections and catalogues made nature intelligible to governments: they evidenced, and made possible, the epistemological control of territory. They provided, in Sally Kohlstedt's words, "material metonymic proofs of conquest, proprietorship, and ultimately incorporation."⁹ Collections and catalogues were thus instruments of state formation: they registered nature as natural resources for exploitation and extended state capacities for rule. Faunal survey was homologous to human census as it made natural populations legible as a political resource. The census, as Bruce Curtis notes, made or modeled population, a previously invisible quality of political territory, into a visible and coherent social object that made it available for "projects of rule."¹⁰ The census was essential to the emergence of the modern state: an argument that also has application to the administration of nature, particularly fisheries administrations which emerged in the mid-nineteenth century to regulate fishing in response to conflicts over access and fluctuations in productivity.

The link between human census, faunal survey, and fisheries was made explicit when the U.S. Fish Commission collaborated with the federal census bureau to produce a faunal catalogue as part of the tenth federal census in 1880. The project was prompted by the Halifax Commission of 1877 which, under the terms of the 1871 Treaty of Washington, ordered the United States to pay Canada compensation for access to

Scotian Institute of Natural Science, 5 no. 1 (1879): 87-97; Ramsay Wright, "Preliminary Report on the Fish and Fisheries of Ontario," in *Ontario Game and Fish Commission* (Toronto: 1892); Philip Cox, "Catalogue of the marine and freshwater fishes of New Brunswick," *Bulletin of the Natural History Society of New Brunswick* 8 (1896): 62-75.

⁹ Sally Gregory Kohlstedt, "Place and Museum Space: The Smithsonian Institution, National Identity, and the American West, 1846-1896," in *Geographies of Nineteenth Century Science* edited by David N. Livingstone and Charles W.J. Withers (Chicago: University of Chicago Press, 2011) 404.

¹⁰ Bruce Curtis, *The Politics of Population: State Formation, Statistics, and the Census of Canada, 1840-1875* (Toronto: University of Toronto Press, 2001) 3.

Canadian fishing grounds. The Halifax award was decided in part on the basis that Canada exhibited a more complete statistical knowledge of its fish and fisheries. The award embarrassed the Americans and prompted the U.S. Fish Commission to embark on a massive survey project, which resulted in *The Fisheries and Fishery Industries of the United States* (1884-1890). The multi-volume work, a “general survey of the aquatic resources, actual and possible, of the United States,” provided a synoptic view of American fisheries captured in statistical tables, illustrations, and essays. The first volume provided an illustrated ichthyological catalogue that specified America’s fish fauna.¹¹

Faunal knowledge was also deployed in a jurisdictional dispute over fisheries within Canada. Unhappy with federal fisheries administration in the late nineteenth century, the Ontario government established a fish and game commission in 1890 to assess provincial fisheries. Described as a “province-wide protest in favour of conservation,” the commission was a rallying point for middle-class anglers who sought to privilege recreational fishing over commercial, subsistence, and native fisheries in the province.¹² The commission’s first report appeared in 1892 and included in an appendix, the “Preliminary Report on the Fish and Fisheries of Ontario,” an illustrated faunal catalogue produced by University of Toronto biology professor Ramsay Wright. The catalogue defined fish as a provincial possession. Beginning with a geographical description of Ontario’s territory, the catalogue then listed Ontario’s fish species in

¹¹ Dean C. Allard, *Spencer Fullerton Baird and the U.S. Fish Commission* (New York: Arno Press, 1978) 205-07; 299; W. Jeffrey Bolster, “Opportunities in Marine Environmental History,” *Environmental History* 11, no. 3 (2006): 588.

¹² Gerald Killan, *Protected Places: A History of Ontario’s Provincial Parks System* (Toronto: Dundurn Press, 1993) 6.

systematic order and commented on their economic importance. Wright used the catalogue to urge the Ontario government to establish “a rigid and effective inspection of the fisheries” and establish its own fish hatcheries, all of which were federal responsibilities. These measures were necessary, Wright argued, if the province was “to counteract the decline in yield which is otherwise inevitable.”¹³ This was precisely what Ontario did: after taking the federal government to the Supreme Court in 1896 the Ontario government established its own provincial fisheries administration in 1900 and later its own system of fish hatcheries.¹⁴

Wright’s catalogue demonstrated that Ontario possessed knowledge about fish within its territory, and bolstered the province’s jurisdictional claim. Ontario’s fish catalogue also highlighted that the federal government lacked its own political fauna. The only national ichthyological survey in its possession was J.R. Whiteaves’ catalogue for the 1886 Colonial and Indian Exhibition in London. This catalogue was based on the Fisheries Museum’s collection and, as a faunal survey, was incomplete. Until Halkett completed his proposed faunal catalogue, the articulation of Canada’s fish fauna after Confederation was left to private naturalists, sportsmen, and American ichthyologists. Abbé Léon Provancher, the noted Quebec natural historian, may have published the first post-Confederation Canadian ichthyological fauna in the pages of his journal *Le Naturaliste Canadien* in 1875. Sportsmen also contributed surveys in books that interleaved the genres of faunal catalogue, angling adventure, and travel guide. Books such as Charles Hallock’s *The Sportsman’s Gazetteer* (1877) and André-Napoléon

¹³ Wright, “Preliminary Report,” 475.

¹⁴ William Knight, “‘Our Sentimental Fisheries:’ Angling and State Fisheries Administration in 19th century Ontario,” (MA thesis, Trent University, 2006) 103-106.

Montpetit's *Les poissons d'eau douce au Canada* (1897) were examples of this literature, which limited their scope to fresh-water fishes that anglers sought.¹⁵

For comprehensive descriptions of Canada's fish fauna, zoologists had to turn to American ichthyologists and faunal catalogues published by the Smithsonian Institution in Washington. The Smithsonian became the administrative and intellectual center of North American ichthyology in the mid-nineteenth century under the direction of Spencer Fullerton Baird. Baird joined the museum in 1850 and established a continent-wide network of collectors, which helped the Smithsonian accumulate large collections of fish specimens. The Smithsonian also benefited from American government boundary and railway surveys which deposited their large collections with the Washington museum. The Smithsonian's centralization of North American ichthyology continued when Baird was appointed director of the U.S. Fish Commission in 1871. Under Baird and George Brown Goode, who assisted and succeeded Baird at both the Smithsonian and the fish commission, the two agencies enumerated fish and produced faunas at national and continental scales.¹⁶

This production reached its apex with David Starr Jordan, a student of Louis Agassiz and the leading American ichthyologist of the late nineteenth and early twentieth centuries. Between 1875 and 1885, Jordan undertook a series of collecting expeditions

¹⁵ L'Abbé Léon Provancher, "Les poissons," *Le Naturaliste Canadien*, 7 no. 4 (April 1875): 98-108; Charles Hallock, *The Sportsman's Gazetteer and General Guide* (New York: Forest and Stream, 1877) 293; André-Napoléon Montpetit, *Les poissons d'eau douce du Canada* (Montreal: C.-O. Beauchemin et fils, 1897) 349; Darin Kinsey, "Fashioning a Freshwater Eden: Elite Anglers, Fish Culture, and State Development of Quebec's 'Sport' Fishery," (Ph.D., Université du Québec à Trois-Rivières, 2008) 220.

¹⁶ Debra Lindsay, *Science in the Subarctic: Trappers, Traders, and the Smithsonian Institution* (Washington: Smithsonian Institution Press, 1993) 13; Philip J. Pauly, *Biologists and the Promise of American Life* (Princeton: Princeton University Press, 2000) 17, 24-25; Sally Gregory Kohlsted, "Place and Museum Space: The Smithsonian Institution, National Identity, and the American West, 1846-1896," in *Geographies of Nineteenth Century Science* edited by David N. Livingstone and Charles W.J. Withers (Chicago: University of Chicago Press, 2011) 411.

for the Smithsonian through the United States, Canada, and Mexico. The collections resulted in the publication of two major works of continental ichthyology, the *Synopsis of North American Fishes* (co-authored with Charles Girard and published in 1883) and the *Fishes of North and Middle America* (produced in collaboration with Barton Evermann) issued between 1896 and 1900. These works became standard references for Canadian zoologists, including Andrew Halkett.¹⁷ American museums and government biological surveys remained at the forefront of zoological collecting into the twentieth century. Taking North America as a natural biogeographical unit, they sent expeditions in increasing numbers into Canada to gather specimens. Mammals were the main focus, but ichthyologists ventured north as well, including Carl and Rosa Eigenmann who used the Canadian Pacific Railway as a survey transect and identified 56 species of fish, including six new species during an 1892 expedition.¹⁸

The presence of American collectors in Canada prompted a form of zoological nationalism that animated Canadian naturalists in the late nineteenth century. Philip Cox, who published a catalogue of New Brunswick fish in 1898, wrote a rare commentary on Canadian ichthyology, describing the discipline as being “in its infancy.” In Cox’s view collecting and cataloguing fish—particularly identifying species new to science—was a territorial privilege. It was not “complimentary to the scientific spirit of provincialists,” Cox wrote, “to be reminded of the fact that whatever little of a systematic character has

¹⁷ J. R. Dymond, “A History of Ichthyology in Canada,” *Copeia* 1964, no. 1 (1964): 5.

¹⁸ Hubbs, “History of Ichthyology,” 48; “Partial List of Museum Mammal Expeditions,” vertical files, Research Library, American Museum of Natural History, New York; Carl H. Eigenmann, “Results of Explorations in Western Canada and the North-western United States,” *Bulletin of the United States Fish Commission*, 14 (1894); S.E. Meek and D.G. Elliot, “Notes on a Collection of Fishes and Amphibians From Muskoka and Gull Lakes,” Zoological Series 41 (Chicago: Field Columbian Museum, November, 1899);

been done is...the work of foreigners.”¹⁹ It was a question of national pride and prestige that Canadian naturalists should survey and catalogue Canadian animals. The problem, however, was that Canadian naturalists relied on American experts in botany, ornithology, mammalogy, and ichthyology for identification of specimens. This included Andrew Halkett who sought Barton Evermann’s help in identifying unknown fish.

In Canada, the specification of national faunas, backed by centralized collections, was not undertaken in any systematic way until after 1887 when John Macoun, mentor to Halkett and member of the Ottawa Field-Naturalists’ Club, was promoted to assistant director of the Geological Survey of Canada. Macoun undertook an ambitious collecting and cataloguing program, making annual expeditions that gathered massive collections of plants, mammals, birds, and occasionally fish. He documented these collections in equally ambitious catalogues. Macoun had already begun publishing his *Catalogue of Canadian Plants*, which ran to six volumes, at the time of his appointment and followed that with the *Catalogue of Canadian Birds* in 1900. Fish, however, were largely absent from these efforts with the Geological Survey remaining focused on Canada’s terrestrial nature. Halkett’s proposed catalogue thus offered something of national value and importance, which had not been undertaken before: a national fish fauna. Such an object would validate both the museum and its curator.²⁰

¹⁹ Philip Cox, “History and present state of the ichthyology of New Brunswick,” *Bulletin of the Natural History Society of New Brunswick* 8 (1896): 28-29.

²⁰ W.A. Waiser, *The Field Naturalist: John Macoun, the Geological Survey, and Natural Science* (Toronto: University of Toronto Press, 1989) 80; 94-95; 139-40; Dymond, “History of Ichthyology in Canada,” 6. Exceptions included Robert Bell, who collected fish from the St. Lawrence and Hudson’s Bay, and J.F. Whiteaves, who undertook a series of faunal surveys of the St. Lawrence River between 1868 and 1872.

4.2 Opportunistic collecting

Halkett's proposed collection and catalogue was not just an opportunity to construct a national fauna: it was also a chance for Halkett to consolidate his identity as a government curator and naturalist. In this section I consider how Halkett navigated ongoing processes of gendered authority through collecting and the modeling of a national fish fauna. As Kate Hill suggests, collecting helped construct personal authority, at times allowing women to navigate gendered boundaries of the "professional" and "amateur." Hill proposes that nineteenth-century women's engagement with "the materiality of natural history" allowed them to transcend these restrictive categories. Hill's argument also applies to Halkett's own negotiation of competing forms of gendered authority in the late nineteenth century, including two models active within natural history: the popular naturalist and the field naturalist.²¹

For Halkett, these two models of the naturalist offered useful versions of masculine authority and he cultivated each during his curatorial and naturalist apprenticeship. In the Ottawa Field-Naturalists' Club, he established a reputation as a popular naturalist, which helped established his authority with his peers, especially Edward Prince. As a result, Prince assigned Halkett first to the Fisheries Museum and then to the Bering Sea fur-seal inquiry where he proved his abilities as a reliable state naturalist. That assignment also provided support for Halkett's reputation as a popular naturalist among his peers in the Field Naturalists' club. Over time, however, Halkett began to identify himself more as a field naturalist, a particularly potent construction that combined elements of the masculine hunter and the independent, observant naturalist. Both idealized figures

²¹ Kate Hill, "He Knows Me...But Not at the Museum," in *Narrating Objects Collecting Stories*, edited by S. Dudley, A. J. Barnes, J. Binnie, J. Petrov and J. Walklate (New York: Routledge, 2012) 186.

established their masculine authority in the great outdoors, testing their manly endurance and self-sufficiency against the elements.

Different types of collecting offered different opportunities not just for the type of museum collection Halkett was making, but also the type of authority he was constructing. I first look at Halkett's reliance on what I call opportunistic collecting: this collecting was unplanned and depended on chance purchases, donations, and exchanges for acquiring specimens. Because of its lack of a program, opportunistic collecting was not as useful to Halkett's objective of assembling a national fauna. It did, however, support his role in the Ottawa Field-Naturalists' Club as a popularizer and leader of local nature study. Expedition collecting, in contrast, provided better opportunities for acquiring specimens and to construct a national fish fauna. It also provided unrivaled opportunity for Halkett to construct his authority as a field naturalist, especially when Halkett was enlisted as a naturalist for the 1903-04 Neptune expedition to the Arctic.

Opportunistic collecting was not a matter of choice. With an average annual appropriation of less than \$5,000, Halkett could not afford to conduct the type of extensive survey expeditions that John Macoun undertook for the Geological Survey. Such expeditions, including those that American museums dispatched into Canada, assembled large collections of animals, comprising long series of specimens of the same species. Such collections permitted the plotting of geographic distribution and to determine subspecific variation and biological zones—the fundamental objects of late nineteenth century biogeographical study. Survey collecting, as Robert Kohler has documented, was also an efficient way of replacing poorly preserved and undocumented specimens with new ones. Halkett, however, only required one or two specimens of a

species to certify its presence in Canadian waters. This was sufficient proof that a fish species was present in Canadian territorial waters and could be thus catalogued as part of Canada's fish fauna.²²

As an opportunistic collector, Halkett took advantage of Ottawa's location. In addition to its position at the confluence of three rivers—the Ottawa, Gatineau, and the Rideau—Ottawa was close to numerous lakes. The Ottawa River had a particularly rich fish fauna and Halkett captured sturgeon, lamprey, and gar, primitive fish that fascinated many.²³ Halkett also collected during vacations, exemplifying the link between natural history and recreation. In 1902, for example, Halkett visited Algonquin Park and during a canoe trip collected single specimens of lake trout, brook trout, and ling, hinting that they were captured while angling.²⁴

Halkett also took advantage of opportunities to collect fish during the annual rounds of museum hatchery work. Just before being appointed curator, Halkett traveled to the fisheries department's whitefish hatchery in southwestern Ontario to help collect whitefish eggs. While netting whitefish, Halkett also caught a five-foot sturgeon which he kept for the museum. Hatchery work also put Halkett in closer contact with fisheries officers across Canada, who constituted an informal and widely dispersed collecting network. Fisheries officers regularly sent Halkett fish specimens and helped him build a more geographically representative collection. Fish specimens arrived unexpectedly from all quarters. One officer based in St. John sent Halkett a small collection of fish caught in

²² Robert E. Kohler, *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950* (Princeton: Princeton University Press, 2006) 107-09 & 232; Waiser, *The Field Naturalist*, 94.

²³ See for example, Louis Agassiz, *Lake Superior: Its Physical Character, Vegetation, and Animals* (Boston: Gould, Kendall and Lincoln: 1850) 249.

²⁴ Andrew Halkett, "Observations of animals native to Algonquin National Park," *The Ottawa Naturalist* 16 no. 8 (November 1902): 158-60; Kohler, *All Creatures*, 67-73.

a salmon weir in the city harbour. An Ontario-based official sent “fine specimens of large-mouthed Black Bass” from Lake Scugog. Other fishery officers forwarded more curious specimens such as a lamprey still attached to the catfish it was parasitizing.²⁵

Chance discoveries at fish markets provided fish specimens as well. Frequented by natural historians since the Renaissance, fish markets aggregated species from diverse locations and often brought into view unusual specimens.²⁶ Fishery officers browsing local market stalls might chance upon almost any species. Specimens purchased at markets, however, usually lacked critical capture and location data. Rarity was often the most salient feature of such finds, which included animals apart from fish. Halkett, for instance, was keen on purchasing an unidentified species of sea turtle that a fishery officer found for sale in a Montreal fish market. Despite its high price, Halkett wanted to buy the turtle because it was captured in Canadian territorial waters near Halifax. It thus counted as a Canadian animal:

According to the rules of precedence among zoologists, a species occurring once in a country is entitled to rank among the fauna of that country, therefore this turtle, whatever it is, must now be admitted among the turtles of Canada, and for this reason it would not be prudent to lose sight of it.²⁷

Fish markets also provided an index to Canada’s changing fish fauna as exotic species were introduced into Canadian waters. In 1907, Halkett bought two large carp at Lapointe’s, a fish merchant established in the 1860s and still active in Ottawa. The carp, caught in Lake Ontario, had been first introduced from Europe to North America in the 1880s. First heralded as a valuable commercial species, the carp, like the English

²⁵ “Report of the Zoological Branch, 1902,” *The Ottawa Naturalist* 17, no. 2 (May 1903): 35-36; A.J. McPherson to E.E. Prince, 1 May 1903, RG 23, volume 226, file 1271, LAC; “Zoological Branch, 1902,” 35-36.

²⁶ Findlen, *Possessing Nature*, 174-75.

²⁷ Andrew Halkett, memorandum, 17 January 1910, RG 23, volume 226, file 1271, LAC.

sparrow, was soon denigrated as a foreign invader that threatened native species. By the beginning of the twentieth century, carp had become naturalized in the Great Lakes and thus became a species for inclusion in the Fisheries Museum's register of Canadian species.²⁸

The museum's collecting network extended beyond the fisheries department to its clients, Canadian fishing companies. Commercial fishing outfits in the Great Lakes and on both ocean coasts occasionally supplied the museum with specimens, especially of unusual or rare fish. A Vancouver-based fishing company, for example, forwarded a barracuda, a Pacific Ocean species not usually found off the coast of British Columbia. Such rarities, if verifiably caught in territorial waters, could then become a "Canadian" fish and registered in the nation's fish fauna. Despite its rarity, the fish was not put on display because it "was not in perfect condition."²⁹

Opportunistic collecting, however, also posed challenges as the practice resulted in an eclectic even haphazard collection of natural history objects. This was particularly true of specimens offered to the museum for sale or as gifts or loans. These were infrequent, unplanned events that resulted in accessions that rarely complemented the museum's collection of Canadian fish. Halkett, for example, bought unusual specimens offered to the museum: he purchased a detached "saw" of a sawfish and the skin of a black-furred muskrat. These specimens straddled the boundary between curio and scientific specimen. The sawfish (a catch-all name for several species of rays and sharks

²⁸ "Note on the European Carp," *The Ottawa Naturalist* 21, no. 4 (July 1907): 71; Margaret Beattie Bogue, *Fishing the Great Lakes: An Environmental History, 1783-1933* (Madison: University of Wisconsin Press, 2000) 166; Glenn Sandiford, "Transforming an Exotic Species: Nineteenth-Century Narratives about Introduction of Carp in America," (PhD, University of Illinois at Urbana-Champaign, 2009).

²⁹ W.A. Found to W.E. Burk, 2 February 1916, RG 23 v226 file 1271, LAC. The barracuda was included in Halkett's 1913 catalogue as entry #266 of Canada's fish fauna.

characterized by a saw-like snout) was a species that Halkett claimed had been once previously recorded from Nova Scotia. Seeking approval to buy it, he reminded department officials that by zoological rules the record “entitles it ever after to a place in the fauna of that country.” Detached from the fish—and lacking location data—the saw was less scientific specimen than natural history curio, one that was commonly found in sixteenth- and seventeenth-century *wunderkammers*. The black musk-rat was another interesting case: the animal’s black fur made it an example of melanism, a condition that like albinism demonstrated zoological variation while also arousing surprise.³⁰

The pitfalls of opportunistic collecting were especially evident in donated or gift specimens. Not only were objects sometimes of dubious quality and unknown origin, but the act of giving also imposed an obligation on the museum to display them. The obligation became more pronounced when the gift came from a prominent person. In a case prior to Halkett’s curatorship, the Fisheries Museum accepted a mounted pike from Sir Adolphe Caron, the postmaster General of Canada, even though it was badly damaged. It required extensive repairs before it could be displayed, an example of how “gifts could be a burden rather than a blessing.”³¹ Gifts from other museums were especially hard to turn down as they legitimized Halkett and the museum as actors within the natural-history museum circuit. The gift of two live African lungfish, encapsulated in

³⁰ Andrew Halkett, memorandum, 16 February 1915, RG 23, volume 1146, file 722-3-2 [3], LAC; Andrew Halkett, memorandum, 7 November 1906, RG 23 v226 file 1271, LAC; MacGregor, *Curiosity and Enlightenment*, 44. Detached saws are visible in two well-known engravings of *wunderkammer*: “Musei Wormiani Historia” of 1655 and “Museo di Ferrante Imperato” of 1672. See Findlen, *Possessing Nature*, 39.

³¹ Memorandum, 18 March 1896, RG 23, volume 226, file 1271, L.A.C., Ottawa; Lindsay, *Science in the Subarctic*, 35; Victoria E. M. Cain, “Nature Under Glass: Popular Science, Professional Illusion and the Transformation of American Natural History Museums, 1870-1940,” (PhD, Columbia University, 2007) 104. An American museum official counseled curators to create a special case labeled “Recent Accessions” where gifts could be displayed “until they are forgotten or can be disposed of.” See John Robinson, “On the formation of local collections,” *The Ottawa Naturalist* 19, no.8 (November 1905): 151-52.

hardened mud balls, was such an instance. The fish were given to Halkett while touring the Liverpool Museum in 1901 and were natural history objects of great scientific curiosity. People were fascinated by the lungfish's ability to breath air and to "hibernate" in their hardened mud capsules, while scientists debated the possibility that the fish was a "missing link" between marine and terrestrial creatures.³² The lungfish, however, was not a native fish and could not figure in Halkett's faunal catalogue. Nor did the tropical fish that Miss Esther Bodger offered to loan to the museum, which Halkett accepted because the fish had aesthetic appeal. "They are very attractive," admitted Halkett, "and will show to advantage when displayed in one of the new cases which are to be made."³³

Halkett also found it hard to resist offers of sale for other exotic creatures. Perhaps the most unusual accession was Halkett's purchase of two live alligators from a Montreal lumber merchant. The merchant had captured the alligators in Louisiana and offered them to Halkett "alive and in a thriving condition" for \$10. Halkett accepted and the alligators were sent via railway express to the museum where they were kept in a tank in the basement hatchery.³⁴ Such accessions, however, posed risks. A museum that featured rarities and oddities was exactly the type of museum that New Museum advocates had condemned. "[W]hatever partaking of the grotesque or fanciful or extravagant," advised one American museum official "should be promptly and forever

³² Bowler, *Life's Splendid Drama*, 219-229; "Report of the Zoological Branch," *The Ottawa Naturalist* 16, no 6 (September 1902): 135-37. The lungfish's value as an educational wonder, however, failed to materialize: when Halkett returned home and placed it a museum aquarium the fish failed to revive. Halkett had also extended the lungfish's relational value by giving the second capsule to University of Toronto biologist Ramsay Wright, curator of the university's biological museum. The lungfish given to Wright, however, was also dead on arrival.

³³ Andrew Halkett, "An African Dipnoid Fish," *The Ottawa Naturalist* 15, no. 8 (November 1901): 184-187; Andrew Halkett, memorandum, 18 November 1915, RG 23, volume 1146, file 722-3-2, LAC. Miss Bodger shows that women were active in fish collecting as well.

³⁴ F. Frankfur Story to Andrew Halkett, 29 March 1906, 2 April 1906, RG 23 v 226 file 1271, LAC; Andrew Halkett to F. Frankfur Story to 4 April 1906, RG 23, v 226 file 1271, LAC.

discouraged.”³⁵

Curiosities and exotic specimens, however, were not simply “penny-peep-show entertainments” as one Canadian zoologist later characterized such collections.³⁶ Such objects attracted visitors and fostered the museum as a centre for nature study, a source of pleasure and instruction as both Leanne McTavish and Sally Gregory Kohlstedt have shown. Nature study became an important element of public and civic education in the late nineteenth century. Educators saw nature study as a way of inculcating habits of close observation and scientific reasoning in children, and a vehicle for self-improvement in adults. Observing live wildlife was considered especially important. “We expect children to get their information from books, or, a trifle better, from dead specimens,” went one Canadian text on nature study. “But all experience proves, that, with young or old, it is the living specimen which fixes and holds the attention.”³⁷

Halkett embodied this approach. As an excursion leader with the Ottawa Field-Naturalists’ Club, he acquired a reputation as a popular naturalist who delighted in living things. His peers in the club remarked on his tendency to produce “a motley collection of insects, snails, frogs and snakes” from his coat pockets, “all of which he handled lovingly while he pointed out their beauties.”³⁸ Halkett kept these animals alive in the Fisheries Museum, thus integrating the museum into the Ottawa Field-Naturalists’ Club’s program

³⁵ R.W. Shufeldt, *Scientific Taxidermy for Museums* (Washington: Government Printing Office, 1894) 434.

³⁶ The phrase was used by museum ornithologist Percy Taverner in 1937 but it reflected prejudices among some late nineteenth century curators about perceived pandering to what Taverner called “the multitude.” Percy A. Taverner to H.M. Speechly, 2 February 1937, Taverner Correspondence, CMNAC/96-021, Canadian Museum of Nature Archives, Aylmer, Quebec.

³⁷ Sally Gregory Kohlstedt, *Teaching Children Science: Hands-On Nature Study in North America 1890-1930* (Chicago: University of Chicago Press, 2010) 117; Leanne McTavish, *Defining the Modern Museum: A Case Study of the Challenges of Exchange* (Toronto: University of Toronto Press, 2013) 65-68; S. Silcox and O J Stevenson, *Modern Nature Study: A First Book for Use in Canadian Schools* (Toronto: Morang & Co., 1902) 94.

³⁸ “Sub-excursion to Rockcliffe,” *The Ottawa Naturalist* 19, no. 8 (November 1905): 157.

of public nature study. He often used live animals in the club's various public events: at a club "soiree" he featured the live alligators, while at a "Conversazione," an evening talk open to the public, he produced a family of snapping turtles. These provided several natural history lessons with one turtle laying her eggs in captivity. When Halkett discovered that one of the turtles was also a host for leeches, he removed them and put them on display. He later preserved the leeches in formaldehyde for another exhibit. When a club excursion was rained out, Halkett led the participants to the Fisheries Museum where they examined mounted specimens and live animals. On rare occasions the museum was itself a collecting site: Halkett exhibited a bat trapped in the museum as well as salamanders that were flooded out of the museum's municipal water pipes.³⁹ The museum thus became a menagerie that provided diversion and education.

Collections of live animals also gave the museum and hatchery the semblance of a biological laboratory, which facilitated studies of living creatures in aquariums. Halkett obtained a live burbot, or ling, which he kept in an aquarium. The fish laid eggs and provided Halkett and Edward Prince an opportunity to study their development. The eggs were "a matter of unusual scientific interest" for Halkett and Edward Prince who co-authored an article on their collaborative study for *The Ottawa Naturalist*. Such studies informed Prince's suggestion that federal fish hatcheries could collaborate with the biological stations "with a view to deciding many questions of scientific and of practical

³⁹ "Report of the zoological Branch," *The Ottawa Naturalist* 21, no. 6 (September 1907): 100-102; "Zoological Report—1905-6," *The Ottawa Naturalist* 20, no. 3 (June 1906): 57; "Reports of branches," *The Ottawa Naturalist* 17, no. 1 (April 1903): 10; "Soirees," *The Ottawa Naturalist* 20, no. 11 (February 1907): 203; "Excursions," *The Ottawa Naturalist* 22, no. 4 (July 1908): 79.

value in fish-development.”⁴⁰

Opportunistic collecting, and Halkett’s love for animals, helped maintain and broaden Halkett’s reputation as a popular naturalist and leader of local nature study. This role, developed in the Ottawa Field-Naturalists’ Club, helped Halkett establish his authority and usefulness in the eyes of Edward Prince. The Club, a network of male civil servants, had been a conduit for science career advancement in the government. But its influence, along with other Canadian natural history societies, was diminishing with the professionalization of science and civil service. Some societies such as Natural History Society of Montreal began to die in the late nineteenth century, exemplifying a broader decline in voluntary societies that Darren Ferry associates with the increasing power of government institutions and centralized administration.⁴¹ Increasingly associated with amateurism, natural history societies waned as a site for masculine authority. Excursions, for example, were deprecated by some naturalists as frivolous sightseeing events, feminized picnics that afforded no space for serious natural-history work. The work of popularization was also associated with the gendered amateur.⁴²

These views began to circulate within the Ottawa Field-Naturalists’ club in the early twentieth century as new members who identified as scientific professionals joined the club. This included Percy Taverner who was appointed chief ornithologist to the

⁴⁰ E.E. Prince and Andrew Halkett, “The Eggs of the Fresh-water Ling,” *The Ottawa Naturalist* 19 no. 12 (March 1906): 219; “Fish Breeding Operations,” *Forty-First Annual Report of the Department of Marine and Fisheries 1907-08* (Ottawa: King’s Printer, 1908-09) 250.

⁴¹ Darren Ferry, *Uniting in Measures of Common Good: The Construction of Liberal Identities in Central Canada, 1830-1900*. (Montreal and Kingston: McGill-Queen’s University Press, 2008) 285-86; Jeff Hearn, *Men in the Public Eye: The Construction and Deconstruction of Public Men and Public Patriarchies* (London: Routledge, 1992) 117; Gagnon 124.

⁴² Ann B. Shteir, “Elegant Recreations? Science Writing for Women,” in *Victorian Science in Context*, edited by Bernard Lightman (Chicago: University of Chicago Press, 1997) 242; Samuel J. M. M. Alberti, “Amateurs and Professionals in One County: Biology and Natural History in Late Victorian Yorkshire,” *Journal of the History of Biology* 34 (2001): 72-74.

Geological Survey of Canada. Taverner joined the Field-Naturalists' Club soon after his arrival in Ottawa in 1911 and disparaged the club's popular approach to natural history. The club, Taverner noted, "had nice picnics," referring to its excursions, but did not engage in rigorous field science and had not "evolved a single naturalist in their twenty-five years of existence."⁴³ By "naturalist" Taverner meant someone who practiced a more specialized form of science and not a self-trained generalist and popularizer such as Halkett who had been the club's president the year previous. Although this episode occurred several years after Halkett's appointment as curator, gendered ideas about amateurs and professionals were already in circulation. Halkett himself appeared to recognize that a popular, aesthetic approach to natural history was insufficient during an era of increasing professionalization. In *The Ottawa Naturalist*, Halkett recalled that his object, when he first began collecting, was "chiefly to obtain pretty specimens." But he soon realized that collecting was only a preliminary to scientific work, such as the production of animal life-histories, a field in which his mentor Prince had developed expertise.⁴⁴

Opportunistic collecting posed risks for Halkett and the museum at the same as it afforded support. A necessary alternative to collecting expeditions, it was at times the only way the museum could gather specimens. Halkett took advantage of his location, his connection to an informal network of fisheries officers, and chance gifts, loans, and purchases. Opportunistic collecting helped locate the museum in the wider natural history

⁴³ Quoted in Daniel F. Brunton, "Origins and History of the Ottawa Field-Naturalists' Club," *The Canadian Field-Naturalist* 118, no. 1 (2004): 15.

⁴⁴ "Entomological Branch," *The Ottawa Naturalist* 17 no. 2 (May 1903): 36; That Taverner was, like Halkett, a self-trained naturalist confirms Samuel Alberti's observation that the discourse of professionalization was also used by "amateur" naturalists seeking to distinguish themselves from those they considered less scientific. Alberti, "Amateurs and Professionals," 133.

network; it was also spontaneous, even joyful, and supported Halkett in his formation as a popular naturalist in Ottawa. But opportunistic collecting lacked system and did little to advance Halkett's faunal catalogue, which was intended to establish the museum's national, scientific purpose. Opportunistic collecting also posed risks as curios and oddities accumulated in the collection. Halkett was in danger of being marked as an amateur, a designation that threatened to undermine his and the museum's authority. Opportunistic collecting thus constituted part of the complex and changing terrain of masculine authority that Halkett navigated. If it threatened to undermine authority, however, expedition collecting offered to secure the authority of both Halkett and the museum.

4.3 Polar Expedition Collecting

Expedition collecting was an innovation in late-nineteenth-century natural history museum practice: large-scale expeditions were used to renew collections, support biogeographical research, and gather materials for new types of displays. They became important for the professional formation of curators who ventured into the field to lead expeditions. Expeditions also played a significant role in the establishment of gendered authority and identity. As Lisa Bloom has argued, polar expeditions became a testing ground of masculine ruggedness and virility, with polar explorers representing "the epitome of manliness."⁴⁵ Collecting expeditions, however, were more common in American museum practice than Canadian. Canada's small university and provincial museums could not afford the type of collecting expeditions that American museums

⁴⁵ Lisa Bloom, *Gender on Ice: American Ideologies of Polar Expeditions* (Minneapolis: University of Minnesota Press, 1993) 6:

funded, with the help of their rich patrons. There were exceptions: the Royal Ontario Museum followed American practice after its inception in 1914, but in the late nineteenth century only the Geological Survey of Canada had the means and expertise to mount collecting expeditions.⁴⁶

On his first expedition as Geological Survey naturalist, for example, John Macoun left Ottawa in April 1889 for Vancouver and covered 400 miles before returning in September with large collections of plants, birds, mammals, reptiles, insects, and some fish. The plant specimens alone numbered 15,000. Macoun's ability to collect large series of specimens depended on Survey funding, his own stamina, and the considerable collecting and field skills of his son James and their assistant William Spreadborough. For Andrew Halkett and the Fisheries Museum, however, planned collecting expeditions were rare events. Between 1901 and 1913 (the year Halkett's faunal catalogue was published) Halkett only engaged in three collecting expeditions. The first was as a naturalist attached to the Neptune Arctic expedition in 1903-04; the other two were successive collecting expeditions to western Canada in 1907 and 1908.⁴⁷

These expeditions were distinctive enterprises in Halkett's career and the Fisheries Museum's history. Carried out at the frontiers of an expanding Canada, they reinforced the role collecting played in projects of nation building and state formation. The expeditions also revealed how Andrew Halkett continued to seek ways to bolster his authority; the Neptune expedition, in particular, was a signal experience in Halkett's career. It was his first dedicated collecting expedition and the longest one of his career, taking him away from the Fisheries Museum for more than a year into the Arctic. It

⁴⁶ Kohler, *All Creatures*, 14 and 110-11.

⁴⁷ Waiser, *The Field Naturalist*, 94.

provided a strong basis for Halkett to claim an identity as a “scientific field naturalist,” whose authority was based on his personal collecting experiences and systematized observations in nature.

The Neptune expedition was sponsored by the Department of Marine and Fisheries. Led by A.P. Low, an officer of Canada’s Geological Survey, it was named for the stout ice-breaking sealing vessel that carried the expedition north and home again. The Neptune expedition’s primary mission was to assert Canadian sovereignty over the eastern Arctic. The United Kingdom had transferred possession of the region to Canada by 1880, but the presence of American whalers and Scandinavian explorers tested Canada’s nominal claim. Previous Arctic expeditions had sought to determine navigability of Arctic waters; the Neptune was the first to assert sovereignty and carried a detachment of Northwest Mounted Police and a group of scientists, including Halkett, who formed an “advance guards of government.”⁴⁸ Halkett was appointed general naturalist to the expedition. His duty was to collect Arctic fauna, including fish, mammals, birds, and invertebrates. Halkett was also responsible for assessing the potential of Arctic fisheries. A previous expedition, led by fisheries patrol officer William Wakeham, had cast doubt on the viability of fishing when Wakeham reported that the Arctic Ocean’s strong currents and cold, deep waters would hinder fishing efforts. The Neptune expedition sought further clarification on this question with Halkett’s collecting serving as an inventory of the Arctic’s potential as a fisheries resource and as an object

⁴⁸ Trevor H. Levere, *Science and the Canadian Arctic* (Cambridge: Cambridge University Press, 1993) 372.

for fisheries administration.⁴⁹

The Neptune left Halifax in late August of 1903 and journeyed north along the Labrador coast, entering Arctic waters several days later. With the aim of establishing Canadian sovereignty, the ship overwintered at Fullerton Harbour, an Inuit community on the northwest shore of Hudson Bay frequented by American whalers. The police established Fullerton as a port of entry, a sovereign gateway, and proceeded to collect customs duties, publicize whaling regulations, and prevent the export of musk-ox skins. The next summer the Neptune cruised north to Ellesmere Island and policed foreign whalers along the way. At several points during the voyage, the expedition crew landed to carry out the formal performances of sovereign possession. These include the planting of flags, the reading of proclamations, and the deposit of customs regulations in rock cairns and, at one location, in the wreckage of a ship abandoned by an earlier expedition. The expedition thus helped bolster Canada's claim that it materially "possessed" the Arctic.⁵⁰

Halkett, as one of several scientific officers aboard the Neptune, helped establish this claim by collecting specimens "in all branches of natural history." Specimens proved possession through scientific knowledge, which was materialized in systematic collections deposited and registered in natural history museums. Described by Low as "indefatigable in the work of collecting specimens,"⁵¹ Halkett collected a wide variety of

⁴⁹ Canada, *Report of the Expedition to Hudson Bay and Cumberland Gulf in the Steamship "Diana" under the command of William Wakeham* (Ottawa: S.E. Dawson, 1898) 1 & 71.

⁵⁰ W. Gillies Ross, "Canadian Sovereignty in the Arctic: The Neptune Expedition of 1903-04," *Arctic* 29, no. 2 (1987): 91-92; A. P. Low, *The Cruise of the Neptune. Report on the Dominion Government Expedition to Hudson Bay and the Arctic Islands, 1903-1904* (Ottawa: Government Printing Bureau, 1906) vii.

⁵¹ Low, *Cruise of the Neptune*, vii.

fauna, though curiously few fish specimens. Halkett spent more time observing and collecting birds and marine invertebrates; he amassed large collections of each and his avian collection was later publicized in North America's leading ornithological journal, *The Auk*. While the Neptune expedition provided little material for Halkett's catalogue of fish, it did afford a substantial resource for his ongoing formation as a "scientific field naturalist."⁵²

As I showed in the previous chapter, Halkett demonstrated in the Bering Sea inquiry his usefulness as a scientific investigator and as a popular naturalist. His account of the journey in *The Ottawa Naturalist* was marked by the absence of descriptions of his scientific tasks; instead, Halkett wrote as an engaged public naturalist, eager to share his love of nature. After the Neptune expedition, Halkett turned once more to *The Ottawa Naturalist* to share his adventures. The three-part narrative that appeared in the club publication shared some features of his Bering Sea story, including general observations and experiences of the expedition. But the articles also showed a shifting conception of his scientific identity and purpose. These are visible in Halkett's turn to a different form of narrative, which included more detailed accounts of his collecting and more precise descriptions of his observations. A passage describing musk-ox skulls, for example, shows Halkett deploying the clipped, quantitative language of morphological description that would have been out of place in his Bering Sea account:

The skins, with the heads intact, of six Musk Oxen (*Ovibos moschatus*) were brought to the vessel from the inland. An examination of their skulls is as follows:—Cavity of brain small; very prominent orbital projections, eye sockets full of fat; when thawed out, the iris brown, pupil light blue...Dentition:—Incisors, 6 in each lower jaw; canines, 1 in each side of lower jaw; molars

⁵² Rev. C.W.G. Eifrig, "Ornithological Results of the Canadian 'Neptune' Expedition to Hudson Bay and Northward, 1903-1904," *The Auk* 22 no. 3 (July 1905): 233-241.

(including pre-molars), 6 in each upper and lower jaw of specimens numbers 1, 2, 3, and 6; 5 in each upper jaw of number 4, with a space for a 6th, and 6 in each lower, the back portion of 6th not having the usual flatness of a molar, but conical and canine-like, and received into the vacant cavity of upper jaw; 4 in each upper and lower jaw in number 5 (calf), the last pointed not flat, but low, apparently a tooth in the forming, each 3rd molar in three parts; 6th molar in each lower jaw of the other skulls in three parts.⁵³

Such descriptions were characteristic of faunal catalogues, which provided keys to quantifiable anatomical features. It was impersonal language stripped of qualitative observations and experience: it was the language of the expert, characteristic of late-nineteenth-century science writing that separated academic and technical writing from literary discourse. In accounts of polar expeditions, as in other forms of writing claiming scientific detachment, “authority resides in the effacement of the speaking and experiencing subject.”⁵⁴ Emotion, however, was not absent from Halkett’s narrative. It was present in passages where Halkett expressed a sense of avocational loyalty in passages where he identified himself as a “scientific field naturalist.” In contrast to the popular naturalist, who was beginning to be associated with amateurism, the field naturalist was a different breed of collector. He derived his authority from close contact with nature and quantitative observation of it. He was also a rugged and manly character who also drew authority from his ability to endure hardship and collect unique specimens under trying conditions in service to science.⁵⁵ Seen in terms of Bloom’s analysis of polar expeditions as sites of gendered performance, Halkett’s Arctic narrative reflects an

⁵³ Andrew Halkett, “A Naturalist in the Frozen North,” *The Ottawa Naturalist* 18 no. 4 (July 1905): 85.

⁵⁴ Bloom, *Gender on Ice*, 128; Shteir, “Elegant Recreations,” 242.

⁵⁵ Sally G. Kohlstedt, “Nature by Design: Masculinity and Animal Display in Nineteenth-Century America,” in *Figuring It Out: Science, Gender, and Visual Culture*, Ann B. Shteir and Bernard Lightman, editors (Hanover, NH: Dartmouth College, 2006) 121. “Professional taxidermists, almost exclusively men, viewed and presented their fieldwork and even zoological preparations as enterprises requiring vigor, strength, and courage. Their out-of-door adventures and intellectual authority transmitted these themes and inscribed them in public exhibitions.”

intensifying sense of himself as a rugged and manly natural history adventurer, whose identity is formed in relation to the field—a feminized geography of challenge and potential:

Ice-bound and snow-covered, then, as those northern regions are during the long winter, they yet offer to the observer a rich field where nature reveals the living objects she has placed there; and the opportunities to observe which the short milder season affords, are many. It is primordially a place for a field-naturalist: a place, moreover, where the mind is aroused to the urgent need on the part of naturalists (and this the more so on account of the present state of zoological knowledge) for closer and deeper observations, whatever the nature of their respective researches may happen to be.⁵⁶

Halkett's combination of quantitative description and sensual passion for field work suggests his affinity for the figure of the "scientific field naturalist;" this figure, as Robert Kohler argues, was formed in the emerging discipline of ecology and in ecologists' reaction to biology and the valorization of laboratory work in the late nineteenth century. Interested in both field work and experimental methods, ecologists, also known as "new" natural historians, valued the aesthetic and emotional values of an older natural history tradition, while recognizing the potential of experimental methods to elucidate ecological processes of community organization and competition.⁵⁷ Field work was valued because it gave scientists opportunities to observe and experiment in the "real" conditions of nature rather than the artificial world of the lab. Field work also helped men without academic credentials to establish careers as the increasing professionalization of biology and museum work created barriers to entry. Field collecting developed tacit skills that university training did not provide and validated the self-trained naturalist and his expertise: "The best collectors are usually the best naturalists," wrote American

⁵⁶ Halkett, "Naturalist in the Frozen North," 80.

⁵⁷ Robert E. Kohler, *Landscapes and Labscapes*. Chicago: University of Chicago Press, 2002) 24-29.

ichthyologist David Starr Jordan, who was himself a PhD-trained zoologist.⁵⁸

These views intersected with and gained support from gendered notions of manliness and hunting. Indeed the “scientific field naturalist” overlapped with the masculinized figure of the hunter. The fusion was unavoidable: collecting was hunting, as Kohler notes, and collecting expeditions were like recreational expeditions in their reliance on a shared set of skills and practices. The skills of the collector were the same as the hunter: tracking animals, dressing kills, and managing camp life. The rewards were similar as well: hunting and collecting cultivated independence, observational skills, and endurance, among other masculine qualities.⁵⁹ These values accorded with changing ideas of manliness in the late nineteenth century. Middle-class men, while still attached to Victorian ideals of self-restraint and propriety, became attracted to more virile models of manhood to mitigate anxieties about the effeminizing effects of urban life and work. Outdoor sports, hunting and angling in particular, offered to restore male virility, and renew the source of male authority, through direct experience in nature that mimicked a return to “primitive” life.⁶⁰ At the same time, anglers and hunters framed their practices as scientific, deploying the language of natural history in field-sports narratives that valorized their practices as distinctive recreations. This fusion of manliness and rationality formed a mutually supportive discourse that, according to Greg Gillespie, rationalized colonialism and the projection of a “new settlement geography” in northwestern Canada. Hunting and collecting, united as rational recreation and rational

⁵⁸ Kohler, *All Creatures*, 205; David Starr Jordan, *A Guide to the Study of Fishes* vol. 1 (New York: Henry Holt and Company, 1905) 434.

⁵⁹ Kohler, *All Creatures*, 67.

⁶⁰ Gail Bederman, *Manliness and Civilization: A Cultural History of Gender and Race in the United States 1880-1917* (Chicago: University of Chicago Press, 1995) 11-16; Tina Loo, “Of Moose and Men: Hunting for Masculinities in British Columbia, 1880-1939,” *Western Historical Quarterly* 32 (2001): 300.

science, displaced traditional cultures and dispossessed their resources: sport and science had claimed them in the name of “civilization.”⁶¹

While Halkett’s Arctic narrative was muted in respect of race, his claim to the identity of “scientific field naturalist” was instructive in the context of an expedition that constructed Canada’s claim to an already populated land. As a context for producing authority, the claim was potent even while the popular naturalist’s authority was waning: Halkett was making nature intelligible in service to the state at the leading edge of the nation’s expanding territorial sovereignty. Following the example of ecologists, Halkett framed his authority in terms of his opposition to the “closet naturalist:” the scientist who studied morphology with microscopes in places such as the biological stations that Halkett’s mentor Edward Prince was then establishing in Canada. Against these professionals, field naturalists emphasized the superiority of their personal and immediate encounter with nature, an experience that forged a rugged independent masculine character that guaranteed the production of authentic knowledge. Halkett adopted this position as his own:

The mere closet naturalist lacks the experience of the field naturalist. Were one, it is true, to confine himself to a laboratory or a library, having little desire to go out of doors, were he simply to read popular works on natural history, or to pore over more advanced zoological treatises, he might familiarize his mind with general theories of classification, or with outlines of comparative structure... But if he thus limited his studies, having little ambition to walk even a mile from his home in order to stroll through the woods or along the banks of a stream, his knowledge would be curtailed and inaccurate. On the other hand, one who values the recorded researches of others, and who, whilst not dependent upon books, reads or refers to them, knowing that they contain many corroborated facts concerning the forms and habits of animals; but who at the same time is independent enough

⁶¹ Greg Gillespie, *Hunting for Empire: Narratives of Sport in Rupert's Land 1840-70*. Vancouver: UBC Press, 2007) 70-73. See Donna Haraway, “Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936,” in Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Science* (New York: Routledge, 1989).

to follow living beings to their haunts, to learn at first hand from themselves, will find his stock of information accumulating and resting upon a surer basis.⁶²

Halkett's celebration of the "field naturalist" echoed Samuel Wilmot's validation of the "practical man" and his critique of scientists such as Edward Prince; like Wilmot, Halkett appealed to tacit knowledge acquired through practice. Halkett may have felt anxiety about his lack of formal education in zoology as the fisheries department increasingly turned to credentialed biologists to conduct research at biological stations. Identifying himself in terms of the "scientific field naturalist," Halkett positioned himself against laboratory scientists and fended off the "amateur" label, a term that trained (and some self-trained) biologists used to deprecate a generation of older generalist natural historians who lacked academic training. As I will show, Halkett was ultimately unsuccessful in warding off this condescending classification, in part because the idea of the "scientific field naturalist" was exhausted by World War I. In this period, however, it was an attractive resource as Halkett strove to establish and maintain his authority within the Fisheries Museum and fisheries department.

It was also an identity that the federal government buttressed when the fisheries department promoted Andrew Halkett from "Second-Class Clerk" to the position of "Naturalist." The reclassification, which took place before the large-scale civil-service restructuring in 1908, recognized Halkett's service during the Neptune expedition and his acquisition of competency in his field. The promotion entailed Halkett's movement from the "Inside Service" to the "Outside Service," the primary classification that

⁶² Halkett, "Naturalist in the Frozen North," 79.

distinguished between civil servants working inside or outside of Ottawa.⁶³ The reclassification reproduced the distinction between “closet” and “field” that was critical to the idea of the “scientific field naturalist.” It also marked Halkett’s passage from the interior sites of clerking—an increasingly feminized form of work in the early twentieth century—to the exterior fields of masculine ‘naturalizing.’⁶⁴ Halkett’s collecting during the Neptune expedition may not have materially expanded the Fisheries Museum’s collection or catalogue, although it did result in important collections of other fauna. But the act of collecting at the expanding edge of the nation, and in a place that tested manly endurance and ability, may have proved more important than actual specimens. The experience warranted Andrew Halkett’s authority as a scientific naturalist, able to conduct further collecting expeditions on behalf of the nation.

4.4 Collecting and Acclimatization

Halkett’s next collecting expeditions came in 1907 and 1908 when he travelled to Saskatchewan and Alberta to collect fish for the Fisheries Museum. As with the Neptune expedition, Halkett’s developed and extended state knowledge. The expeditions resulted in specimens that expanded the museum’s collection and catalogue, and gave the new provincial governments of Saskatchewan and Alberta their first museum collections of fish. Halkett’s collecting expeditions were also a reconnaissance for faunal

⁶³ Order-in-Council #1905-1746, 30 September 1905, RG2, Privy Council Office, Series A-1-a, volume 897, LAC; David Banoub, “The Patronage Effect: Civil Service Reforms, Job-Seeking, and State Formation in Victorian Canada,” (PhD, Carleton University, 2013) 66-67.

⁶⁴ Graham S. Lowe, “Class Job and Gender in the Canadian Office,” in *Canadian Working Class History: Selected Readings*, eds. Laurel Sefton MacDowell and Ian Radforth, third ed. (Toronto: Canadian Scholars' Press, 2006) 179-83; Hilary Golder, *Politics, Patronage and Public Works: The Administration of New South Wales, Volume 1, 1842-1900* (Sydney: University of New South Wales Press, 2005) 146; Golder notes the progressive denigration of clerks as feminine and marginal. The clerk “lacked the physical strength and self-reliance that characterized ideal types of masculinity in settler societies.”

transformation. At the same time that Halkett collected specimens, he also assessed western waters to determine their suitability for the introduction of an eastern game fish species, the black bass. Halkett thus projected the remodeling of the faunas that he was documenting and cataloguing.

While seemingly at odds, collecting and acclimatization—the introduction of non-native species—reinforced each other as extensions of state administration. Collecting and cataloguing rendered nature as a legible resource and made interventions such as bass introductions possible by identifying whether or not sporting and recreational species were present. As Stéphane Castonguay and Darin Kinsey have argued in the context of nineteenth-century Quebec, fish introductions were part of a liberal reconfiguring of nature. Acclimatization sought to “improve the aquatic landscape” for individual recreational and commercial uses by tailoring faunas that supported these fisheries.⁶⁵ For Andrew Halkett the western collecting expeditions also promised to consolidate his reputation as a “scientific field naturalist” serving the state. But acclimatization also risked that authority: resistance to projects of faunal change, as well as failed attempts to naturalize fish, undermined Halkett’s and, more broadly, the fisheries department’s authority as experts.

As I described in chapter two, natural history and acclimatization overlapped in terms of its proponents—male administrators, naturalists, and sportsmen—and in the sites where such projects were coordinated, such as museums and zoological societies. These pre-existing networks of collecting provided a conduit for the exchange of exotic species

⁶⁵ Stéphane Castonguay and Darin Kinsey, “The Nature of the Liberal Order: State Formation, Conservation, and the Government of Non-Humans in Canada” in *Liberalism and Hegemony: Debating the Canadian Liberal Revolution*, edited by Michel Ducharme and Jean-François Constant (Toronto: University of Toronto Press, 2009) 235.

with colonial possessions. While fish introductions were not new, they grew in scale after the development of fish culture in the mid-nineteenth century. Fish culturists, who perfected methods for fertilizing and handling fish eggs, created an informal acclimatization network that, taking advantage of expanding rail and steamship networks, facilitated a global exchange of fish species. Acclimatization projects were cultural and colonial interventions as much as biological ones and embodied a range of values grounded in bourgeois ideals of nature and its exploitation. English colonists, for example, introduced trout throughout the British empire in an effort to recreate the masculine culture of trout fishing, celebrated in English angling literature as a genteel and individualistic pursuit. Commercial considerations were also active: the introduction of fish such as carp and shad was designed to replace native species suffering from over-fishing and environmental degradation.⁶⁶

In North America, after state fisheries administrators adopted fish culture in the late 1860s, acclimatization became a key part of state fish culture policy. By the 1870s, eastern and western fish species were being exchanged across the continent by the railway, whose operators had vested interests in angling tourism. One of the most ambitious introductions was carried out by Livingston Stone of the California State Fish Commission in 1874. Using a custom-outfitted aquarium railcar, Stone delivered a menagerie of 14 different species of fish from the eastern seaboard to California, a transfer that resulted in the naturalization of several species in the state. In Canada, Samuel Wilmot was an active agent of acclimatization, trading fish with American and

⁶⁶ Darin Kinsey, "'Seeding the Water As the Earth: the Epicenter and Peripheries of a Western Aquacultural Revolution.'" *Environmental History* 11 (2006); Hugh R. MacCrimmon, "World Distribution of Brown Trout," *Journal of the Fisheries Research Board of Canada*, 25:12 (1968) 2530.

British fish culturists. He introduced several species, including western North American fish such as Rainbow trout and Pacific salmon, as well as European carp, into eastern Canada. Wilmot also tinkered with the distribution of native fishes, planting Atlantic salmon, which at the time were still present in Lake Ontario, to Lake Huron.⁶⁷

After Wilmot's retirement in 1895, Edward Prince assumed responsibility for fish culture policy. He expanded the federal hatchery system and widened acclimatization efforts by initiating transfers of eastern species, including Atlantic salmon, lobsters, oysters, and black bass to western Canada. Prince also arranged international exchanges and sent Pacific salmon to New Zealand, Tasmania, and Australia between 1900 and 1902. Aiming to develop commercial and recreational fisheries, Prince framed acclimatization as a scientific intervention. "The introduction of new species of great market value and the creation of new industries," Prince wrote in 1893, "is one of the readiest and most apparent ways in which science is able to benefit the fisheries."⁶⁸ He was particularly interested in transferring black bass, a central Canadian game fish which I will focus on here among the other species Prince introduced. Prince had criticized Wilmot's efforts in game fish acclimatization as "erratic and subsidiary" and, after Wilmot's retirement, approved fish introductions that Wilmot had rejected, including the transfer of bass to western Canada in 1896. In 1901, Prince approved the leasing of a private bass hatchery near Belleville to ensure that a reliable supply of bass was available

⁶⁷ Darin Kinsey, "The Fish Car Era in Nebraska," *Railroad History* 177 (1997): 43-67; Jerry C. Towle, "Authored Ecosystems. Livingston Stone and the Transformation of California Fisheries," *Environmental History* 5: 1 (2000): 54-74. Hatcheries were often built adjacent to rail lines and railway companies subsidized fish introductions by carrying fish for free in specially equipped railcars.

⁶⁸ E.E. Prince, "A Marine Scientific Station for Canada," *Twenty-sixth Annual Report of the Department of Marine and Fisheries 1893* (Ottawa: Queen's Printer, 1894) cxci.

for acclimatization projects.⁶⁹

Bass enjoyed a growing reputation as a game fish in nineteenth-century North America. The generic name for a family of fishes native to the Mississippi and St. Lawrence river drainages, bass in this context referred to the smallmouth bass (*Micropterus dolomieu*) which supported expanding tourist fisheries in Ontario. American angling writer James Henshall promoted bass as the “game fish of the people,” a democratic sport fish that was equal to salmon and trout—the choice quarry of elite anglers—but more accessible. “I consider him inch-for-inch and pound for pound,” Henshall declared, “the gamest fish that swims.”⁷⁰ More tolerant of warm waters than trout and salmon, bass were suited to habitats affected by settlement and urbanization. Its hardy and adaptable nature also made it perfect for introductions. In Ontario, provincial fisheries administrators viewed bass as a utilitarian solution to the increased demand for sport-fishing in the context of environmental change. The bass was “unaffected by the onward march of civilization,” the Ontario fisheries commissioner reported, and would thrive “in waters surrounded by cleared and cultivated lands.” Since these were areas of the province that were “most densely populated and the most easily accessible,” administrators reasoned that bass filled “the angling needs of a greater percentage of the provincial population...than does any other sporting fish.”⁷¹

Fisheries administrators also saw bass acclimatization, and sport fisheries more

⁶⁹ Wilmot rejected the plan in 1894 as an expensive and “futile” experiment. See Charles Wilmot to Charles Hibbert Tupper, 25 July 1894, RG 23, volume 337, File Part 1, Reel T-4023, LAC.

⁷⁰ William H. Robbins and Hugh R. MacCrimmon, *The Blackbass in America and Overseas*, (Sault Ste. Marie: Biomangement and Research Enterprises, 1974), 2; James Henshall, *Book of the Black Bass*, (Cincinnati: R. Clarke & Co., 1881), 379.

⁷¹ Ontario, *Final Report of the Ontario Game and Fisheries Commission 1909-11* (Toronto: L.K. Cameron, 1912) 116.

broadly, as socially beneficial in terms of how it could foster a virile masculinity. Fishing along with hunting “cultivated all those attributes which go to make a manly man, one capable of not only thinking vigorously,” an Ontario official wrote, “but also of acting vigorously.” Vigorous men produced vigorous nations: field sports would help Canada take “a first place among the nations of the world” and protect it “in time of peace and war.”⁷² The bass itself was seen through this gendered and nationalist lens: according to James Henshall, the bass was “eminently an American fish. . . He has the faculty of asserting himself and of making himself completely at home wherever placed. He is plucky, game, brave, unyielding to the last.”⁷³ Administrators also saw the creation of bass fisheries near urban centers as a way of providing recreation for working-class men and their families. Angling countered what were seen as the demoralizing effects of urban life: it was thus “[m]orally and economically advantageous to foster and develop [recreational fisheries] by every possible means.”⁷⁴ As part of this social project, bass were viewed as emblems of progress, of an aquatic Manifest Destiny. “[D]ans moins de vingt ans, il sera le type des poissons d’eau douce de l’Amérique du nord, comme la morue est présentement le type de nos poissons d’eau salée,” wrote André-Napoléon Montpetit in 1897. “Répeuplons-en les lacs épuisés, transplantons-le dans des eaux nouvelles pour lui, répandons le plus possible chez nous, ce noble et vaillant poisson qui n’est nulle part plus vaillant, plus sain et plus succulent que dans les sources de nos rivières du nord.”⁷⁵

⁷² Ontario, *Report of the Ontario Game and Fish Commissioners 1898* (Toronto: Warwick Brothers & Rutter, 1900) 3.

⁷³ Henshall, *Book of the Black Bass*, 379.

⁷⁴ Ontario, *Final Report 1909-11*, 89.

⁷⁵ Montpetit, *Les poissons d’eau douce du Canada*, 121-24.

In Canada, the first bass introductions occurred within Ontario, where bass were widespread. Areas without bass, such as Algonquin Park, were the first to receive the fish. The park was a haven for trout and park officials wanted bass to boost angling during the tourism peak in mid-summer. Collaborating with the Canada Atlantic Railway, park superintendent George Bartlett had bass shipped by from Georgian Bay beginning in 1899. The Ontario government followed with transfers that further widened the range of bass in the province.⁷⁶ At the federal level, Edward Prince initiated more bass transfers after the first 1896 delivery in response to continued petitioning from across Canada. Many requests came from the west where settlers such as Donald Fraser in British Columbia wanted bass introduced into a lake that reminded him of Sharbot Lake, a renowned bass-fishing destination in eastern Ontario. Politicians, tourist associations, and local chambers of commerce demanded bass for lakes where trout fishing had declined or because “coarse” fish—fish that did not satisfy sporting rationales—were too numerous. Working with the Canadian Pacific Railway, Prince arranged a second transfer in October of 1901, shipping 3,000 bass from the department’s bass hatchery via train to western Canada. En route the train delivered bass to Banff National Park, before the remaining fish were trans-shipped to Vancouver Island where they were released in two lakes near Victoria.⁷⁷

Halkett became an agent of Prince's acclimatization work. In 1901, Halkett supervised a transfer of bass from Ontario to lakes near Sherbrooke, Quebec. He

⁷⁶ William Knight, “‘Our Sentimental Fisheries:’ Angling and State Fisheries Administration in 19th century Ontario,” (MA thesis, Trent University, 2006) 125-135.

⁷⁷ Donald Fraser to William Saunders, 11 October 1900, RG 23, volume 337, File Part 1, Reel T-4023, LAC; E. E. Prince to Donald Fraser, 28 November 1900, RG 23, RG 23, volume 337, File Part 1, Reel T-4023, LAC; Canada, *Thirty-Fourth Annual Report of the Department of Marine and Fisheries 1901* (Ottawa: 1902), 237; “Black Bass Shipment a Success,” *The Globe*, Tuesday, October 8, 1901, 8.

accompanied the fish on their rail journey and released them into the water. The next year Halkett undertook another rail journey to deliver bass, this time to New Brunswick and Nova Scotia. Halkett also handled inbound exotic species. In 1902, the museum hatchery received 20,000 western rainbow trout eggs and when they hatched, Halkett helped distributed the fish in lakes north of Ottawa. Halkett also discussed plans for other acclimatization projects: he talked with John Macoun about the introduction of eastern trout to Alberta and conferred with Algonquin Park superintendent George Bartlett about establishing a bass hatchery in the park.⁷⁸

Not everyone agreed on the wisdom of bass introductions. Prince himself had expressed general reservations about careless fish introductions. “There are dangers, and very real ones,” Prince warned, unless care was taken selecting the appropriate fish and water-body for acclimatization. Prince was particularly wary of bass. The fish was “on the offensive at all times,” and reduced numbers of other game fish. Once “bass have established themselves,” wrote Prince, “they find ready access to neighboring waters and overrun regions occupied by brook trout, grayling, or desirable kinds of fish.” Prince recommended that bass should only be stocked in “isolated waters, where they cannot spread and migrate.”⁷⁹

Sportsmen, who believed bass to be inferior to trout, agreed. Before the 1901 bass shipments, an editorialist in *Rod and Gun in Canada* warned that bass transfers posed “a very grave risk” to trout fisheries, a view supported by members of the British Columbia

⁷⁸ Canada, “Fish Culture,” *Thirty-Fourth Annual Report of Department of Marine and Fisheries 1902* (Ottawa: King’s Printer, 1903) 227; Andrew Halkett, memorandum, n.d.; G.W. Bartlett to Andrew Halkett, 23 August 1901; Andrew Halkett, memorandum, 14 October 1901, RG 23, Volume 321, file 2698, Reel T-4006, LAC; Canada, *Thirty-Fifth Annual Report of the Department of Marine and Fisheries 1902* (Ottawa: King’s Printer, 1903) 237-249.

⁷⁹ E.E. Prince, “The Propagation and Planting of Predaceous Fish,” in *Supplement No. 1 to Thirty-Fourth Annual Report of the Department of Marine and Fisheries* (Ottawa: King’s Printer, 1902) 7-15.

Forest and Stream Club. Indeed, Prince had initially refused requests for bass transfers into Banff National Park and Christina Lake in British Columbia on these grounds. Pressure from local politicians and the Canadian Pacific Railway, however, forced Prince to reverse the decision and both Banff and Christina Lake were stocked with bass. It was only when commercial interests expressed strong opposition were bass transfers suspended. In 1902 British Columbia's salmon canners learned of a planned third transfer to the province and mobilized resistance. Bass were "the natural enemies of salmon, and are very voracious," the canners complained and, with the support of the British Columbian government, forced Prince to cancel the railway transfer on the eve of its departure.⁸⁰

Bass introductions exposed the limits of Prince's authority and brought into doubt his expertise as a scientific administrator and Halkett's status as an "expert officer." The fisheries department had defended the introductions on the basis that Prince and Halkett possessed expertise: "there was no shadow of danger," the federal fisheries minister advised the British Columbia government, "as the work is in charge of expert officers, who are thoroughly posted as to the steps that are wise and free from danger in regard to planting fish in new areas."⁸¹ Prince further defended the introductions on the basis that he possessed centralized, synoptic knowledge. The fisheries department was "competent to decide, more so, indeed, than any local authorities, such matters as these, on account of

⁸⁰ British Columbia Packers Association to C.B. Sword, 3 October 1902, RG 23, volume 337, File Part 1, Reel T-4023, LAC; British Columbia; D.M. Eberts to James Sutherland, 9 October 1902, RG 23, volume 337, File Part 1, Reel T-4023, LAC.

⁸¹ James Sutherland to J. L. G. Abbott, 25 October 1902, RG 23, volume 337, File Part 1, Reel T-4023, LAC.

the extensive and varied means of information it possesses.”⁸² In the case of the salmon canners, however, local power could trump claims to central knowledge and expertise.

Conflict over bass introductions and expertise thus set the context for Andrew Halkett’s collecting expeditions to western Canada in 1907 and 1908. They were first suggested by the Saskatchewan provincial government, which proposed an ichthyological survey in 1906. Saskatchewan offered to share expedition expenses with the federal fisheries department in return for a duplicate set of fish specimens, an offer that Alberta supported if the expedition was extended to its territory. Such an ichthyological survey promised to establish faunal knowledge, develop museum collections, and set out a framework for future fisheries administration. “The Department has been trying to obtain knowledge of the species and variety of fish which inhabit the lakes of Central and Northern Alberta,” wrote an Alberta government official, “but has not been successful in discovering very much information.”⁸³ As Saskatchewan’s agriculture commissioner argued, “[i]t would be very desirable that full and definite information regarding possible resources in the way of fisheries in this Province should be available.”⁸⁴ For Halkett, the expedition promised to both renew and expand the museum collection. It was in circulation again with specimens on loan to provincial exhibitions rather than international ones, but the problem remained as Halkett noted: “the existing collection has been reduced and many specimens spoiled at the various exhibitions to which they

⁸² Canada, “Fish Culture,” *Thirty-Fourth Annual Report of Department of Marine and Fisheries 1902* (Ottawa: King’s Printer, 1903) 226.

⁸³ George Harcourt to Minister of Marine & Fisheries, 4 February 1907, RG 23, volume file 1271, LAC.

⁸⁴ W.R. Motherwell to L.P. Brodeur, 27 December 1906, RG 23, volume 226, file 1271, Library & Archives Canada, Ottawa.

have been sent.”⁸⁵ The expedition also aimed to expand the museum’s collection of Canadian fish. “Virtually the fishes of the two new Provinces are unrepresented in the Fisheries Museum,” Halkett reported. “There are only four old mounted specimens labeled ‘North West Territories.’”⁸⁶

The expedition was moreover an opportunity to continue bass transfers. Despite opposition to them in British Columbia, the department wanted to satisfy the continuing demand for bass. “This investigation,” a departmental memo stated, “was brought up by numerous applications for [fish] fry for lakes of Alta. and Sask.” Many of the lakes which people wanted to stock with bass, however, were thought unsuitable because they were too shallow or might contain valuable commercial fish. A collecting expedition, which would construct the new provinces’ fish faunas, would allow a closer examination of these lakes and reveal how they could be “improved.”⁸⁷ Halkett was thus in a position similar to Moses Perley and Pierre Fortin, the mid-nineteenth century fisheries inspectors active in colonial Canada. Like them, Halkett was a man of middle-class propriety who worked to extend the administrative capacities of the state in support of commercial and recreational fisheries. In this case, Halkett was not just extending the knowledge of the federal government, but was also enabling state formation at the provincial level. Alberta and Saskatchewan were Canada’s two newest provinces and had been admitted to Confederation in 1905. Established to accommodate the political representation of growing white settler populations, the provinces consolidated Canada as a nation with contiguous territorial integrity and a continuous liberal political order. An ichthyological

⁸⁵ Andrew Halkett, memorandum, 18 March 1907, RG 23, volume file 1271, LAC.

⁸⁶ Andrew Halkett, memorandum, 28 January 1907, RG 23, volume 226, file 1271, Library & Archives Canada, Ottawa.

⁸⁷ F. H. Cunningham Memorandum 4 October 1904, RG 23, volume 337, File Part 1, Reel T-4023, LAC.

survey and fish introductions, which made the west more like the east in faunal terms, extended this homogenization of rule in ecological terms.

In July 1907, Halkett left Ottawa on a train bound for Regina hoping to gain “some knowledge of what the waters of the two new Provinces contained.” Halkett’s geographical scope for collecting was constrained to two areas within the “belt of settlement.” One was the Qu’Appelle Valley in Saskatchewan; the other was a region of lakes east of Edmonton, a geographic sample that would permit broad generalizations about fish distribution in the new provinces. In Saskatchewan, Halkett hired John Leader, a Métis man who Halkett described as an “expert fisherman.” Leader guided Halkett around the valley’s lakes in his canoe and set the nets to collect the fish. Although the work had been delayed by the late arrival of nets and specimen jars from American suppliers, Leader and Halkett collected specimens of 14 species, in triplicate, of native prairie fish. Halkett then traveled to Alberta where he collected fish in several lakes in the Edmonton region.⁸⁸

Parallel to his collecting, Halkett surveyed lakes to determine their suitability for fish introductions. He assessed each lake’s water quality, fish species already present, as well as proximity to settlements, roads, and railways. Based on these factors, Halkett advanced recommendations for fish introductions. Of all the areas he had surveyed, Halkett was particularly enthusiastic about Saskatchewan’s Qu’Appelle valley. “I have never before seen,” Halkett claimed, “a system of lakes, such as these, where black bass could be introduced with impunity.” The bass, he projected, would thrive among the

⁸⁸ Andrew Halkett, “Report in regard to a collection of fishes, and other natural history objects, made during the Summer of 1907, in the Province of Saskatchewan and Alberta,” 25 January 1908, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

other “useful” fish and eat less desirable species such as the native buffalo fish. This fish was valued as food by native peoples, but was a fish that Halkett believed “could admit of considerable reduction.”⁸⁹

This view reflected broader ideas about animal utility shared by other ichthyologists and more broadly by state administrators. Animals were either useful or they were “vermin,” a classification that rationalized extermination programs in the late nineteenth century for a wide range of predatory animals, from wolves and cougars to hawks and owls.⁹⁰ Nativeness—a quality now valued—had no intrinsic value unless it was supported by recreational or commercial worth. Prominent American ichthyologist David Starr Jordan denigrated the prairie species that Halkett was collecting and advocated their replacement with more “vigorous kinds of fishes.” “Our rivers,” he wrote, “ought to raise something better than suckers, paddle-fish, drum and buffaloes.”⁹¹ The acclimatization of bass offered a solution to such problems: bass would not only provide sport for settlers, but also provide biological control of aquatic “vermin” that impinged on recreational enjoyment or restricted opportunities for commercial profit.

Halkett, like Prince, recognized that fish introductions could also threaten native fish. In Alberta, for example, Halkett tempered his enthusiasm for bass introductions. Settlers near Alberta’s Beaver Lake, who had gotten wind of the purpose of Halkett’s survey, lobbied him to stock bass. He resisted because the lake supported a healthy

⁸⁹ Ibid.

⁹⁰ For perceptions of vermin in Canada see Tina Loo, *States of Nature: Conserving Canada's Wildlife in the Twentieth Century* (Vancouver: UBC Press, 2006) 4 and 83; Peter Coates, *Strangers on the Land: American Perceptions of Immigrant and Invasive Species* (Berkeley and Los Angeles: University of California Press, 2006) 38.

⁹¹ Jordan, “Distribution of Freshwater Fishes,” 24. It is tempting to read Jordan’s assessment of fish in light of his eugenicist ideas expressed in books such as *The Blood of the Nation* (1902) and others.

population of pike and suckers. “Why disturb the natural condition of things,” he asked them, “when as in this instance it is good?”⁹² In other Albertan locales, however, Halkett recommended bass. In 1908, Halkett returned to continue his survey of lakes in Alberta and identified several more as candidates to receive bass. Gull Lake, for example, was suitable because it was well-served by roads. It also lacked whitefish, a valuable commercial fish, but contained ling, or burbot, which preyed on fish eggs. The bass, he wrote, would “turn the tables” on the ling and eat their young and prosper.

Acclimatization could also turn the region’s countless sloughs, or shallow lakes, to different account. Halkett recommended that one near Edmonton be used as “an experimental pond” to test the suitability of “less choice varieties of fish” for planting. Others could be used to raise catfish, which “could be so easily transported long distances from the east.”⁹³

Introductions did not just promise to sideline if not eliminate unproductive fish. They could also marginalize subsistence and native fishers. Considered antagonistic to sport and market values, these fishers were already marginalized by fisheries laws that had begun conserving game fish for sportsmen in the mid-nineteenth century. The introduction of game fish introduced this regulatory logic farther across the land: the acclimatization of fish entailed the acclimatization of restrictive laws that furthered the dispossession of native fishers in particular, and more broadly, rural populations that relied on subsistence fisheries. When Prince introduced Atlantic salmon to rivers on Vancouver Island to support fly-fishing he also introduced conflict with aboriginal fishers as fisheries regulations prohibited the capture of Atlantic salmon by any means except

⁹² Andrew Halkett to G.J. Desbarats, 30 November 30, 1907, RG 32 vol. 119, file 391, LAC.

⁹³ Halkett, “Report in regard to a collection of fishes, and other natural history objects.”

fly-fishing.⁹⁴ Fish introductions were thus part of establishing a liberal order of nature: re-ordering the aquatic landscape also re-ordered people's relation to nature. Hardy and easy to transport via railway, bass was a perfect fish to colonize western Canada. They offered sport and biological control: their introduction sustained individual recreation and commercial exploitation, and supported the colonization of the west. Acclimatization, however, also risked Halkett's and Edward Prince's reputations as "expert officers." Re-arranging fish faunas could also lead to resistance that undermined authority, which appeared geographically uneven and contingent.

4.5 Conclusion

In 1907, after returning from his first western collecting expedition, Halkett offered the first draft of his faunal catalogue. Included in the fisheries department's annual report, the catalogue presented the museum's collection as a neatly ordered typographic instrument, a national fish fauna. Identifying himself as "Naturalist and Curator, Canadian Fisheries Museum," Halkett noted that the 28-page catalogue was yet incomplete. The Fisheries Museum collection only contained only one-fifth of Canada's estimated 500 fish species and Halkett re-affirmed his commitment of "having the collection represented by a full complement of specimens."⁹⁵ An archival photograph taken to accompany the report, but not published, shows the collection from a different angle, one that reveals the results of Halkett's heterogeneous modes of collecting (figure 4). Taken by Topley, a prominent Ottawa photography firm, it is the only extant image of

⁹⁴ Douglas C. Harris, *Fish, Law, and Colonialism: The Legal Capture of Salmon in British Columbia*. (Toronto: University of Toronto Press, 2001) 151.

⁹⁵ "Natural History Report," *Fortieth Annual Report of the Department of Marine and Fisheries 1907* (Ottawa: King's Printer, 1907) 321.

the museum's interior space.

The photograph shows the main floor and a neatly ordered if profusely stocked room. It captures the arrangement of display cabinets in the room which, arranged along the walls, appear to contain mounted fish. Larger specimens, including several shark, are displayed on their top shelves. A small book-shelf in the foreground reveals an array of alcohol-preserved specimens in glass jars. An eclectic array of objects are also visible, including a large model of a square-rigged sealing or whaling vessel, a small aquarium on an ornate stand, and a swivel gun, a large shotgun associated with market hunting.

Dominating the image and room is a large free-standing octagonal cabinet that serves as both a container and a display stand. Mounted beavers, in a variety of poses, are arranged around the base of cabinet. Arranged on its interior shelves are a selection of mounted aquatic birds, including ducks and wading birds. Several "aquatic raptorial birds" are perched on the cabinet's top. Projecting from the cabinet's top are the largest objects in the room: a set of mounted trophy heads of elk, moose, and caribou.

The mammalian trophies are curious objects in a museum dedicated to fisheries. Perhaps remnants of the exhibit Halkett arranged for the 1900 Paris exposition, they marked the museum as a masculine bourgeois space. Trophy heads had appeared in gentlemen's cabinet of curiosities; they also characterized hunting lodges and men's dens in the nineteenth century and expressed mastery over nature: "victory, ownership, control, and dominion," as Ludmilla Jordanova puts it.⁹⁶ In the Fisheries Museum, the

⁹⁶ MacGregor, *Curiosity and Enlightenment*, 32; Tina Loo, "Of Moose and Men: Hunting for Masculinities in British Columbia, 1880-1939," *Western Historical Quarterly* 32 (2001): 296-98; John M. Mackenzie, *The Empire of Nature: Hunting, Conservation and British Imperialism* (Manchester: Manchester University Press, 1988) 30; Ludmilla Jordanova, "Objects of Knowledge: A Historical Perspective on Museums," in *The New Museology* ed. Peter Vergo (London: Reaktion Books, 1989) 32.

trophies may also be read in terms of the construction of masculine curatorial authority. Amidst the fish specimens, which marked Halkett's modeling of Canada's fish fauna, the trophy heads spoke to Halkett's self-modeling through collecting: linking natural-history collecting and hunting, the trophies suggested the blurring of the masculine hunter into his equally manly and hardy counterpart, the scientific field naturalist.⁹⁷



Figure 4: Interior of the Canadian Fisheries Museum, c. 1907. Source: Source: Canada, *Forty-Seventh Annual Report of the Department of Marine and Fisheries 1913-14* (Ottawa: King's Printer, 1914) 1.

⁹⁷ Nigel Rothfels, "Trophies and Taxidermy," on *Gorgeous Beasts: Animal Bodies in Historical Perspective*, edited by Joan B. Landes, Paula Young Lee and Paul Youngquist (University Park: Pennsylvania State Press, 2012) 134; Matthew Brower, "Trophy Shots: Early North American Photographs of Nonhuman Animals and the Display of Masculine Prowess," *Society and Animals* 13, no. 1 (2005): 22; Samuel J. M. M. Alberti, "Constructing Nature Behind Glass," *Museum and Society* 6, no. 2 (2008): 76.

Chapter Five: Modeling, Remodeling, and Display

In 1907, Andrew Halkett presented the Canadian Fisheries Museum in the fisheries department's annual report as a thriving natural history institution. Expeditions, donations, and purchases had expanded the museum's collection and Halkett's faunal catalogue. There were fish specimens from Alberta and Saskatchewan, and invertebrates from the Arctic. The museum used the most current practices; a pamphlet directed visitors through the collection "after the manner of the guides to the galleries of the British Museum."¹ Four years later, the fisheries department reported that it was "engaged in completely remodeling its Fisheries Museum."²

This chapter examines what may have been the most active period of remodeling in the museum's history between 1910 and 1914. It shifts the focus from Andrew Halkett's attempts to stabilize his personal authority to the ways in which he, and other fisheries officials, strove to construct the museum's authority in material form. Natural history museums established "authoritativeness" in two key ways: through an impressive architectural presence, and through collections of carefully selected and arranged specimens and objects. A purpose-built museum structure, designed in a national or historicist style and placed prominently in the urban landscape, symbolized the nation-state's dominion over nature in architectural form. Within such spaces, specimens of

¹ "Natural History Report," *Fortieth Annual Report of the Department of Marine and Fisheries 1907* (Ottawa: King's Printer, 1907) 321.

² W.A. Found to R. Hockin, 20 October 1911, RG 23 volume, 226 file 271, LAC.

plants, animals, and rocks specified that relation in detail: objects represented material and intellectual possession, and articulated the nation through their material bodies.³ Models, as Stephen Schaffer argues, established a claim to governing the natural and artificial systems the models represented.⁴

For Andrew Halkett and the Canadian Fisheries Museum, the construction of an authoritative physical presence and an authoritative collection were significant challenges. As he assembled his faunal catalogue, Halkett confronted the Fisheries Building's physical limits as a museum and the material complexities of arranging the dead bodies of fish into a credible, convincing model of a national fauna. This chapter explores the tension between modeling, which Schaffer argues offers "god-like power over realities," and McTavish's contention that museums are in a perpetual state of becoming. I begin by first examining efforts to install the Fisheries Museum in the Victoria Memorial Museum, the government's natural history museum in Ottawa. When that failed, Halkett was granted funding to renovate the Fisheries Building and expand the museum's collection. Fish, however, were among the most difficult of all animals to preserve and competent taxidermists were hard to secure. When Halkett hired an American taxidermist he then confronted the question of what constituted a "Canadian" fish. Models of fishing boats and fishing gear, on the other hand, offered confident representations of state administration and the progress of capitalism. And when Andrew Halkett obtained a fifty-foot whale skeleton, the museum secured a spectacular model, one emblematic of authoritative natural history institutions. As Halkett navigated the

³ Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (New York: Princeton Architectural Press, 2005) 5-6.

⁴ Simon Schaffer, "Fish and Ships: Models in the Age of Reason," in *Models: The Third Dimension of Science*, edited by Soraya de Chadarevian and Nick Hopwood (Stanford: Stanford University Press, 2004) 72-3.

complex terrain of professional and gendered authority, he also negotiated the material world of museum-keeping to secure the Fisheries Museum's authority.

5.1 Remodeling Space and Prestige

When Andrew Halkett proposed his faunal catalogue, he projected a national purpose for the Canadian Fisheries Museum. As a scientific inventory of all of Canada's fish species, the catalogue supported Edward Prince's efforts to integrate science into Canadian fisheries administration and extend the state's natural history knowledge of the national territory. The Fisheries Building, the Fisheries Museum's home, however, was inadequate to the task. With the National Art Gallery on the building's top floor and the hatchery in the basement, the Fisheries Museum lacked sufficient space for display and research. In 1898, a fisheries official described the collection's mounted fish as being stacked against a wall "laid in rows of five cases high," which one newspaper described as "cramped."⁵

In 1901, relief appeared imminent when the federal government approved the construction of the nation's first purpose-built museum.⁶ The structure was intended to accommodate the Geological Survey of Canada and its natural history collection, which had been relocated to Ottawa in 1882. The Survey had lobbied hard for the museum: its collection, the largest of its kind in Canada, was housed in a former Ottawa hotel that was inadequate as a museum as it lacked space and fire-proofing. The nation's register of natural history was thus at risk, but it took many years of negotiation to secure a

⁵ J.D. Sutherland to F. Gourdeau, M.P., 20 June 1898, RG 23, volume 157, file 470, Reel T-2846, LAC; "News from Ottawa," *Windsor Evening Record*, January 16, 1897, 1.

⁶ William Waiser, *The Field Naturalist: John Macoun, the Geological Survey and Natural Science* (Toronto: University of Toronto Press, 1989) 150; Morris Zaslow, *Reading the Rocks: The Story of the Geological Survey of Canada, 1842-1972* (Toronto: Macmillan Company of Canada, 1975) 266.

government commitment to construct a museum. Government architect David Ewart, who had surveyed the Fisheries Museum in 1887, won the commission with a design for a substantial building with three wings. It was projected that the new museum would accommodate not just the Geological Survey, but also the Supreme Court, the National Art Gallery, and notably the Fisheries Museum.⁷

Nineteenth-century natural history museum buildings made powerful statements about nature and nation. Imposing buildings consecrated natural history collections as national possessions and sought to establish “trust in the authoritative nature of knowledge.”⁸ Designed in an eclectic range of architectural styles that referenced past traditions of social and political order, museum buildings imbued collections with historical and cultural authority.⁹ Museums also functioned in relation to other civic and national buildings. Prominently sited in central locations on grand avenues, and located close to other national buildings and monuments, museums functioned as part of what Lawrence Vale calls a “capitol complex,” an official landscape that symbolized the nation-state. Museums, as part of these complexes, demonstrated the legitimacy of government and materialized “government to the governed.”¹⁰

In Ottawa, the proposed Geological Survey museum fit into an emerging capitol complex and urban, renewal project promoted by Prime Minister Sir Wilfrid Laurier after

⁷ Waiser, *The Field Naturalist*, 123-25 and 135; Canada, *Official Report of the Debates of the House of Commons*, Vol. 53. (Ottawa: Queen’s Printer, 1900) 7934.

⁸ Sophie Forgan, “The Architecture of Display: Museums, Universities and Objects in Nineteenth-Century Britain,” *History of science* 32 (1994): 143; Sophie Forgan, “Building the Museum: Knowledge, Conflict, and the Power of Place,” *Isis* 96, no. 4 (2005) 580.

⁹ Yanni, *Nature’s Museums*, 6.

¹⁰ Lawrence J. Vale, *Architecture, Power, and National Identity*. (New Haven: Yale University Press, 1992) 3, 15, and 43; David L. A. Gordon and Brian S. Osborne, “Constructing National Identity in Canada’s Capital, 1900–2000: Confederation Square and the National War Memorial,” *Journal of Historical Geography* 30 (2004): 620-21.

his election in 1896. As Brian Osborne and David Gordon point out, Ottawa in the late nineteenth century was a “functional, vernacular, and prosaic” city that lacked the architectural elements that sufficiently demonstrated its role as the nation’s symbolic centre.¹¹ Laurier wanted to transform Ottawa into the “Washington of the North” with monuments, parks, avenues, and official buildings and so fashion “a city worthy of a capital, and a capital worthy of the nation.”¹² The Geological Survey museum became part of this landscape with a location that linked the museum, located at the foot of Metcalfe Street, to Canada’s parliamentary buildings on a direct axis. This site, similar to the Smithsonian’s location on The Mall in Washington and its relation to sites of American federal power, consecrated the exhibitionary rendering of Canada’s nature in the nation’s capital.¹³

The importance of an architectural manifestation of power was obvious to Canada’s Minister of the Interior, who called for the Survey’s museum, before its construction, to be “of such proportions and commanding appearance as to be worthy of our Great Dominion.”¹⁴ David Ewart’s proposed building in Scottish Baronial Style, “a natural style to signify establishment authority,” fulfilled this requirement: it featured a centrally placed tower or keep at the museum’s entrance which hearkened to medieval castles and aristocratic homes.¹⁵ With the appearance of a citadel or fortress, the Victoria Memorial Museum, as it was later christened, marked Canada’s dominion over nature.

¹¹ Gordon and Osborne, “Constructing National Identity in Canada’s Capital, 620.

¹² Quoted in David L.A. Gordon, “A City Beautiful plan for Canada’s capital: Edward Bennett and the 1915 plan for Ottawa and Hull,” *Planning Perspectives* 13, (1998): 276.

¹³ Vale, *Architecture, Power, and National Identity*, 29; Forgan, “Building the Museum,” 580. The museum served as a temporary House of Parliament after fire destroyed the Parliamentary buildings in 1916.

¹⁴ Quoted in Waiser, *The Field Naturalist*, 125.

¹⁵ Miles Glendinning, Ranald MacInnes, and Aonghus MacKechnie, *A History of Scottish Architecture: From the Renaissance to the Present Day* (Edinburgh: Edinburgh University Press, 1996) 284.

The plan to include the Fisheries Museum promised a symbolic recognition of the collection's national importance.

Officials from the fisheries department thus watched the museum's construction, which began in 1906, with interest. In 1907, the deputy Minister of Fisheries reminded the Department of Public Works, the federal agency responsible for government buildings, of the plan to include the fisheries exhibit: he wanted to know "what arrangements are being made to afford accommodation for the Fish Hatchery and Fisheries Exhibit in the Victoria Museum now in course of construction at the foot of Metcalfe Street?" The response was brief and graphic: a blueprint that projected a single, tall, glass-paneled display case to contain the entire collection.¹⁶ There is no record, however, of a response and the issue appeared to disappear as the museum's prolonged construction continued.

In 1910, the question of the fisheries exhibit's inclusion in the Victoria Memorial Museum remained open as the building neared completion. Fisheries minister L.P. Brodeur pressed William Templeman, the Minister of Inland Revenue, for an answer. "I can scarcely conceive," wrote Brodeur, "that in arranging for the disposal of the space such an important industry as the Fisheries of this Country could be overlooked."¹⁷ Brodeur did not mention the single display case: he was "under the impression that the whole of one wing was to be set aside for a Fisheries Exhibit." Templeman acknowledged that a fisheries exhibit would make "an attractive feature in the museum," but expressed surprise that there were enough specimens in the Fisheries Museum to fill

¹⁶ Deputy Minister of Fisheries to Secretary of Public Works, 1 August 1907, RG 23, volume 158, file 497, LAC; Secretary of Public Works to Deputy Minister of Marine and Fisheries, 24 August 1907, RG 23, volume 158, file 497, LAC.

¹⁷ Louis Brodeur to William Templeman, 8 July 1910, RG 23, vol. 158, file 497, LAC.

one room let alone an entire wing. He cautioned Brodeur that a fishery exhibit would only be considered after the Geological Survey had been installed in the new building and room left for its future expansion.¹⁸

As these deliberations continued, Andrew Halkett and the fisheries department confronted the sudden closure of the museum hatchery. A typhoid epidemic in Ottawa in 1911 forced municipal officials to treat the city's water supply, drawn untreated from the Ottawa River, with hypo-chlorite of lime.¹⁹ The chemically treated water proved fatal to eggs and fish, and the fisheries department was forced to close the hatchery.²⁰ The hatchery's closure terminated an exhibit that had extended the museum's exhibitionary appeal and which had supported Halkett's involvement in local nature study. It was, along with the Survey's refusal to accommodate the Fisheries Museum, a blow to the museum's prestige.

These setbacks compounded a setback to Halkett's career the year previous when the recently established Civil Service Commission (CSC) refused the fisheries department's promotion of Halkett to a higher rank. The Commission had been established in 1908 and was the product of a long project to eliminate patronage and professionalize Canada's public service as I argued in chapter three.²¹ An independent commission, the CSC set qualifications for candidates and restructured the civil service into three divisions. The First Division comprised deputy ministers and senior bureaucrats with specialized skills, including scientific officers: it required higher

¹⁸ William Templeman to Louis Brodeur, 22 July 1910, RG 23, vol. 158, file 497, LAC.

¹⁹ Chris Warfe, "The Search for Pure Water in Ottawa: 1910-1915," *Urban History Review* 1 (1979): 93.

²⁰ Assistant Deputy Minister of Marine and Fisheries to J.A. Ewart, Chief Architect, Department of Public Works, 7 September 1911, RG 23, volume 158, file 497, LAC.

²¹ Luc Juillet and Ken Rasmussen, *Defending a Contested Ideal: Merit and the PSC of Canada, 1908-2008* (Ottawa: University of Ottawa Press, 2008) 1-2.

academic qualifications than the Second Division, which consisted of clerks and other officers “of less importance and responsibility.” The Third Division consisted of clerks who performed “copying and routine work.” This division, as Amber Loydlangston has pointed out, was almost exclusively female, who had little chance of promotion into the upper divisions, which were reserved for men.²² The 1908 restructuring had classified Halkett as an officer of Subdivision A of the Second Division, which recognized him as a skilled clerk, despite his 1905 promotion as a naturalist after the Neptune Expedition. In 1910, the CSC denied Halkett’s promotion to the First Division because he lacked academic qualifications.²³ Halkett later wrote that he “felt acutely that upon me is the reproach that I am not qualified for the work in which nevertheless I am engaged and with which I am entrusted to the evident satisfaction of those under whom I serve.”²⁴ The denial of the promotion contrasted with the vote of confidence given him by his peers in Ottawa Field-Naturalists’ Club, which elected Halkett as president in 1910. In the eyes of his peers, Andrew Halkett was a recognized and accomplished naturalist; the Civil Service Commission, in the vanguard of professionalization in government administration, was less willing to validate Halkett and his authority as a self-trained naturalist.

Against these setbacks, however, there were compensations. While the Fisheries Museum had been denied inclusion in the Victoria Memorial Museum, the National Gallery was given an entire wing in the new building. This move would leave the

²² J. E. Hodgetts, W. McCloskey, R. Whitaker, and V. S. Wilson, *The Biography of An Institution: The Civil Service Commission, 1908-1967* (Montreal & London: McGill-Queen’s University Press, 1972) 27; Amber Loydlangston, “Women in Botany and the Canadian Federal Department of Agriculture, 1887-1919,” *Scientia Canadensis* 29, no. 2 (2006): 120.

²³ W.A. Found, memorandum, “Re Promotion of Mr. Andrew Halkett, Naturalist of the Department,” 14 January 1918, RG 32, volume 119, file 391, LAC.

²⁴ Andrew Halkett to G.J. Desbarats, 30 November 1917, RG 32, volume 119, file 391, LAC.

Fisheries Building's upper floor vacant and the fisheries department lobbied the Public Works department for the space. In the spring of 1911, permission was granted and the spacious gallery, once filled with statuary and paintings became the exclusive domain of the Fisheries Museum. Models of dead fish would replace painted canvas and marble.²⁵ The Fisheries Museum received a further boost when the Fisheries Department increased the museum's appropriation and approved measures to renovate the museum space and collection.²⁶ Halkett also received a vote of confidence. In what may have been preparation for the renovation, Halkett traveled to Europe to tour museums and aquariums. The trip is, however, only scantily documented in the fisheries department archives but shows Halkett engaging in professional development as a curator by making the rounds of other natural history institutions.²⁷

Upon Halkett's return from his European museum tour, the renewal of the collection proceeded quickly. Renovations to the space, however, bogged down in delays and bureaucratic conflict. The Public Works department responded slowly to requests for work or ignored them altogether. A request to convert two small rooms into an exhibit space, for example, remained unanswered for more than seven months. Delays in the installation of flooring, fixtures, heating and electrical equipment also caused frustration as new specimens arrived without a place to put them.²⁸ "The Department has had

²⁵ J.B. Hunter to C. Stanton, 11 March 1911, RG 23, volume 158, file 497, LAC.

²⁶ "Natural History Report," *Forty-Fifth Annual Report of the Department of Marine and Fisheries 1911-12* (Ottawa: King's Printer, 1912) 348.

²⁷ Ottawa Field-Naturalists' Club records indicate the Halkett was absent from Ottawa for six months. He took a leave of absence from his post as club president resuming it on his return in March 1911. Ottawa Field-Naturalists Club Record Book, 1910-1923, MG 28-I-31, LAC. Halkett wrote in 1917 that he had visited "some of the most important museums and aquaria of the United Kingdom, France, Germany, and the United States." Andrew Halkett to G.J. Desbarats, 30 November 1917, RG 32, volume 119, file 391, LAC.

²⁸ "Natural History Report," *Forty-Fifth Annual Report of the Department of Marine and Fisheries 1911-12* (Ottawa: King's Printer, 1912), 348.

sufficient specimens to open the top flat of the Museum for nearly a year past, and has been prevented from doing so owing to the noncompletion of the repairs,” the deputy minister of fisheries complained to his Public Works counterpart in early 1913. “The Department is being seriously crippled in its work of building up the Museum, owing to the delay.” Renovations were still underway in August of 1913 and were not completed until the end of the year.²⁹

Even before these delays were encountered, Andrew Halkett had complained about the decision to remain in the Fisheries Building. The space was “entirely unadapted for the purposes of a natural history museum,” he wrote in 1911, “and, of course, was never constructed with any such object in view.” The lack of space hampered the comparative display of the museum’s expanding collection of mounts, casts, and wet specimens. The museum also lacked the “appurtenances” of science: “a proper laboratory” equipped with scientific instruments and a zoological library without which “no museum of natural history is complete.” “The Fishery Museum,” Halkett went on,

is by no means even an adequate ostentation of what an institution of its kind ought to be... it behooves me to exclaim violently against the present condition of things, with a view to its remedy, so that there might be a national fisheries collection which would be in every way creditable to the department.³⁰

Halkett had by this time been familiar with the Fisheries Building museum for almost 15 years: the defects of space and layout that he itemized in 1911 had been present when he first worked in the exhibit in 1895. Did his aggrieved tone reflect the fact that the Fisheries Museum was excluded from a building dedicated to the representation of

²⁹ C. Stanton to the Secretary Department of Public Works, 3 January 1913, RG 23 volume 158 file 497, LAC; C. Stanton to the Secretary Department of Public Works, 7 August 1913, RG 23 v158 file 497, LAC.

³⁰ “Natural History Report,” *Forty-Fourth Annual Report of the Department of Marine and Fisheries 1910-11* (Ottawa: King’s Printer, 1911) 418-420.

Canadian nature? When it was finished, the Victoria Memorial's Scotch Baronial design wrapped the Geological Survey and its natural history collections in a stately exterior that acknowledged Canada's Anglo-colonial past. Gargoyles of native flora and fauna wove representations of iconic northern nature into the building's physical fabric. The museum materialized the Geological Survey's importance to Canada and paid homage to its role in articulating a national territory. In this model of Canada's national nature, fish and fisheries had no place.

Halkett demanded a museum building, "a corresponding structure," that would do justice to the fisheries collection. Halkett also asked for a hatchery and aquarium, an indication that he felt the loss of the hatchery's vital element. Without living displays, the museum suffered from an "immobile effect engendered by mounted and prepared objects." Most telling was Halkett's plea for "a more dignified name for the institution than that of 'Fishery Exhibit.'" He suggested "The Canadian Fisheries Museum," a request that more than anything else alludes to the museum's provisional stability.³¹ Since 1884, the fisheries department annual reports had alternated between "exhibit" and "museum" to refer to the collection. Wilmot first referred to the collection as the "Fisheries Museum in Ottawa." In 1886 he called it the "Canadian Fisheries Exhibit." In 1900 the fisheries department referred to the collection as a "former exhibit" and "museum" on one page and the "Fisheries Exhibit" on another. Between 1901 and 1904 the name was "Canadian Fisheries Exhibit;" in 1905 it was the "Ottawa Fisheries Exhibit or Museum" and in 1910 it was the "Canadian Fisheries Museum" and the "Canadian

³¹ Ibid., 419-420.

Fisheries Exhibit.”³²

As its curator, Andrew Halkett may have been the only person to consistently refer to the collection as a “museum.” Linguistic instability reflected the collection’s uncertainties, which Halkett hoped to resolve with a custom-designed building. He sought to confirm the collection’s importance with an architectural form that both reflected and established credibility and prestige. The Fisheries Building lacked this authority in the shadow of the Victoria Memorial Museum, the newly consecrated space of Canadian nature.

5.2 “The Question of Fish Exhibition”

The remodeling of the Fisheries Museum’s interior spaces was accompanied by a remodeling of the collection. Renovating and replacing the museum’s models of fish raised fundamental questions about the museum’s representation of Canadian fish and fisheries. One was “the question of fish exhibition” itself: fish posed a material problem to curators and taxidermists in the late nineteenth and early twentieth centuries. Fish were, according to American Museum of Natural History curator Roy Miner in 1908, “refractory and difficult to prepare effectively for exhibition.”³³ The greatest obstacle was achieving “life-likeness,” a problem common to all taxidermy, but especially true of fish. This material problem was also a conceptual one as the failure to model “life-likeness” undermined the validity of both model and museum. The search for a competent

³² See *Thirty-third Annual Report of the Department of Marine and Fisheries 1900* (Ottawa: Queen’s Printer, 1901) xxxviii and 5; See page lix in *Thirty-eighth Annual Report of the Department of Marine and Fisheries 1905* (Ottawa: Queen’s Printer, 1906); see pages 1 and 418 *Forty-fourth Annual Report of the Department of Marine and Fisheries 1910-11* (Ottawa: Queen’s Printer, 1911).

³³ R. W. Miner, “A Plan for an Educational Exhibit of Fishes,” in *Bulletin of the Bureau of Fisheries* (Washington: Government Printing Office, 1908) 1317.

taxidermist to solve “the question of fish exhibition” revealed another source of uncertainty when curator Halkett commissioned an American taxidermist to collect and mount fish. Taxidermist Sherman Denton made dozens of specimens for the Fisheries Museum, but his American citizenship and the doubtful provenance of some of his specimens caused Halkett anxiety as he prepared to publish his checklist of “Canadian” fish. Moreover, despite his claims to producing stable mounts, Denton’s models were prone to warping and decay, which cast their “life-likeness” into doubt.

Fish were therefore a source of epistemological instability in the Fisheries Museum. The “question of fish exhibition,” as Miner put it, was a recurring and longstanding. In 1901, Ottawa taxidermist W.J. Henry wrote the fisheries minister and enumerated the problems visible in the collection’s mounted specimens. Henry had previously prepared some mounted fish for Halkett and wanted to be hired as the museum’s permanent taxidermist. His description of the collection is thus self-interested, but is nevertheless worth quoting at length:

...the specimens were never made right, the method being a very poor one, and the person or persons who did the work could not have had much experience in this kind of work; the specimens to be set up were not half-cleaned out, therefore when set up, they twisted and warped out of shape. In some cases of fish, they were stretched several inches longer than when they were in the flesh. To fasten in the case, big nails, screws, or spikes were used, which are exposed to the public, and then they were not colored or painted but big doses of common rosen [sic] varnish were used. The fins and tails were badly set and broken. The material used in mounting them is running out into the case. Many of them have bird’s eyes instead of fish eyes. Some have plain transparent eyes, not colored at all, and what is colored is done is very bad. The grease and oil is running out of the specimens. The alcohol specimens were very badly done, and unless they are remedied soon, they will be lost.³⁴

³⁴ W.J. Henry to Louis Davies, 8 May 1901, RG 23 volume, 226 file 271, LAC; “Memorandum,” 2 April 1897, RG 23 volume 226 file 271, LAC.

Bad taxidermy was not unique to the fisheries collection. Well-known taxidermist, museum administrator, and conservationist William T. Hornaday warned that fish were the most difficult animal of all to mount, and the most certain to disappoint. “In nearly every large zoological museum,” advised Hornaday, “the stuffed fishes are the least attractive, and the least life like of all the vertebrates.”³⁵ Taxidermists in the late nineteenth century used the same methods to mount fish as they did to mount birds and mammals: they removed the skins from dead animals and fitted them over molds or models of their bodies. These techniques had been developed earlier in the nineteenth century and by the 1880s museum and commercial taxidermists were constructing vivid and realistic mounted animals.³⁶ But the aquatic origin of fish betrayed attempts by taxidermists to preserve them in the same way as terrestrial animals. Fish not only lost their vivid colours after death, but their fins and scales were prone to shriveling and fraying after mounting. “The great objection to mounted fish,” wrote John Rowley in 1898, chief taxidermist at the American Museum of Natural History, “are the shrinkage and mummification of the fins and head in drying.”³⁷

Rowley, Hornaday, and other taxidermists offered a variety of techniques to solve “the question of fish exhibition.” These were largely variations on shaping fish skins over moulds or models. Rowley specified a complex process of molding and casting fish in plaster. A mold produced a “perfectly formed manikin” over which the taxidermist glued

³⁵ William T. Hornaday, *Taxidermy and Zoological Collecting*, 4th edition (New York: Charles Scribner’s Sons, 1894) 208.

³⁶ Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History* (Uppsala: Acta Universitatis Upsaliensis, 1993) 23; Jane Desmond, “Displaying Death Animating Life: Changing Fictions of “Liveness” From Taxidermy to Animatronics,” in *Representing Animals*, edited by Nigel Rothfels (Bloomington: Indiana University Press, 2002) 160.

³⁷ John Rowley, *The Art of Taxidermy* (New York: D. Appleton and Company, 1898) 173.

the fish's skin.³⁸ Once dry, the fish could be painted and varnished. William Hornaday advised whittling a wood model of fish at three-quarters of its real size and coating it with a mixture of clay and tow (a cotton material). One then immediately fitted the skin over this wet model, pressing it down "firmly to exclude all air-bubbles." The skin was then sewn together and varnished. Glass eyes were inserted as the final touch.³⁹

The frustration that taxidermists experienced with fish is evident in Hornaday's account of mounting cartilaginous fishes, which included rays and sharks. These, he claimed, were the hardest of all the fishes to mount as they were especially prone to shrinkage. Hornaday reserved his bitterest remarks for rays, a family of fish with wing-like bodies and long tails. "The rays are the meanest of all subjects that vex the soul of the taxidermist. Shun them as you would the small-pox or the devil," Hornaday wrote. His advice on mounting rays was to avoid them altogether: "The best way to mount a ray is to make a nice plaster cast of it, paint it, and then bury the accursed ray in a compost heap."⁴⁰

Casting indeed was one technique that taxidermists used to model fish. As Michael Rossi notes, however, "casting could produce an incredibly *precise* mold...while nevertheless yielding a terribly *inaccurate* impression of the animal in life."⁴¹ Plaster casts required considerable finishing and taxidermists experimented with a variety of methods to achieve life-like results. Dwight Franklin, a taxidermist with the American Museum of Natural History, claimed success in 1908 using plaster molds to produce

³⁸ Ibid.

³⁹ Hornaday, *Taxidermy*, 209-11.

⁴⁰ Ibid., 215-216.

⁴¹ Michael Rossi, "Fabricating Authenticity: Modeling a Whale at the American Museum of Natural History, 1906-1974," *Isis* 101, no. 2 (2010): 352.

translucent wax models that he painted in “vibrant and life-like colours.”⁴² Another museum taxidermist in 1914 experimented with electroplating plaster-cast fish with metals such as copper and silver. These, he claimed, gave his models “the natural sheen” that reproduced what fish curator Ray Miner called “the surface bloom of the living fish.”⁴³

This “bloom” was also lacking in alcohol-preserved wet specimens or “alcoholics.” These were fish captured during collecting expeditions and preserved in jars containing alcohol or a formaldehyde solution called formalin. Wet preservation saved fish for close anatomical study. While considered the standard for museum-quality fish specimens, some curators blanched at exhibiting them. An American curator described alcohol specimens as “discolored, dead, ghastly, [and] of no general resemblance to nature.” The cylindrical jars used to store alcohol specimens also caused visual distortion, “another serious disadvantage” to their exhibition. Alcohol specimens “must be replaced by something worth while,” the curator declared, “something that is representative of life.”⁴⁴ Most taxidermists and museum curators agreed that “liveness” also something more easily achieved with mammals than with fish. As George Colpitts notes, this may have depended on familial proximity. Large mammals share with humans “morphological similarities,” particularly facial characteristics that give mammals physiognomic legibility. “[Mammals’] mouths could display anger and a range of other emotions,” notes Colpitts. “Their eyes could communicate fear, pain, and sometimes

⁴² Dwight Franklin, “A Method of Preparing Fishes for Museum and Exhibition Purposes,” in *Bulletin of the Bureau of Fisheries* (Washington: Government Printing Office, 1908) 1355.

⁴³ Boyd P. Rothrock, “A New Method of Preparing Exhibits of Fishes,” *Proceedings of the American Association of Museums* 9 (1914): 88; Miner, “Educational Exhibit of Fishes,” 1317-18.

⁴⁴ Charles F. Millsbaugh, “Botanical Installation,” *Proceedings of the American Association of Museums* 4 (1910): 56

pleasure.” Cold-blooded fish did not offer similar anthropomorphic affordances.⁴⁵

Edward Prince recognized this: fish were “slimy, scaly, cold-blooded creatures,” “repulsive,” and “unattractive.”⁴⁶

Within the authoritative space of a museum, a discolored wet specimen or cracked mounted fish that failed to display the animal as it once lived subverted both the authenticity and attractiveness of the display. Specimens needed to look life-like to authenticate their validity as models and secure their authority. A mount that failed to look “real” satisfied neither curatorial requirements for morphological accuracy nor visitor’s expectations of attractive exhibits.⁴⁷ Specimens had to “be an exact copy, as if it were a cast of the animal as fashioned by nature’s cunning hand,” declared R.W. Shufeldt, who surveyed American museum taxidermy in 1892. A museum specimen not only had to withstand visual scrutiny, but do so over time, as Shufeldt explained: “It must not swerve from its poise; it must not shrink nor change its form; it must retain its smoothness and resist the ravages of destroying insects.”⁴⁸ Specimens that failed these tests, because they had the wrong eyes or were visibly decaying, diminished a museum’s credibility. This was true whether a mounted animal was exhibited in a systematic or synoptic display, or a habitat group, the two main forms of animal display in museums in

⁴⁵ George Colpitts, *Game in the Garden: A Human History of Wildlife in Western Canada to 1940*. Vancouver: UBC Press, 2002) 8; Lissa Wadewitz, “Are Fish Wildlife?” *Environmental History* 16 (2011): 424.

⁴⁶ Edward E. Prince, “Fish: Some thoughts on Canadian Fisheries and the Canadian Public. An Address To the Canadian Club of Regina, Saskatchewan,” (1910) 2.

⁴⁷ Lorraine Daston, “Type Specimens and Scientific Memory,” *Critical Inquiry* 31, no. 1 (2004): 177; Michael Rossi, “Fabricating Authenticity: Modeling a Whale at the American Museum of Natural History, 1906-1974,” *Isis* 101 (2010): 354.

⁴⁸ R.W. Shufeldt, *Scientific Taxidermy for Museums* (Washington: Government Printing Office, 1894) 381; Victoria Cain, “The Art of Authority: Exhibits, Exhibit-Makers, and the Contest for Scientific Status in the American Museum of Natural History, 1920-1940,” *Science in Context* 24, no. 02 (2011): 219.

the last half of the nineteenth century.⁴⁹

Habitat groups, which presented mounted animals posed in reconstructions of their natural habitats, became popular in the last half of the nineteenth century. They reflected ecological understandings of living organisms conceived as communities and by the early twentieth century were considered essential in natural history museums.⁵⁰ They were more common for representations of bird and mammal life, as fish were hard to arrange into group displays not the least because it was difficult to model water and pose fish as if they were swimming or floating. The American Museum of Natural History's Ray Miner noted that there were comparatively few fish groups in museums. Those that existed made the mistake, he claimed, "of producing an aquarium effect without a central point of interest." Fish groups required an overarching idea or theme such as life history or "some biological phenomenon, like adaptation, protective coloration, symbiosis, or sexual dimorphism." Habitat groups drew visitors because they provided a spectacle and offered educational value, but "[a] fish or school of fish swimming among seaweed and rocks," argued Miner, "is not sufficient excuse for the time and expense incurred in producing a fish group."⁵¹

Synoptic displays of fish were more common and useful. They presented fish in taxonomic or systematic order. Promoted by Louis Agassiz at Harvard's Museum of Comparative Zoology in the 1860s, synoptic exhibits were also economical as they

⁴⁹ Lynn A. Nyhart, *Modern Nature: The Rise of the Biological Perspective in Germany* (Chicago: University of Chicago Press, 2009) 23-4.

⁵⁰ Wonders, *Habitat Dioramas*, 31-35.

⁵¹ Miner, "Educational Exhibit of Fishes," 1318. The Berlin oceanographic museum attempted to create fish habitat groups with alcohol specimens; it built what the museum called an "Alkoholarium"—a habitat group consisting of "faunal types in alcohol or formalin in natural groupings and environmental effects." Albrecht Penck, "Das Museum Für Meereskunde Zu Berlin," in *Meereskunde Sammlung Volkstümlicher Vorträge Zum Verständnis Der Nationalen Bedeutung Von Meer Und Seewesen* (Berlin: Ernst Siegfried Mittler und Sohn, 1907) 26. Thanks to Sam Armstrong for translation from the German.

displayed a selection of “representative” specimens from major categories; they thus reduced the number of specimens on display and made nature’s organization legible to visitors.⁵² “The synoptic series has great teaching value for the student of elementary zoology,” fish curator Ray Miner explained, “since the orderly grouping of fishes carries with it an orderly grouping of facts readily retained by the mind.”⁵³ The American Museum of Natural History in New York, for example, presented fish in a synoptic display of 19 cases of mounted fish. The display used 230 specimens to exemplify fish diversity then estimated at 13,000 species.⁵⁴ Placing fish in systematic order, however, posed display issues. “One of the physical difficulties encountered in arranging exhibits is that animals of very different sizes may be zoologically related,” Frederic Lucas at the American Museum of Natural History noted, “rendering it difficult to place the specimens at once in their proper order and to permit the smaller specimens to be seen.”⁵⁵

Andrew Halkett encountered this problem when arranging synoptic displays in the Fisheries Museum. Halkett realized that placing specimens in systematic order—where “genera, families, and orders, should in the main follow one another consecutively”—was difficult, especially in the confined space of the museum where “closely related kinds cannot always be placed side by side.”⁵⁶ The problem was particularly glaring in the lowest order of fishes—the lampreys and the hagfishes—which were systematically adjacent to the sharks and rays. Small alcoholic specimens of lampreys were difficult to

⁵² Mary P. Winsor, *Reading the Shape of Nature: Comparative Zoology at the Agassiz Museum* (Chicago and London: University of Chicago Press, 1991) 120-125.

⁵³ Miner, “Educational Exhibit of Fishes,” 1319.

⁵⁴ F. W. Lucas, “Outline for An Educational Exhibit of Fishes,” in *Bulletin of the Bureau of Fisheries* (Washington: Government Printing Office, 1908) 1343.

⁵⁵ *Ibid.*, 1345.

⁵⁶ Canada, *Forty-Fifth Annual Report of the Department of Marine and Fisheries 1911-12* (Ottawa: King’s Printer, 1912) 350.

pose in close proximity to large mounted sharks; as Halkett noted these differences in size and medium led to “a break in continuity...as most of the sharks would require to stand upon the floor space and could not be adjusted against the wall.”⁵⁷ Synoptic displays also required well-crafted specimens to illustrate and validate systematic classification, which was founded on morphological differences: a single mounted fish, for example, typified an entire species and had to be, on that count, a perfect specimen. Life-like poses were not required in a synoptic display, but accurate life-like form was.⁵⁸

As W. J. Henry’s 1901 critique showed, however, the quality of taxidermy in the Fisheries Museum was uneven. While Canada had many commercial taxidermists, men who specialized in mounting game trophies, there were fewer competent taxidermists who produced museum-quality work.⁵⁹ American taxidermy was in better shape: there were more natural history museums to practice in and American taxidermists also benefitted from the presence of Ward’s Scientific Establishment, a natural history dealer in Rochester, New York. Many American museum taxidermists, including Carl Akeley, apprenticed at Ward’s where they learned the craft of making museum-grade models. Canada lacked a comparable centre for museum-taxidermy training, although Michael Quinn has suggested that taxidermists such as Oliver Spanner in Toronto played such a role in training Canadian naturalists such as Percy Taverner in the art of specimen-making in ornithology.⁶⁰

Taverner, who became Canada’s chief ornithologist in 1911, was well aware of

⁵⁷ Ibid.

⁵⁸ Lorraine Daston, “Type Specimens and Scientific Memory,” *Critical Inquiry* 31, no. 1 (2004): 177.

⁵⁹ Waiser, *The Field Naturalist*, 104; Sally G. Kohlstedt, “Henry A. Ward: The Merchant Naturalist and American Museum Development,” *Journal of the Society for the Bibliography of Natural History* 9, no. 4 (1980): 651.

⁶⁰ Michael Shannon Quinn, “The Natural History of a Collector” (PhD, York University, 1995) 97-98.

Canada's taxidermist shortage and the quality of American work. After joining the Victoria Memorial Museum, Taverner toured American natural history museums seeking advice on taxidermy and displays. "No one can realize the great steps in advance that museum methods have taken in method and technique," he reported, "without having seen the present work being done, especially at the American and Field Museums." Commercial taxidermist shops did "not tend to develop men along the most correct and scientific lines." The only men that could dependably produce good specimens were "those that are or have been employed in museums."⁶¹ Full-time museum taxidermists were rare in Canada, however.⁶² With "modern" taxidermic talent in short supply, Canadian museums, including the Victoria Memorial Museum, tendered work to American natural history suppliers such as Ward's or recruited American talent. Indeed, Percy Taverner recruited one such worker during his museum tour, Clyde Patch. Patch was a taxidermist at the American Museum of Natural History, who became chief taxidermist at the Victoria Memorial Museum in 1913.⁶³ For Andrew Halkett, the solution to "the question of fish exhibition" was quickly decided in favour of an American answer.

5.3 American Taxidermy and Canadian Fish

In 1911, in possession of the upper floor of the Fisheries Building, Andrew Halkett inaugurated the collection's remodeling by burning the old "worthless"

⁶¹ Percy A. Taverner to R.M. Brock, 27 July 1911, Taverner Correspondence, CMNAC/96-021, Canadian Museum of Nature Archives, Aylmer, Quebec.

⁶² Waiser, *The Field Naturalist*, 104; Kohlstedt, "Henry A. Ward: The Merchant Naturalist and American Museum Development," 651.

⁶³ Percy A. Taverner to R.M. Brock, 2 March 1913, Taverner Correspondence, CMNAC/96-021, Canadian Museum of Nature Archives, Aylmer, Quebec.

specimens and initiated a search for a Canadian taxidermist.⁶⁴ Fisheries inspectors, who constituted part of the museum's informal collecting network, were asked for recommendations for skilled practitioners, "though such," the fisheries department acknowledged, "are scarce."⁶⁵ Inspectors were instructed to have taxidermists mount a single specimen and submit it to the museum for inspection. If the mounted fish measured up, other orders would follow.

None of the taxidermists who responded were able to produce fish to the museum's satisfaction. A rainbow trout made by a Sault Ste. Marie taxidermist was a case in point: it was "very clumsily done," Halkett reported, and does not in any way manifest what a mounted rainbow trout ought to be."⁶⁶ A Dartmouth taxidermist sent a mounted mackerel, which the museum described as "not up to the standard of workmanship that the Department is seeking to obtain."⁶⁷ The mounts delivered by a Belleville taxidermist were typical of problems faced by the museum. The taxidermist had used glass birds' eyes, which betrayed a lack of anatomical knowledge about fish. "The eyes are quite convex," Halkett pointed out to the taxidermist, "but on a careful examination of the eyes of a fish, you will observe that they are almost flat." While the mounted fish appeared "true in form" the fisheries department observed that they "look like dead fish." The museum required mounts with "a life-life appearance."⁶⁸

As this process was underway, Andrew Halkett asked senior fisheries officials to widen the search. They contacted Canada's High Commissioner in London, Lord Strathcona, and American Museum of Natural History director Frederic Lucas for

⁶⁴ "Memorandum," 12 January 1915, RG 23, volume 1146, file 722-3-2, LAC.

⁶⁵ W.A. Found to Joseph Riendeau, 9 March 1912, RG 23, volume 226, file 1271, LAC.

⁶⁶ Andrew Halkett to W.A. Found, 20 Sept 1912, RG 23, volume 226, file 1271, LAC.

⁶⁷ A. Johnston to Lancelot A. Purcell, 16 December 1912, RG 23, volume 226, file 1271, LAC.

⁶⁸ A. Johnston to J. Thompson, 9 October 1912, RG 23, volume 226, file 1271, LAC.

recommendations for “a thoroughly competent taxidermist.”⁶⁹ Lord Strathcona in London forwarded the request to the British Museum. Its zoological curator recommended several British taxidermists, as well as the British Columbia Provincial Museum, having seen “excellent models of fishes” from the museum in London in 1906.⁷⁰ The letter to Lucas prompted more useful results as it led to direct contacts with three American taxidermists—Dwight Franklin, Francis West, and Sherman Denton—all of whom had collected and mounted fish for the American Museum of Natural History in New York.

Dwight Franklin, the preparator who specialized in wax-casting fish models, applied for the position of naturalist with the Fisheries Museum in late 1911 after prompting from Lucas. Franklin described his skills as “designing and making groups of fishes as well preparing them for synoptic exhibition.”⁷¹ Franklin also sent a portfolio of his work. Halkett found his mounts “very good indeed,” but the museum was not seeking a permanent naturalist. It wanted to hire an “outside” taxidermist to renew the demoralized collection. Franklin then offered to work as the Fisheries Museum’s “outside” taxidermist and sent the fisheries department a more detailed resumé of his experience and training, stressing his modeling versatility. “I have kept in touch with all of the latest methods in general Museum technique,” wrote Franklin, “and can model in clay and beeswax, make moulds in plaster and other mediums, mount skins of reptiles and fishes, being especially interested in wax models.” He also had collecting experience and was about to embark on a western expedition to collect for two fish groups.⁷²

Francis West, another American taxidermist, also responded. West was a

⁶⁹ W.A. Found to F.A. Lucas, 27 July 1911, RG 23, volume 226, file 1271, LAC; W.A. Found to Lord Strathcona, 28 July 1911, RG 23, volume 226, file 1271, LAC.

⁷⁰ S.F. Harmer to High Commissioner, 30 October 1911, RG 23, volume 226, file 1271, LAC.

⁷¹ Dwight Franklin to Andrew Halkett, 2 January 1912, RG 23, volume 226, file 1271, LAC.

⁷² Andrew Halkett to Dwight Franklin, 4 January 1912, RG 23, volume 226, file 1271, LAC.

taxidermist and an avowed sportsman, a fly-fisherman who had lived four years in Sault Ste. Marie. Lucas was a preparator in the masculine mold of Carl Akeley whose collecting expeditions took the form of adventurous sporting trips. Lucas was proud of his rugged approach to taxidermy and emphasized his field craft. “Am used to the paddle & the hard work of the portage,” he reported to the fisheries department, offering “a big lake square tail trout” caught in Maine. The fish had been prepared outdoors with “no materials at hand except a hunting knife with which I modeled an old light seasoned piece of drift cedar.” Although West claimed to produce stable fish mounts based on new methods that preserved colours and kept fins soft, his models suffered from a lack of realism. The speckled trout that West offered to the museum as a sample was “of marked beauty,” but the treatment of fins and coloration were inaccurate, according to Halkett.⁷³ Despite these defects, West was later contracted to collect specimens of Quebec red trout at several hatcheries. During the trip, West also stopped in Montreal and proposed mounting a lobster “in the red live colors,” an offer the museum accepted. West’s other work, including expeditions to Cuba, however, prevented him from regularly supplying models to the museum.⁷⁴

Of the three taxidermists recommended by Lucas, Sherman Denton was the only one to obtain regular work with the Fisheries Museum. Like other taxidermists, Denton claimed to have solved “the question of fish exhibition,” which he described in a promotional pamphlet titled “Fish Mounting as an Art.” In it, Denton repeated Hornaday’s blunt assessment of fish taxidermy: “A “stuffed” fish is perhaps the ugliest thing in the way of decoration one can find in a day’s search,” wrote Denton. “When

⁷³ A. Johnston to Francis West, 13 January 1912, RG 23, volume 226, file 1271, LAC.

⁷⁴ Francis West to W.A. Found, 20 January 1913, RG 23, volume 226, file 1271, LAC.

gazing on the dried and wrinkled skin without beauty of form or color, how difficult it is to realize that this wretched object was once a graceful, glittering fish.”⁷⁵ Denton advised the department that he had previously made fish casts, supplying them to museums and exhibitions; but he grew disillusioned with a process that only allowed him “to make simply an imitation.” He abandoned casting in favour of mounting skins over papier maché forms or molds, a method similar to those prescribed by Hornaday and Rowley, which preserved the specimens as “real fishes” and which suffered, Denton claimed, no deterioration. “I have mounted fish skins now in hand were put up twenty five years ago and no man could tell but that they were mounted yesterday,” he explained.⁷⁶

Lucas had not hesitated in recommending Denton. Denton had sold mounted fish to the British Museum, Harvard University’s Museum of Comparative Zoology, the Brooklyn Institute Museum, and had collected fish for David Starr Jordan. Lucas, however, also cautioned the fisheries department about the taxidermist’s source of fish specimens. Denton could supply all the required specimens “provided you do not insist that your specimens shall actually come from Canadian waters,” Lucas wrote.⁷⁷ Fisheries department official W.A. Found (who wrote letters based on Halkett’s memos) initiated a correspondence with Denton, and true to Lucas’ warning, Denton proposed to supply the Fisheries Museum with American-caught specimens from his inventory.⁷⁸ Francis West had also offered to supply fish native to Canada, but which the taxidermist could capture

⁷⁵ Sherman Denton, *Fish Mounting as an Art* (Wellesley Farms, MA: n.d.) 2.

⁷⁶ Sherman Denton to W.A. Found, 7 August 1911, RG 23, volume 226, file 1271, LAC. W. A. Found assumed many of Edward Prince’s administrative duties as Prince focused on fisheries inquiries. See Gough, *Managing Canada’s Fisheries*, 160.

⁷⁷ F.A. Lucas to W.A. Found, 10 August 1911, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁷⁸ Sherman Denton to W.A. Found, 9 September 1911, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

in New England.⁷⁹

These suggestions unsettled the fisheries department. “[A]s the Museum it is building up is to be distinctly Canadian,” a fisheries official wrote, “[the department] is therefore anxious that the originals of the specimens of fish therein should have originally been taken in Canadian waters.”⁸⁰ An authentic synoptic model of Canada’s fish fauna required fish specimens collected in Canada, even if the fish were also native to the United States. Given the lack of skilled museum-taxidermists in Canada, however, the fisheries department decided to hire Sherman Denton. Once Denton was confirmed as the Fisheries Museum’s outside taxidermist, its collection quickly grew. Initially the fisheries department ensured that Denton’s specimens were “Canadian” by having its fisheries officers send fish caught in Canadian waters directly to Denton in Massachusetts for mounting. But Denton also included American-caught fish in the mounts he delivered to the museum, arguing that specimens he collected were in better condition than fish specimens received from Canadian officials, which often arrived damaged from poor handling at the point of capture and during transit. Halkett, who had so long been concerned about the collection, was pleased “that within a year’s time considerable has been done towards building up a collection which will be creditable to the Dominion.” He worried, however, that the museum’s credibility would be damaged once he published his long-projected faunal catalogue. Inclusion of data that exposed the museum’s reliance on American work “would reflect upon what Canada ought to have been doing.”⁸¹

⁷⁹ Francis West to W.A. Found, 8 January 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁸⁰ A. Johnston to Francis West, 13 January 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁸¹ Andrew Halkett to W.A. Found, 29 May 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

This anxiety was exacerbated by perceptions that American museums were scooping up Canada's best specimens. "Many a rare specimen has been lost to us in the past," wrote Halkett, "and has been secured by the United States."⁸² This fear was shared in other quarters of Canadian zoology. Victoria Memorial Museum ornithologist Percy Taverner worried that Americans out Canadians: not only were specimens from Canada flowing into American museums, but American ornithologists and graduate students were conducting research on Canadian birds, infringing on what was perceived to be a national obligation to study nature within one's own political boundaries.⁸³ For Halkett, as it was for Philip Cox, it was embarrassing that Americans were surpassing Canadians in the ichthyological investigation of their own country. As the national institution devoted to ichthyology, the museum, Halkett argued, "ought to have in its possession such a collection of the fishes of the Dominion as it would be out of place for any other public institution to establish."⁸⁴

Halkett, however, was reliant on American expertise, much as John Macoun was for the identification of his massive collections.⁸⁵ While Halkett preferred not to "swell our collection with specimens procured in United States waters," he nevertheless determined that, on balance, Denton was useful if not essential to the museum's mission. On the question of rarities, Denton could supply specimens of fish rarely recorded in Canada from his own American collection. On the question of quality, there was no argument. Halkett had solicited work from a number of Canadian taxidermists and all

⁸² Ibid.

⁸³ M G. Ainley, "From Natural History to Avian Biology: Canadian Ornithology, 1860-1950" (PhD, McGill University, 1985) 124.

⁸⁴ Andrew Halkett to W.A. Found, 29 May 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁸⁵ Waiser, *The Field Naturalist*, 110.

were “deficient in the mounting of fish.”⁸⁶ In the absence of Canadian talent, Halkett recommended that “we secure as many specimens as possible from Mr. Denton.” In the end the completeness of the Fisheries Museum’s collection was more important than the origin of its specimens, even if it meant some American fish crept into the collection. What mattered to Halkett was “that we should have in Canada a Fisheries Museum, second to none in the world.”⁸⁷

Specimens from Denton began to flow into the museum. In September 1912 the museum received 15 specimens that Denton had “locally procured.”⁸⁸ Another shipment of specimens were of Canadian origin, which led to expressions of relief: “I am pleased to know that most of the fishes enumerated,” the fisheries department wrote to Denton, “were taken either in Canadian waters or in the Great Lakes.”⁸⁹ When Denton offered to collect specimens in Canada during a Pacific expedition on behalf of another museum, Halkett accepted his offer. Earlier that year Halkett had drawn up a list of specimens he required for the museum and the regions they represented: the desideratum ranged from the prairies to the Atlantic Ocean, but it was apparent that the museum was most in need of Pacific fish specimens, which were underrepresented in the museum’s collection.⁹⁰ Before the expedition Denton prepared a list of specimens he hoped to collect. The list included, however, fish that Halkett identified as American, again raising concerns about

⁸⁶ Andrew Halkett to W.A. Found, 20 September 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁸⁷ Andrew Halkett to W.A. Found, 10 October 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁸⁸ Andrew Halkett to W.A. Found, 16 September 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁸⁹ W.A. Found to Sherman Denton, 18 October 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁹⁰ Andrew Halkett to W.A. Found, 12 February 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

the origin of specimens. “The Department is very anxious,” the department advised Denton, “where such is at all feasible, that the specimens should in the first instance be secured in Canadian waters.”⁹¹

In the fall of 1912 Denton traveled to British Columbia carrying letters of introduction to fisheries department inspectors who could help him collect fish. By December 1912 he had completed collecting and reported that he had “obtained a fair collection of the food and game fishes of Vancouver.”⁹² Denton mounted the specimens back at his home in Massachusetts and began shipping the Pacific specimens to the Fisheries Museum. Most of the fish were listed as having been collected in British Columbia, but several were from the United States. Among the fish were specimens of California smelt and a small shark identified as a “roussette.” Halkett flagged both as being previously unrecorded in Canadian waters and called the shark “a very interesting find.”⁹³

Halkett urged his superior W. A. Found to ask Denton to confirm that the specimens had indeed been captured in British Columbia. “As I am very anxious that the data in connection with the various specimens should be absolutely correct,” Found wrote to Denton, “I should be much obliged if you would be kind enough to inform me just where these specimens were procured.”⁹⁴ Another shipment of specimens included more rare fish, prompting more doubts from Halkett. He was first excited by the specimens as

⁹¹ W.A. Found to Sherman Denton, 14 October 1912, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁹² Sherman Denton to W.A. Found, 22 February 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁹³ Andrew Halkett to W.A. Found, 8 July 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁹⁴ W.A. Found to Sherman Denton, 6 August 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

he believed Denton's expedition had brought "to light species which were new to our waters." But, Halkett added, "as such alleged finds are multiplying I think I ought to draw attention to the matter."⁹⁵ Halkett did not want to cast aspersions on Denton; instead he framed his request as a disinterested appeal to science. "Science is science and the most dogmatic thing in the world — adhering only to ascertained facts," Halkett insisted. The status of the museum was in peril, Halkett warned, if data errors were allowed to "creep in."⁹⁶

Denton provided an account of his collecting practices to re-assure the museum. The smelt, he reported, were obtained from a Vancouver fish processing plant. Denton had selected "six of the best" from a box containing more than 50 pounds of the fish. Other fish were bought directly from fishermen. Yet Denton's reassurances were accompanied by admissions that countered them. "It is exceedingly difficult to get correct information from the average fisherman," Denton replied to Found. "I usually ask no questions but take each specimen as I can get and thank good fortune for whatever comes my way." He made a further admission: "I rarely have the time or opportunity to personally collect the fishes where I go. I cannot always be positive about the locality from which they came."⁹⁷ Denton could not therefore confirm that the fish had been caught in British Columbia waters; he surmised that the smelt had been caught in the province because they looked fresh, but he admitted the possibility that they may have been caught in California.

⁹⁵ Andrew Halkett to W.A. Found, 8 July 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁹⁶ Andrew Halkett to W.A. Found, 31 July 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

⁹⁷ Sherman Denton to W.A. Found, 9 August 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

The lack of location data was regrettable. It was one of Halkett's critiques of the museum before remodeling commenced. "All specimens," he wrote in 1911, "require detailed labels with descriptive remarks," including the "technical name of the species."⁹⁸ Labels with data validated collections: indeed "a complete authentic label for a mammal in most instances is scientifically more valuable than the skin to which it is attached."⁹⁹ A label authenticated the specimen's initial identification and description, and most important of all, its capture location. George Brown Goode stressed the importance of labels in an "efficient educational museum," which he claimed, "may be described as a collection of instructive labels, each illustrated by a well-selected specimen."¹⁰⁰ Labels were a textual layer of authenticity as vital to a museum specimen as its material and visual integrity.¹⁰¹

Despite Denton's inability to verify some specimen data, Halkett accepted the fish as Canadian records. "From the information given by you, it would seem very probably that these fish were taken in British Columbia waters," Halkett wrote Denton. He advised the taxidermist, however, to exercise more care in obtaining location data.¹⁰² Against the uncertainty of his specimen data, Halkett weighed Denton's value in the gaps he filled in the museum's collection. After the museum received a shipment from Denton of 34 specimens, representing 16 species of fish found in British Columbia, Halkett was able to

⁹⁸ "Natural History Report," *Forty-Fourth Annual Report*, 419.

⁹⁹ Quoted in Griesemer, "Modeling in the Museum," 17.

¹⁰⁰ G. Brown Goode "The Museums of the Future," *Report of the National Museum 1888-89* (Washington: Government Printing Office, 1890) 433.

¹⁰¹ The emphasis on labels and data reminds us that "learning to see" also depended on texts and reading. Lianne McTavish, "Learning to See in New Brunswick, 1862-1929," *The Canadian Historical Review* 87, no. 3 (2006): 556;

¹⁰² W.A. Found to Sherman Denton, 14 August 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

report that “[w]e have now almost 1/6 of the fishes of Canada” in the collection.”¹⁰³

Denton’s collecting enabled Halkett to remodel the museum collection and complete his faunal catalogue. After 10 years of work, Halkett’s *Check List of the Fishes of the Dominion of Canada and Newfoundland* was published in 1913. The catalogue completed and complemented the collection: it facilitated the study of specimens in the museum and made the museum, Halkett later claimed, “self-explanatory.” It bolstered Halkett’s reputation as a naturalist who specialized in ichthyology and bolstered the museum’s authority as a scientifically credible register of its fish. *The Canadian Fisherman*, a new trade magazine dedicated to fisheries, praised the checklist, likening it to a “Dictionary of Canada’s Fishes.”¹⁰⁴ “Everything with fins, scales and gills to be found in Canadian waters is enumerated in the book,” the magazine reported, “and as a scientific record, it is one of the ablest and most comprehensive works ever issued by the Fisheries Department.”¹⁰⁵

Denton’s models, however, suffered the same fate as other taxidermied fish: they decayed. In the spring of 1914, Halkett wrote Denton to complain of one large specimen: “I regret to inform you that the skin of the Man-eating Shark you mounted for the Fisheries Museum here is becoming so cracked that it will soon be unfit for display.” A specimen of an Ocean sunfish (*Mola mola*) was also showing cracks. Halkett, however, was able “with the use of putty and paint” to conceal the splits in its skin and to arrest further splitting in the shark with a coating of glycerin and water.¹⁰⁶ A year later Halkett

¹⁰³ Andrew Halkett to W.A. Found, 17 April 1913, RG 23, volume 226, file 271, Library & Archives Canada, Ottawa.

¹⁰⁴ “Who’s who in the Fishing World,” *The Canadian Fisherman* 1 no 4 (April 1914): 110.

¹⁰⁵ “Who’s who in the Fishing World,” *The Canadian Fisherman* 1 no 4 (April 1914): 110.

¹⁰⁶ W.A. Found to Sherman Denton, 18 March 1914 & 25 March 1914, RG 23 volume 1146, file 722-3-2 [2], LAC.

reported more specimens were falling apart:

I regret to advise you that some of the specimens supplied by you are seriously cracking. The two large Skates are cracking across the back. The green sturgeon is cracking practically all over. A large halibut is cracking close to the head, and the sword-fish is falling away from the board to which it is attached. The cast of the whale is cracking in several places and the maskinonge and blue shark are cracking about the head. Scales are falling off the two specimens of California herring, as well as off the shad.¹⁰⁷

Decaying models of fish even diminished the authority of the textual model of the collection. When Halkett's *Checklist* was published, a reviewer in *The Ottawa Naturalist* generally praised the book, but criticized Halkett's decision to illustrate the catalogue with photographs of the museum's mounted specimens. The photographs, the anonymous reviewer complained, were not sharp enough for readers to distinguish important morphological characteristics. An image of a model of a hag-fish, an eel-like fish, resembled a "policemen's baton." A drawing would have had more "scientific utility," the reviewer suggested, than a "very indistinct photographic effigy."¹⁰⁸ The root of the problem was the models themselves: they lacked realism and many were "defective" with missing features. Samuel Alberti has argued that faunal catalogues were like "sleights of hand" that helped curators textually tidy their collections, and disguise defects and deterioration in neatly ordered typographic lists. By including poor photographs of poor models, however, Halkett's exposed the museum's material shortcomings.¹⁰⁹ Halkett's experience with Denton showed that "the question of fish exhibition" was not just an ongoing material problem, but a conceptual one as well. Material models authenticated the museum's purpose and status, but their provenance and material instability posed

¹⁰⁷ W.A. Found to Sherman Denton, 12 May 1915, RG 23 volume 1146, file 722-3-2 [3], LAC.

¹⁰⁸ "Book Reviews," *The Ottawa Naturalist* 28 no. 2 (May 1914): 38-39.

¹⁰⁹ Samuel J. M. M. Alberti, *Nature and Culture: Objects, Disciplines and the Manchester Museum* (Manchester: Manchester University Press, 2009) 132.

risks to the museum's authority. Schaffer's claim that models offer "god-like" power has to be tempered in the case of fish: elusive alive and prone to decay as remnant models, fish posed an epistemological uncertainty at the heart of the Canadian Fisheries Museum.

5.4 Scaling the Fisheries in Models

If fish posed epistemological uncertainties, then scale-models of boats and fishing gear offered more material and conceptual stability. Scale-models served as object-lessons, or demonstrations, of new technologies, much as patent models served to prove inventions to patent inspectors.¹¹⁰ Simon Schaffer shows how model-makers use scale to simplify and master forms, materials, and processes, and govern "the large-scale systems of trade and industry that the models represented."¹¹¹ Maria Varutti argues that scale models are political because the differential in size positions observers of models in relations of "authority, distance or opposition."¹¹² Scale models are thus strategic objects of knowledge because of their ability to represent the world and convince viewers that it is manageable and orderly.

In the Fisheries Museum, scale-models of boats and fishing gear helped elaborate a "systematics of fisheries," a classification that privileged increased productivity through technology, capitalist investment, and state administration. In 1911, the fisheries department asked its inspectors to collect scale-models just as they had been instructed to secure fish specimens. And just as the museum desired a geographically representative collection of fish, the department also wanted to display a geographically diverse

¹¹⁰ Alain Pottage, "Patent Law Machines: Scale Models, Forensic Materiality, and the Making of Modern," *Social Studies of Science* 20, no. 10 (2011): 1-23.

¹¹¹ Schaffer, "Fish and Ships," 75.

¹¹² Marzia Varutti, "Miniatures of the Nation: Ethnic Minority Figurines, Mannequins and Dioramas in Chinese Museums," *Museum and society* 9, no. 1 (2011): 9.

selection of models that were “thoroughly representative of the Canadian fisheries.”¹¹³

There was a tension in this choice: on one hand the museum wanted models of vernacular fishing technology, such as a Gaspé fishing dory or a Bay of Fundy herring weir, that set Canadian fisheries apart. On the other hand, the museum was also interested in models that exemplified the penetration of modern technologies into local fishing economies, and thus illustrate the progressive nature of Canadian fisheries. British Columbia fisheries inspector F.A. Cunningham, for example, was instructed to find models “from a dory to a halibut steamer.”¹¹⁴ The tension between the local and the new was resolved when an Ontario fisheries inspector reported finding a model maker who offered an evolutionary sequence of fishing technology on Lake Erie. The diorama consisted of five boat models that depicted the change from row-boats to steam-powered fishing tugs, which were becoming the dominant fish-catching technology in the Great Lakes.¹¹⁵

The fisheries department encountered some difficulty, however, in finding model-makers. When Arctic explorer and fisheries patrol commander William Wakeham was asked to find a three-foot model of the Gaspé fishing dory, he replied that the region had few model makers. Those knowledgeable about the craft advised Wakeham that a model of a dory was “almost as difficult a job to build as an actual fishing boat.”¹¹⁶ Other fisheries officials had more success in locating model-makers who could produce accurate scale models of vernacular fishing technologies. A New Brunswick fisheries inspector found an “ingenious and skillful” local man, Silas McLellan, to build a scale-model of a herring weir, a gear-type found in eastern Canada. When the model was

¹¹³ W.A. Found to William Wakeham, 27 July 1911, RG 23, volume 226, file 1271, LAC.

¹¹⁴ W.A. Found to F.A. Cunningham 27 July 1911, RG 23, volume 226, file 1271, LAC.

¹¹⁵ A.B. Sheppard to W.A. Found, 2 November 1911, RG 23, volume 226, file 1271, LAC; Bogue, *Fishing the Great Lakes*, 41.

¹¹⁶ William Wakeham to W. A. Found, 10 September 1911, RG 23, volume 226, file 1271, LAC.

delivered in 1912, Andrew Halkett was so pleased with it—“the work throughout is artistic, and at the same time gives an excellent idea of a Weir and its surroundings”—that he paid McLellan \$50 instead of the contracted price of \$25. McLellan went on to build other gear models, including a salmon trap and lobster pot.¹¹⁷

For models of more modern fishing technologies, particularly steam-powered trawlers, Halkett turned to marine engineering firms in England. In the summer of 1911, the fisheries department asked Smith’s Dock Company in England for estimates to produce models of a steam-trawler and herring drifter. The models would represent the latest in capital-intensive fishing-vessel design developed for England’s North Sea fisheries. The steam-powered herring drifter had been introduced to Canadian fishermen in 1903 as part of an effort to modernize Canada’s traditional salt-cod fisheries, an episode I describe in detail in the next chapter. Steam trawlers were another innovation that also figured in British fisheries. These vessels dragged large nets that could capture huge amounts of fish; blamed for destroying fish habitat and overfishing, trawlers were nevertheless widely adopted. They transformed English fishing and were first tested in Canadian waters in 1899, gaining slow acceptance. Initially restricted to waters outside the Canadian three-mile territorial limit, steam trawlers represented a capital-intensive approach to modernization that the Canadian government urged on its fishermen.¹¹⁸

Shipbuilders were an obvious source for models of such vessels: they had the skilled labour and knowledge necessary to produce full-scale versions and incorporated

¹¹⁷ W.A. Found to John F. Calder, 29 November 1911, RG 23, volume 226, file 1271, LAC; John F. Calder to W.A. Found, 20 October 1911, RG 23, volume 226, file 1271, LAC.; W.A. Found to John F. Calder, 9 March 1912 & 17 April 1912, RG 23, volume 226, file 1271, LAC.

¹¹⁸ See J.A. Balcom, “Technology Rejected: Steam Trawlers and Nova Scotia, 1897-1933,” In *How Deep Is the Ocean? Historical Essays on Canada’s Atlantic Fishery*, eds. James E. Candow and Carol Corbin (Sydney, NS: University College of Cape Breton Press, 1997).

model-making in the production process. Half-hull and plating models, for example, were essential to full-scale ship production, while beautifully detailed presentation models were often produced for valued customers. The English boat builder responded to Halkett and proposed to mount its models in cases showing the boats “actually trawling.” It presented a sketch showing how the models set on plate glass which represented the ocean surface. Below the glass, the model would show the nets in operation.¹¹⁹ Although the models were expensive, the museum ordered them. Fire in Smith’s shipyard delayed their construction, but the models were ready for delivery by May of 1912. The models were so valuable and fragile that Smith’s sent the model-maker to safeguard their passage aboard the steamer S.S. “Victoria.” Fisheries Museum curator Halkett went to Montreal to meet the vessel and take receipt of the model ships which cost £288.¹²⁰ Although the museum wanted its models to be “Canadian,” these British ship models showed that fisheries were a transnational endeavour; steam-powered fishing technology, and scale-models of it, were embedded in a global capitalist economy that diffused new capital-intensive fishing-technologies.

Scale models were effective representations of fishing technologies, but some of the models produced for the museum also raised questions about appropriate scale and fidelity. The museum, for example, commissioned Fred Sole in Sarnia, Ontario, to build a model of a pound net, a complex shore-based net system in extensive use on the Great Lakes. The completed model impressed the fisheries department, but it questioned Sole’s choice of a three-eighths-inch-to-the-foot scale, which resulted in a large display.

¹¹⁹ Tristram Edward to Deputy Minister, Minister of Marine & Fisheries, 8 August 1911, RG 23, volume 226, file 1271, LAC.

¹²⁰ W.A. Found to The Allen Line, 14 June 1912, RG 23, volume 226, file 1271, LAC.

Fisheries officials admired the model for “its correctness in detail,” but regretted that it was “not somewhat smaller.” At the same time, the museum questioned Sole’s laborious commitment to accuracy in the modeling of net’s mesh. “While scientifically this is of the most utmost importance, from a museum standpoint it is not essential,” the fisheries department advised Sole. W. A. Found thought the net was so detailed that it could be used on much smaller models and “very few indeed would notice any discrepancy in scale.” The matter was also an issue because Sole wanted \$80 for the model as he claimed to have spent 25 days alone knitting the net mesh. The museum, however, claimed that it had not paid more than \$50 for any of its models; scale accuracy in this case bore costs above what the museum thought was reasonable.¹²¹

The discussion over Sole’s pound-net model pointed toward larger-scale fisheries issues and the relationship of models to the complex social and political relations which they abstracted. While a museum model accurately scaled the technology of Great Lakes pound-net fisheries, it also simplified and resolved them into an easily readable form. Much as a fish specimen disentangled an individual animal from a complex ecological community and presented it as a formal representative in a systematic model of species, a model net or boat abstracted fishing technology from complex social relations and presented it as a practical yet aesthetic object representative of a technological order. The pound-net model, for example, did not capture that the technology was a large-scale capital-intensive fishing technology that had significant impacts on Great Lakes fisheries. Pound-nets limited access to fish, impinged on aboriginal fishing rights, and were linked to over-fishing. Instead the model pound net focused a visitor’s attention on its rational

¹²¹ W.A. Found to Fred Sole, 11 June 1917, RG 23, volume 1146, file 722-3-2 [5], LAC; Fred Sole to WA Found 27 June 1917, RG 23, volume 1146, file 722-3-2 [5], LAC.

geometric form, aestheticized in scale and craft through the modeler's art—a model that was fisheries officials found “artistic” and “representative.”¹²²

The museum also purified its models of commercial connections by ridding them of signs that showed they originated with fishing companies and equipment suppliers. When Toronto fishing supply company John Leckie Ltd. delivered four models of fishing nets to the museum the advertising cards that accompanied them were refused.¹²³ Similarly when a ship model-maker asked the museum if it wanted a name placed on the schooner model he was building for its collection, the museum told him “as it is representative of a type, it is not considered desirable to have a name placed thereon.”¹²⁴ Models were thus exempt from the requirement for location-specific data that governed fish collections: models were exemplars abstracted from their production. They were not quite timeless and placeless, however. Models of steam vessels exemplified modernity, while models of vernacular fishing technologies represented distinctive regional fisheries. While fish were difficult to model, scale models permitted the confident remodeling of the museum's “systematics of fisheries” with far less resistance.

5.5 Building a Whale

Scale-models generalized fishing as a productive economic activity without having to detail specific patterns of ownership, state policy, or ecological impacts. These were all miniaturized or scaled to invisibility. Scale at the gigantic end could also be used to authorize the museum. In 1914, Andrew Halkett obtained a large whale skeleton that

¹²² Bogue, *Fishing the Great Lakes*, 100-101; Michael J. Chiarappa, “Great Lakes Commercial Fishing Architecture: The Endurance and Transformation of a Region's Landscape/Waterscape,” *Perspectives in Vernacular Architecture* 10 (2005): 217.

¹²³ “Memorandum, 1915-16” 16 March 1916, RG 23, volume 1146, file 722-3-2 [4], LAC.

¹²⁴ W.A. Found to Joseph McGill, 21 March 1913, RG 23, volume 226, file 1271, LAC.

placed the Fisheries Museum in a select company of natural history museums, including the American Museum of Natural History and the Natural History Museum in London. These institutions exhibited massive skeletal reconstructions of whales and dinosaurs that drew visitors fascinated by gigantic creatures. Giant skeletons served as powerful emblems of museological prestige and scientific attainment, and museum curators avidly sought them for prominent display in entrance halls and from gallery ceilings.¹²⁵

London's Natural History Museum had perhaps the largest nineteenth-century collection of articulated whale skeletons: when the natural history museum opened its doors in 1885, the first exhibit that visitors encountered was a Sperm whale skeleton after which they could proceed to the "whale room" and view an entire gallery of skeletonized whales.¹²⁶ While whale specimens and skeletons provided popular and iconic displays, they also challenged museums. Skeletons were heavy, required intensive cleaning, and occupied large display spaces. Multi-story museum atriums with iron-and-glass ceilings provided room to suspend whale skeletons, but their size and weight defied some efforts to display them. A Blue whale skeleton in London's Natural History Museum collection weighed ten tons and was not assembled and suspended until 1934, forty-three years after it had been recovered from a whale beached in Ireland.¹²⁷

Since whales were difficult if not impossible to mount like fish, taxidermists and museum preparators turned to other methods to model whales. Plaster casting and papier-

¹²⁵ Richard D. Altick, *The Shows of London: A Panoramic History of Exhibitions, 1600-1862*. (Cambridge, MA: Harvard University Press, 1978) 65; Frederick W. True, "The British Museum of Natural History," *Science* 6, No. 132 (1885): 128; William T. Stearn, *The Natural History Museum at South Kensington* (London: The Natural History Museum, 1981) 118; S. J. M. M. Alberti, *Nature and Culture: Objects, Disciplines and the Manchester Museum* (Manchester: Manchester University Press, 2009) 125.

¹²⁶ Frederick W. True, "The British Museum of Natural History," *Science* 6, No. 132 (1885): 128.

¹²⁷ William T. Stearn, *The Natural History Museum at South Kensington* (London: The Natural History Museum, 1981) 131.

maché were popular materials with the latter being light and easy to handle. Such models were constructed at various institutions including the Smithsonian and the American Museum of American History.¹²⁸ The latter museum built a seventy-six-foot papier-maché model of a blue whale in 1907 while the Smithsonian had earlier revealed a hybrid model: a thirty-three-foot humpback whale that consisted of a skeleton enveloped by a papier-maché cast.¹²⁹ Concerns about the authenticity of such “wooden whales” was mitigated by emphasis on the skill of museum taxidermists and their careful measurements of the real animal before modeling.¹³⁰ Some curators, however, preferred skeletons, including British Natural History Museum curator William Henry Flower who favored skeletons because they were durable. “No portions of the structure of vertebrate animals can be preserved with greater facility than the bones and teeth,” Flower noted. Moreover, the skeleton “gives, more than any other system, an outline of the general organisation of the whole animal.”¹³¹ Whether presented as a wood-and-paper model or as a skeleton, whale displays brought “the whole beast, life-sized, unreduced, into the heart of the city, where citizens [could] survey the wonders of nature as wrought by human ingenuity.”¹³²

Whales have long been objects of popular and natural-history interest. Beached whales may have been the first public whale displays, drawing onlookers to marvel at their size and bulk. Stranded whales also provided skeletal specimens for natural history

¹²⁸ Michael Rossi, “Modeling the Unknown: How to Make a Perfect Whale,” *Endeavour* 32, no. 2 (2008): 58.

¹²⁹ Frederick W. True, “The Exhibition of Cetaceans by Papier Maché Casts,” *Nature* 8, No. 186 (1898): 109

¹³⁰ Michael Rossi, “Fabricating Authenticity: Modeling a Whale at the American Museum of Natural History, 1906-1974,” *Isis* 101 (2010): 344.

¹³¹ W. H. Flower, *Essays on Museums and Other Subjects Connected with Natural History* (London: Macmillan, 1898) 88.

¹³² Rossi, “Modeling the Unknown,” 58.

museums, which in the mid-nineteenth century began to develop systematic cetacean collections. In the late nineteenth century, museums took advantage of changes in whaling to amass larger collections of whales, including whales that had been previously hard to collect. Beginning in the 1860s, Norwegian whalers began hunting rorqual whales—large, fast whales that included Blue, Fin-back, and Minke species—that had been previously ignored because of their speed and tendency to sink after killing. The development of faster steam-powered boats, equipped with powerful bow-mounted harpoon guns, allowed whalers to exploit rorqual-type whales from shore-based whaling stations.¹³³ While museum zoologists expressed concerns about excessive whaling, they became dependent on and implicated in commercial whaling. D. Graham Burnett calls these researchers “hip-booted cetologists” because their work was usually conducted aboard whaling ships or on flensing platforms at whaling stations. In North America, Roy Chapman Andrews exemplified the close link between whaling and museums; his North American whale survey for the American Museum of Natural History took him to whaling stations in Quebec and British Columbia in search of specimens.¹³⁴

Andrew Halkett’s search for a whale skeleton illuminates this intersection in Canada. After whaling was banned in Norway’s coastal waters in 1904, Norwegian whalers turned to Newfoundland and Canada, where industrial whaling grew quickly. When whaling in Newfoundland suddenly declined in the 1900s, whalers shifted their attention to the Gulf of St. Lawrence and the Pacific coast. In 1911 the Norwegian-

¹³³ J.N. Toennessen and Arne Odd Johnsen, trans. *The History of Modern Whaling* (Berkeley: University of California Press, 1982) 25-35.

¹³⁴ Stearn, *Natural History Museum*, 120-21; Rossi, “Fabricating Authenticity,” 347; D. Graham Burnett, *The Sounding of the Whale: Science and Cetaceans in the Twentieth Century* (Chicago: University of Chicago Press, 2012) 215; Roy Chapman Andrews, *Whale Hunting with Gun and Camera* (New York: D. Appleton and Company, 1916) 140.

Canadian Whaling Co. established a whaling station in Sept Iles, Quebec. One of the largest whaling companies in the world, the Pacific Steam Whaling Company, was based in Victoria with three whaling stations on Vancouver Island. Chapman Andrews visited the Pacific Steam Whaling Company's operations in 1908 and reported that one of the company's shore-based whaling ships killed three hundred and twenty-five whales in seven months, twenty-six in one week alone. For Andrew Halkett, these whaling companies provided the best opportunity to collect a complete whale skeleton from Canadian waters.¹³⁵

Halkett's search for a skeleton began in 1911 in the Queen Charlotte Islands (now known as Haida Gwaii). Visiting a whaling station at Naden Harbour, Halkett was only able to collect a whale fetus, which he bought for ten dollars.¹³⁶ The next year Halkett was in Nova Scotia, where he was alerted to a decomposing beached whale that measured seventy feet. But the whale was quickly being dismantled by local residents. "When seen by me one large bone of the head...was exposed," Halkett reported, "and parties had been at work chopping it with an axe or some other instrument." Nevertheless Halkett asked the plant manger to secure the skeleton once "the flesh and entrails have wasted away."¹³⁷ When he was unable to obtain this skeleton, Halkett approached Canadian whaling companies for help. Halkett specified that the skeleton had to be complete. He especially wanted a specimen with intact baleen "in the upper jaw," as well the pelvic bones—"or bones of the aborted hind limbs"—which provided visible proof of the whale's theorized relation to land mammals. The search was constrained, however, by one requirement: the

¹³⁵ Toennessen and Johnsen, *Modern Whaling* 75; 107-8; 114-17; Andrews, *Whale Hunting*, 19.

¹³⁶ "Memorandum," 28 November 1911, RG 23, volume 226, file 1271, LAC.

¹³⁷ "Memorandum," 27 September 1912, RG 23, volume 226, file 1271, LAC; "Memorandum," 2 October 1912, RG 23, volume 226, file 1271, LAC.

skeleton had to fit inside the Fisheries Museum. With its front doors measuring less than six feet wide and its top floor measuring thirty-seven by fifty-two feet, the museum could not accommodate a skeleton any larger than forty-five feet. A skeleton so-sized would provide a safe margin of several feet and “there would be less danger of not getting the skull through the door.”¹³⁸

The Canadian Northern Pacific Whaling Co. replied that finding a whale less than sixty-five feet would be difficult. The Norwegian Canadian Whaling Co. also expressed doubts: forty-foot whales were rare and no whale less than fifty feet had been spotted so far that summer. Moreover the company was too busy to clean a whale skeleton. As the company’s legal representative in Montreal explained “[t]he preparing is rather a long process. After the blubber has been taken off, we must place the carcass on the beach to let the meat putrefy some time before we are able to get the bones cleaned.” The whaling company eventually relented, however, and agreed to supply a skeleton. The company also sent an official to measure the Ottawa museum’s top gallery, who established a maximum length of forty-seven feet for a skeleton specimen.¹³⁹

Early in 1914, Halkett learned that the whaling company had captured a large Fin-back whale in the Gulf of St. Lawrence and had dispatched its skeleton to Montreal. When the skeleton arrived in Ottawa, Halkett reported that it was not entirely clean as “it was not bleached by being left in sea water until all the flesh would be removed from the bones, as is the usual practice.”¹⁴⁰ The museum thus had to undertake the laborious process of cleaning, which fell to the museum’s general labourer, Joseph Alexandre

¹³⁸ Memorandum,” 14 July 1913, RG 23, volume 226, file 1271, LAC.

¹³⁹ Andrew Halkett to Canadian Northern Pacific Fisheries Ltd., 3 May 1913 & 8 May 1913, RG 23, volume 226, file 1271, LAC; Meredith Macpherson Hague Holden & Shaughnessy to Deputy Minister of Fisheries, 12 July 1913, RG 23, volume 226, file 1271, LAC.

¹⁴⁰ A. Johnston to S.L. Sverre, 20 February 1914, RG 23, volume 1146, file 722-3-1, LAC.

Rochon. Some museums relied on outside taxidermists to build whale skeletons. The Manchester Museum hired one to construct its Sperm whale skeleton purchased from natural-history dealer Ward's in 1898. Other museums such as the Smithsonian and the American Museum of Natural History relied on inside workers to construct whale models and articulate whale skeletons. While the Fisheries Museum used outside workers such as taxidermist Sherman Denton to mount fish, it chose inside worker Joseph Rochon to undertake this gargantuan task.¹⁴¹ Hired in 1903 as a labourer, Rochon had acquired sufficient experience in specimen preparation by 1913 to undertake the building of a whale skeleton, one of the most challenging of projects in natural history museums.¹⁴² The skeleton had to be stripped of remnant flesh and purged of residual oils so that it did not offend visitors' sense of smell. This preparatory work halted decay and also stripped the whale of its commercial associations. Purified of putrid flesh and foul odours, the skeleton acquired new meanings as an object of systematic taxonomy, morphology, and spectacle.¹⁴³

Beginning in early April, Rochon began by scraping whale flesh from the bones and ridding them of "oily and greasy substances." Halkett sought advice to hasten the cleaning process and asked the Canadian Geological Survey to recommend chemical agents that would dissolve muscle and flesh while leaving the bones intact. There was some urgency to the question. The skeleton needed to be cleaned, Halkett warned, before

¹⁴¹ Alberti, *Nature and Culture*, 126.

¹⁴² F.G. Gourdeau to A.H. Cunningham, 26 November 1903, RG 23, volume 260, file 1708, LAC; Andrew Halkett praised Rochon's osteology skills. Halkett wrote that Rochon "manifests ability of a handicraft nature, and especially that he has shown real skill for dislocating, whitening, and mounting skeletons of vertebrates." Andrew Halkett to "Whom it may concern," 26 February 1918, Folder 10, Box 37, Series A, CMNAC: 1996-077, R.M. Anderson Papers, Canadian Museum of Nature Archives, Aylmer, Quebec.

¹⁴³ Michelle Henning, "Neurath's Whale," in *The Afterlives of Animals*, Samuel J. M. M. Alberti, editor (Charlottesville and London: University of Virginia Press, 2011) 152-58.

“the warm weather comes on; if not it will be almost impossible to scrape them on account of the smell.” Out of various bone-cleaning techniques practiced at other natural-history museums, Rochon opted to immerse the Fin-back’s skeleton in a bleach solution. While Rochon was performing this work, he also had to attend to his duties as museum porter. He complained that he had to wash and change his clothes twice a day to make himself presentable for this work, which consisted of keeping “a constant guard” on museum visitors. But Rochon wanted to clean bodies, not watch them, and asked Halkett to relieve him of guardian duties so he could devote his entire working day to the “special work” of cleaning the whale.¹⁴⁴

In early July Rochon advised Halkett that the whale skeleton, now clean, required several weeks drying in the open air and sun before it could be mounted. The *Ottawa Citizen* took note of this stage, calling the drying bones “the most remarkable looking wash hanging out on a clothesline that the Capital ever saw.”¹⁴⁵ While the skeleton dried, Rochon turned his attention to the steel armature on which he would mount the whale’s bones. An invoice from a local iron-monger specified the materials for this work: four ten-foot sections of two-inch diameter steel rod with threaded couplings and a hundred hex-nuts and two hundred washers. This formed what was essentially an iron backbone for the skeleton: Rochon then drilled through each vertebra and threaded them onto the steel armature and thus articulated the skeleton. How Rochon accomplished the difficult task of attaching the fins and skull to the reconstructed vertebral column is unclear, but through July Halkett reported that Rochon was “energetically keeping at it.” By early August the whale was ready for final assembly and installation in the museum. Halkett

¹⁴⁴ Andrew Halkett to W.A. Found, 4 April 1914 and 23 April 1914, RG 23, volume 226, file 1271, LAC.

¹⁴⁵ “A Remarkable Wash,” *The Ottawa Citizen* July 17, 1914, 5.

ordered scaffolding to the museum and Rochon asked for a crew of ten men “for the placing of a skeleton of a whale in the upper room of the Fisheries Museum.”¹⁴⁶ The skeleton was suspended from the ceiling in early August and the whale just fit: at 50-feet long the whale skeleton filled the fifty-two-foot hall.

The whale skeleton was an object of considerable prestige for the Canadian Fisheries Museum. No other museum in Canada had a similar skeleton of such size on display; even some major American natural history museums could not boast of a similar exhibit.¹⁴⁷ The skeleton’s authority derived from its status as a “real” object rather than a constructed model. As Michael Rossi notes, natural history museums and dealers commonly bought and sold whale models constructed of papier maché and molded onto wood frames, rather than rely on as actual whale carcasses, which were difficult to acquire. But while museum taxidermists vouched for the accuracy and authenticity of such models, suspicions lingered that such models were shams. When the Victoria Memorial Museum considered buying a whale model, politicians debating the museum’s expenditures derided the purchase as “[r]idiculous and silly.” “There is no need in war time,” one member of parliament declared, “to buy more wooden whales.”¹⁴⁸ The skeleton, in contrast, was real: moreover its reconstruction demonstrated that the Fisheries Museum possessed the skill and scientific knowledge required to perform such a massive undertaking.¹⁴⁹

¹⁴⁶ Joseph Rochon to Andrew Halkett, 5 August 1914, RG 23, volume 1146, file 722-3-2 [3], LAC.

¹⁴⁷ J.A. Rochon to Andrew Halkett, 5 August 1914, RG 23, volume 1147, file 722-3-2 [2], LAC.

¹⁴⁸ *The Globe*, Thursday, March 30, 1916, 3. Halkett later commissioned Denton to construct a twelve foot papier-mache model of a pygmy sperm whale using a mold Denton acquired from a natural history supplier. Sherman Denton to G.J Desbarats, 21 December 1914, RG 23, volume 1146, file 722-3-2 , LAC.

¹⁴⁹ Victoria Cain, “The Art of Authority,” 219.

5.6 Conclusion

The whale skeleton provided a fitting capstone for the museum's remodeling, although the upper floor, and its "conspicuous object," was not finally open to the public until late 1915 or early 1916.¹⁵⁰ *The Ottawa Naturalist* praised the museum, which it noted had been "entirely remodeled" by Halkett, the "well known naturalist." It also noted the new collection of mounted fish and how it had been "beautifully arranged and classified" according to Halkett's *Checklist*, the authoritative catalogue that certified the museum's authoritative collection.¹⁵¹ Even with the delay in opening the upper floor, the Fisheries Museum recorded an increase in visitors after its remodeling. In previous years the museum had annually received fifteen to twenty thousand visitors: in 1915 it counted almost thirty thousand and in 1916 over forty-five thousand.¹⁵²

From 1910 to 1914, Andrew Halkett had engaged in the museum's most extensive renovation of its interior spaces and collection. After the museum collection was denied space in the Victoria Memorial Museum—the new national natural history museum that was part of Ottawa's emerging "capitol complex"—Halkett was granted funds to expand within the Fisheries Building. Remodeling was a quest for authority, but some objects and materials were more amenable than others. Some models appeared to offer "god-like power over realities," such as scale-models of fishing vessels and fishing gear. Others, such as the Fin-back whale skeleton, became an emblem of pride for the Fisheries

¹⁵⁰ "The Canadian Fisheries Museum," *The Ottawa Naturalist* 29, no. 8 (1915): 99; An American Museum of Natural History curator described a whale model as a "fitting capstone" to an ocean exhibit. Memorandum, 2 November 1927, CA 2622, Central Archives, American Museum of Natural History, New York.

¹⁵¹ "The Canadian Fisheries Museum," *The Ottawa Naturalist* 29, no. 8 (1915): 99.

¹⁵² Canada, *Forty-Ninth Annual Report of the Fisheries Branch, Department of the Naval Service 1915-16* (Ottawa: King's Printer, 1916) 336. The increase in visitors cannot be ascribed solely to the museum's remodeling: there was an influx of military personnel into war-time Ottawa and the Victoria Memorial Museum was closed as it was accommodating Canada's parliament.

Museum. But the core of the museum—fish—were an unstable medium. Their stability as authoritative models was elusive and contingent.

Chapter Six: Consuming at the Canadian National Exhibition

The year 1913 was an auspicious one for the Fisheries Museum in Ottawa. After ten years of work, Andrew Halkett published his faunal catalogue *The Checklist of the Fishes of the Dominion of Canada*. The museum's expansion and renovation was completed and the museum reopened with a new collection of specimens and models on display. The year also marked a significant shift in the fisheries department's exhibitionary strategy when the museum mounted a consumer-themed exhibit at Canada's largest seasonal fair, the Canadian National Exhibition (CNE) in Toronto. Between 1913 and 1918, the Fisheries Museum collection, under Andrew Halkett's supervision, was integrated into a government campaign designed to promote fish consumption and inspire confidence in fish as a safe, wholesome food. The campaign, produced in collaboration with fish wholesale merchants, began with an exhibit designed to resemble a modern fishmonger's shop and presented the museum's mounted fish specimens alongside fresh and preserved fish in an idealized retail space. In 1915, the fisheries department extended the campaign and began operating a fish restaurant at the CNE, where it also distributed a free fish cookbook.

The campaign, intended to expand demand for fresh fish in particular, represented a sea-change in the fisheries department's modeling of fisheries. The CNE exhibits and campaign shifted focus from production to consumption, a change framed in gendered terms. Consumption was represented as a feminine activity and responsibility. For the

first time, the Fisheries Museum collection was used in an exhibit that acknowledged women as actors, although in the limited role of middle-class consumers, in Canadian fisheries. As a school for consumption, the campaign was not only an extension of the state's educative capacity, but a widening of its scope as the campaign took consumer behaviour as its object. The campaign's goal was to increase Canadian consumption of fresh fish, a product growing in importance as Canadian fisheries became increasingly industrialized and capitalized. Figuring women as domestic culinary gate-keepers, but hapless fish cooks, the campaign sought to train women in shopping and culinary skills that would increase demand for fish by familiarizing women with their proper preparation. During World War I, this campaign seamlessly merged with state-mandated food rationing and measures to reduce consumption of meat, which was reserved for fighting men. Fish preparation and consumption was thus represented as a national and patriotic duty of female consumer citizens.

The CNE exhibits and campaign effectively highlighted the limits of the Canadian Fisheries Museum's modeling of a masculine "systematics of fisheries" centered on production. Compared to the Ottawa museum, the CNE reached a larger audience at the growing centre of Canada's industrial economy and the campaign led the fisheries department to question the Fisheries Museum's utility. Doubts intensified after 1917 when the fish-consumption campaign was integrated into Canada's war-time food strategy. The Office of the Food Controller (later the Canada Food Board) supported the fisheries department's eat-more-fish campaign, but also critiqued the fisheries department's exhibitionary strategies. In 1918 the fisheries department ceded responsibility for the fish-consumption campaign to the Canada Food Board and

withdrew from further participation at the CNE. The Fisheries Museum closed the same year and the Fisheries Building, the museum's home for thirty-four years, was demolished. This chapter focuses on this critical period in the museum's history: it examines how gender reshaped the modeling of Canadian fisheries as consumption became a distinct concern in Canadian fisheries administration, and the impact on the Fisheries Museum.

6.1 Contexts for Consumption

Historians of consumption describe the late nineteenth century as the formative moment in the emergence of consumerism and consumer society in North America. Industrialization, urbanization, democratization, and immigration have all been implicated as factors in the increasing consumption of manufactured goods across all classes of society. Growth in waged work and the industrial output of everyday items from food to clothes, along with the expansion of transportation networks, "led businesses to coordinate methods of distribution and sales," Kathy Peiss argues, "and to forge the infrastructure of our consumer culture."¹ Innovations in advertising, retailing, store architecture and design, lighting, packaging, book-keeping and other areas of business changed the terrain of selling and buying. Large department stores and specialized retail outlets materialized these changes and created a new urban landscape serving a new figure, the consumer. Industrial exhibitions morphed into consumer exhibitions, where manufacturers attempted to engineer confidence in their products and,

¹ Kathy L. Peiss, "American Women and the Making of Modern Consumer Culture," *The Journal for MultiMedia History* 1, no. 1 (1998). <http://www.albany.edu/jmmh/vol1no1/peiss-text.html#biblio%20notes> (accessed October 24, 2013) 1.

more broadly, in a new social and economic order characterized by an increasing variety of standardized manufactured products designed to satisfy new needs and desires.²

These changes were also evident in the fisheries as North American fisheries underwent major technological, organizational, and environmental changes in the late nineteenth century, which shifted state attention from problems of production to questions of consumption. Fisheries intensified and expanded: they became more technology- and capital-intensive and underwent corporate concentration as capitalists sought to gain competitive advantage. Workers in turn tried to organize themselves in the face of these challenges. Markets changed with growth in urban population and immigration. In the United States, increasing numbers of Jewish and Catholic immigrants drove demand for fish as their religious observances called for its consumption. And in the waters, fish populations endured environmental stresses in the shape of over-fishing, habitat changes, and exotic-species introductions. Fisheries boomed and went bust.³

There were significant changes to the ways fish were caught. Following developments in European fisheries, North American fishing shifted from sail-power vessels to steam- and gas-powered ones, which also used power to set and lift heavy nets.

² Donica Belisle, "Toward a Canadian Consumer History," *Labour/Le Travail* 52 (2003): 181; Donica Belisle, *Retail Nation: Department Stores and the Making of Modern Canada* (Vancouver: UBC Press, 2011); David Monod, *Store Wars: Shopkeepers and the Culture of Mass Marketing, 1890-1939* (Toronto: University of Toronto Press, 1996); William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Vintage Books, 1994); *Becoming Modern in Toronto: The Industrial Exhibition and the Shaping of a Late Victorian Culture* (Toronto: University of Toronto Press, 1997) 84-5.

³ Brian Fagan, *Fish on Friday: Feasting Fasting and the Discovery of the New World* (New York: Basic Books, 2006) 35; Harold Innis, *The Cod Fisheries: The History of An International Economy* (1940; repr., Toronto: University of Toronto Press, 1978); Jennifer Hubbard, *A Science on the Scales* (Toronto: University of Toronto Press, 2006); W. Jeffrey Bolster, *The Mortal Sea: Fishing the Atlantic in the Age of Sail* (Cambridge, MA: Harvard University Press, 2012); Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis*. (Seattle: University of Washington Press, 1999); Margaret Beattie Bogue, *Fishing the Great Lakes: an environmental history* (Madison: University of Wisconsin Press, 2000); Tim D. Smith, *Scaling Fisheries: the Science of Measuring the Effects of Fishing, 1855-1955* (Cambridge: Cambridge University Press, 1994).

Heralded as “the latest and most successful mode of capturing large quantities of fish ever put into operation,” trawlers or draggers used a net called a large bottom drag-net trawl to scoop up huge amounts of fish.⁴ Changes in fishing technology also led to changes in fish processing and marketing as fishermen moved from preserving fish to shipping fish for the fresh-fish market. The weekly trade magazine *Canadian Grocer*, for example, reported faster turnaround and better quality from trawler boats. “Instead of depending upon the old sailing trawlers,” the magazine reported, “[fish companies] use steam trawlers and are thus able to land their catches every other day... Thus the dealers get their supplies in less time and the fish are in a better state of preservation than formerly.” These vessels also exploited species of fish, such as flounder, that were previously ignored by commercial fisheries because they could not be dried or salted.⁵

There was also a revolution in distribution with fresh-fish production gaining advantage with the expansion of railway networks in the late nineteenth century. The completion of rail lines such as the Intercolonial Railway between Montreal and Halifax in 1876 allowed Atlantic fish to be shipped to inland Canadian markets, while the Canadian Pacific Railway’s completion in 1885 opened up fish transport from the Pacific coast. Fresh-fish producers could ship and display fish in better condition thanks to artificial ice makers, insulated railcars, and refrigerated display cases. Fresh-fish production thus grew in the late nineteenth and early twentieth centuries. In 1881 fresh fish represented seventeen percent of the total value of Canadian fisheries; by 1900 that figure had grown to thirty-three percent and was growing faster than the trade in dried

⁴ J.J. Cowie, “Sea-Fisheries of Eastern Canada,” in *Commission of Conservation*, edited by Clifford Sifton and James White (Ottawa: 1912) 108

⁵ “Arrival of Lent Means Big Fish Sales,” *The Canadian Grocer* 27 no. 4 (24 January 1913): 38; Bolster, *The Mortal Sea*, 239-248.

fish. Between 1901 and 1911, the value of fresh-fish shipments from Nova Scotia, for example, almost doubled and by 1914 fresh fish represented forty percent of Canada's total fish production measured in dollars.⁶ As Glenn Grasso notes, the shift from cured fish to fresh fish had class and racial dimensions. Pickled and salted fish had been a middle-class staple, but became associated with working-class immigrants and the southern black population in the United States. "In an upwardly-striving, increasingly middle class nation," Grasso notes, "the identification of fish consumption with poverty was sufficient incentive for many to abandon the practice."⁷

This gradual shift from seasonal production of salted fish to year-round production of fresh fish is apparent in the pages of the weekly grocery-trade magazine, *The Canadian Grocer & General Storekeeper*. The publication kept a close eye on fish sales in central Canada in the 1890s and 1900s, providing insight into Canada's urban fish markets. In 1891, an advertisement for a Hamilton grocery-wholesaler showed that it carried more pickled, dried, and smoked fish than fresh. Weekly reports on Toronto fresh-fish prices in the same period reveal a small selection of freshwater and marine species for sale. By 1901, the *Canadian Grocer* reported a wider variety of marine species for sale such as red snapper, cod, and haddock, and noted the opening of several new fish dealers. By 1914, the list of fresh fish available for sale in Montreal and Toronto had expanded to twenty-two species of fresh- and salt-water fish.⁸

⁶ Innis, *The Cod Fisheries*, 418-432; Bolster, *The Mortal Sea*, 165-66; "Market value of fisheries products by major process forms Canada 1870-1960," Series M69-78, *Historical Statistics of Canada*, edited by M.C. Urquhart and K.A.H. Buckley (Cambridge and Toronto: Macmillan Company of Canada, 1965) 398; Balcom, "Technology Rejected," 186-187.

⁷ Glenn M. Grasso, "What Appeared Limitless Plenty: The Rise and Fall of the Nineteenth-Century Atlantic Halibut Fishery," *Environmental History* 13 (January 2008): 74.

⁸ "Fish," *The Canadian Grocer & General Storekeeper* 5 no. 27 (3 July 1891): 27. See also *The Canadian Grocer & General Storekeeper*, 24 July 1891; 7 August 1891; 23 October 1891; 25 December 1891;

Across Canada, the shift to fresh-fish production had regional differences. In British Columbia, the trade grew in the shadow of the province's dominant fishery, the salmon canning industry, and largely focused on one species, halibut. Halibut became important in the late 1880s when Atlantic halibut populations crashed after intense exploitation. Halibut, once scorned as a nuisance fish, had become popular on the Atlantic coast as in-shore cod fisheries declined. Fishermen discovered that its firm flesh was palatable and withstood icing, which made it suitable for the fresh-fish trade. Halibut, along with some fresh Pacific salmon, thus became part of a west-east trade in fish via the transcontinental railway.⁹

The Great Lake fisheries were the least affected by the shift to fresh fish. Fishermen had already been supplying fresh fish to the basin's major urban centres since the fisheries began growing in the 1830s, and grew as the region's railway network expanded. Over-fishing and anthropogenic changes, including exotic fish introductions, also shaped the fresh-fish trade. Fisheries moved from species to species as populations of different fish declined. After carp were introduced into the Great Lakes in the 1880s, for example, fishermen caught them and shipped them live to New York to supply new markets among the city's burgeoning European population, which valued the fish.¹⁰

The fisheries perhaps most affected by this transformation were those in Atlantic Canada. While fresh fish had figured in trade between the northeast United States and New Brunswick and Nova Scotia since the 1840s, the principal commodity was dried

"Fish," *The Canadian Grocer* 15 no. 27 (5 July 1901): 24; "Fish," *The Canadian Grocer* 28 no. 27 (3 July 1914): 44.

⁹ Glenn M. Grasso, "What Appeared Limitless Plenty," 66-91; John Thistle, "'As Free of Fish as a Billiard Ball is of Hair:' Dealing with Depletion in the Pacific Halibut Fishery, 1899-1924," *B.C. Studies* 142/143 (2004): 108.

¹⁰ Bogue, *Fishing the Great Lakes*, 257.

salt-cod. Cod had been the basis for a trans-Atlantic economy beginning in the sixteenth century, but changes in international markets and the shift from sail to steam created dislocations in labour and capital across the North American Atlantic fisheries. Increased competition from European salt-cod producers, declines in West Indian trade, and shifts in sugar production led to declines in salt-cod fisheries and opened opportunities for fresh fish. As Harold Innis pointed out, fresh-fish production was more capital intensive, and prone to concentration, evidenced in the United States by the development of modern fish processing and distribution facilities in Boston in 1910.¹¹

In Canada, the federal government sought to modernize the traditional salt-cod fishery and smooth its transition to new forms of production and different fish species through various measures. These included providing education and technical advice to fishermen in attempts to develop new markets and new products. The federal government also subsidized the rail shipment of fresh fish from both the Atlantic and Pacific coasts to counter American competition. And while Jennifer Hubbard argues that many of these projects failed to help Atlantic Canadian fishermen, these efforts mark an important shift in Canadian fisheries administration from regulating production to increasing consumption.¹²

One such project, an attempt to transfer Scottish herring-processing techniques to Canada, eventually led to the consumer campaign inaugurated at the CNE in 1913. In 1903, the fisheries department invited John Cowie, a member of a Scottish fish-processing company, to demonstrate fishing methods that made Scottish herring popular

¹¹ Innis, *The Cod Fisheries*, 418-432.

¹² Innis, *The Cod Fisheries*, 435; Bolster, *The Mortal Sea*, 268. “Modernization” would be the siren call of fisheries in Canada in the 20th century; it occupied later administrators as Miriam Wright has shown and led, as Dean Bavington has argued, to the “managed annihilation” of the northern cod.

in European and American markets. “It has long been a matter of grave concern,” the department reported, “that the pickled herring put up in the maritime provinces of Canada have never gained a very high place in the markets of the world.”¹³ Cowie arrived with the latest in fishing technology: a steam-powered herring drifter along with a male crew to operate the vessel and six “girls” to process the catch. After the completion of the trial, Cowie remained in Canada and joined the fisheries department as an inspector of cured fish. He also became an outspoken critic of Canada’s “non-progressing” Atlantic fisheries and an early and vocal advocate for consumer-oriented campaigns. In this shift, urged on by Cowie, what came into focus was the gendered realm of consumption, which moved the focus of fishing from the ocean to the threshold of consumption, the domestic kitchen.¹⁴

6.2 Modernization and Consumption

In 1908, John Cowie—herring processor turned fisheries inspector—delivered a blunt analysis of Canada’s Atlantic fisheries. In contrast to inland and Pacific fisheries, which yearly increased in value, Atlantic fisheries were stagnant, increasing their value only marginally between 1884 and 1906 from \$14.8 million to \$15.8 million. Cowie ascribed “the lack of progression” to several factors, but generalized the problem as a failure to adopt modern technology and larger-scale capitalist enterprises:

To the writer, who has seen the great industries of steam trawling and steam

¹³ Canada, *Thirty-Seventh Annual Report of the Department of Marine and Fisheries 1904* (Ottawa: King’s Printer, 1905) xii-xiii; Hubbard, *Science on the Scales*, 96-7;

¹⁴ Ruth Fulton Grant, *The Canadian Atlantic Fishery* (Toronto: The Ryerson Press, 1934) 127; Suzanne Morton, “‘The End Man Is a Woman’: Women, Fisheries, and the Canadian State in the 20th Century,” in *Making Up the State: Women in 20th-Century Atlantic Canada*. Edited by Janet Guildford and Suzanne Morton (Fredericton: Acadiensis Press, 2010).

drifting, with all the concomitant and subsidiary industries they bring in their train, grow and expand by leaps and bounds in the course of a decade in Great Britain, the spectacle of beholding an industry, on which such a large proportion of the population of our maritime provinces depends for its very existence, simply marking time for such a long period, is a source of great amazement.¹⁵

This failure to modernize was conceived of as the root of Atlantic Canada's problem, as the fishing industry of the region remained reliant on an outmoded staple product, salt cod. Cod was losing favour with consumers in part because Canadian fishermen produced "'fillets' that are too salty for the average consumer."¹⁶ Cowie contended that fishing companies needed to produce more consumer-oriented products like fillets of smoked fish recently offered by Halifax merchants. Cowie was heartened by improvements in distribution, however. The completion of a rail link between New Glasgow and Port Mulgrave in Nova Scotia in 1880 had enabled deliveries of fresh ocean-fish to central Canada. In 1907, the fisheries department began subsidizing railcar transport of fish to Montreal and Toronto to counter American wholesalers who dominated Canada's inland markets.¹⁷

Improved fish production, transportation, and distribution were useless, however, without changes to Canadian fish-consumption habits. Canadians were "non-fish eaters" and Cowie blamed the final two links in the commodity chain, inland retailers and housewives. Cowie accused retailers of shoddy handling of fish and putting up unappetizing displays:

A dealer, usually a butcher, on a Friday morning places a large tin tray in his shop window on which are laid out, generally in an inch or more of their own blood, a

¹⁵ John J. Cowie, "The Non-Progression of the Atlantic Fisheries of Canada," in Canada, *Forty-Third Annual Report of the Department of Marine and Fisheries 1909-10* (Ottawa: King's Printer, 1910) lxxii.

¹⁶ Grant, *Canadian Atlantic Fishery*, 32.

¹⁷ "Transportation of Fresh Fish" in Canada, *Forty-Third Annual Report of the Department of Marine and Fisheries 1909-10* (Ottawa: King's Printer, 1910) 14-18.

few sickly-looking ‘fresh’ haddock, trout, &c., by means of which he expects to entice the custom of those, and there are many, who would eat real fresh sea fish. The exhibition is enough to make most fish eaters vow never more to indulge their appetite.¹⁸

Cowie’s concerns were voiced by others. The International Joint Commission, the bilateral body established in 1909 to discuss U.S.-Canadian fisheries issues, noted in its survey of Great Lakes fisheries that “considerable quantities of fish in more or less advanced states of decomposition are put upon the market usually salted, sometimes frozen or fresh.” One factor may have been over-production: fishing companies were simply catching too many fish for markets to absorb. Trawlers were starting to fish Canadian waters and these boats required “a large and ready outlet for all kinds of fish in their fresh state,” as Cowie later reported.¹⁹

Cowie recommended a plan to reform fish retailing and consumption in Canada. Starting at the production end of the commodity chain, Cowie recommended that fishing companies follow the example of the Scotch Fishery Board and gather intelligence about consumer preferences. At the retail end, Cowie urged food retailers to hire “expert fish cleaners” and establish “clean, up to date fish shops.” Cowie also recommended the fisheries department participate in exhibitions, “especially inland fairs,” and present displays in the form of “a model fish-shop.” Experts would staff exhibits and demonstrate to retailers how to clean, prepare, and display fish in shop windows.²⁰

Cowie also found fault at the domestic end of the commodity chain. He argued that housewives failed to make fish palatable because of their “want of a proper knowledge of

¹⁸ Cowie, “Non-Progression, lxxvii.

¹⁹ Quoted in Bogue, *Fishing the Great Lakes*, fn 32, 274; J. J. Cowie, “Handling and Preparing Fish for Market,” *The Canadian Fisherman* 5 (September 1918): 998.

²⁰ Cowie, “Non-Progression, lxxvii.

the art of cooking fish.”²¹ Drawing on cultural constructions of food preparation and consumption as female responsibilities, Cowie shifted blame from the masculine sphere of production to the feminine realm of consumption. As Suzanne Morton points out, this view reinforced a breadwinner ideology prevailing in Canadian fisheries: men were responsible for production, while women “were primarily regarded as consumers whose significance for policy inhered in their power to create a prosperous domestic fishery.”²² Cowie proposed to discipline women through consumer education and pointed to the “Fish for Food Campaign” launched by Britain’s National Fisheries Protection Association as a model. In addition to newspaper articles, posters, advertisements, the campaign distributed a cookbook to “the consuming public.” Germany undertook a similar campaign, but instead of cookbooks offered women “sea-fish cooking classes.”²³ In identifying women as the chief focus of a consumption campaign, Cowie was following the lead of advertisers and manufacturers, who Kathy Peiss notes, had targeted middle-class women as the “chief purchasing agents” of familial consumption. Peiss points out that the gendering of consumption entailed normative assumptions of femininity. “The woman consumer was considered emotional and impulsive,” notes

²¹ Ibid. lxxx;

²² Morton, “The End Man Is a Woman,” 151; Donica Belisle, “Toward a Canadian Consumer History,” 188.

²³ Cowie, “Non-Progression, lxxx. For more on gendered ideas of production and consumption in food see “Introduction” in *Edible Histories, Cultural Politics: Towards a Canadian Food History*, edited by Franca Iacovetta, Valerie J. Korinek and Marlene Epp (Toronto: University of Toronto Press, 2012) 15; Warren Belasco, “Food Matters: Perspectives on An Emerging Field,” in *Food Nations: Selling Taste in Consumer Societies*, edited by Warren Belasco and Philip Scranton (New York & London: Routledge, 2002) 7; Joy Parr, *Domestic Goods: The Material, the Moral, and the Economic in the Postwar Years* (Toronto: University of Toronto Press, 1999) 85-6; Dorothy Duncan, *Canadians at Table: A Culinary History of Canada* (Toronto: Dundurn Press, 2006) 162.

Peiss, “driven by ‘inarticulate longings’ and ‘dormant desires.’”²⁴ She was thus vulnerable to making poor decisions, but was also easily educated into making the right ones.

Cowie’s concerns about fish retailing and consumption connect to broader changes in, and anxieties about, nineteenth-century food production. Food chains, the link between food producers and food consumers, stretched as people moved into cities and food moved over longer distances on railways and steamships. The form of food also changed as manufacturers increasingly produced processed and packaged foodstuffs. Consumer anxieties about hygiene and food safety emerged as food systems expanded and industrialized. Scandals in milk processing and meat-packing revealed lax standards and inspection, and, as Ann Vileisis argues, the increasing “scale, complexity, and anonymity” of North American food production. Governments responded with increased surveillance and regulation: Canada’s Food Adulteration Act of 1874 and the Pure Food and Drug Act in the United States in 1906 sought to restore confidence in food production through regulatory standards and inspection.²⁵

Fish, however, came under less official scrutiny than other foods, such as meat, and remained outside of new inspection and regulatory regimes. The exception was canned fish, which fell under the Meat & Canned Food Act of 1907. When the federal government instituted a wider program of fish inspection in 1914, it was a voluntary

²⁴ Kathy L. Peiss, “American Women and the Making of Modern Consumer Culture,” *The Journal for MultiMedia History* 1, no. 1 (1998). <http://www.albany.edu/jmmh/vol1no1/peiss-text.html#biblio%20notes> (accessed October 24, 2013) 3.

²⁵ Barry E.C. Boothman, “‘A More Definite System’”: The Emergence of Retail Food Chains in Canada, 1919–1945,” *Journal of Macromarketing* 29 (March 2009): 24; Donica Belisle, *Retail Nation: Department Stores and the Making of Modern Canada* (Vancouver: UBC Press, 2011) 14; Ann Vileisis, *Kitchen Literacy: how we lost knowledge of where food comes from and why we need to get it back* (Washington: Island Press, 2008) 6; Aleck Samuel Ostry, *Nutrition Policy in Canada, 1870-1939* (Vancouver: UBC Press, 2006) 15-19.

system restricted to pickled fish. With fresh-fish inspection lacking at the federal level, city governments of fishing ports attempted to impose inspection at municipally-run fish markets. Modern facilities like the Boston Fish Dock were held up as a model of “absolute cleanliness” for other cities, including Vancouver. There, the city’s Health Committee recommended a fish market to oversee fish-retailing and curtail it among “Oriental” retail stores, “house-to-house hawkers, and proprietors of the cheaper restaurants.”²⁶

Outside of port cities, fish shopping appeared to have been a fraught exercise. Retail food-stores were “isolated and autonomous units,” that could neither ensure timely supplies nor implement quality-controls required at the production end of the food chain. Many grocers avoided fresh fish altogether because the product was difficult to handle and store, especially in the summer. Winter, however, was no protection against fish spoilage; food inspectors in Toronto’s public health department condemned and destroyed almost three thousand pounds of fresh fish one February. Fishy odours turned consumers off and even made other retailers wary of locating beside fish-stores as “very few people like to linger in the vicinity of such places.”²⁷

Ideas about health and hygiene infused Cowie’s ideas about increasing fish consumption and were taken up in the pages of a new trade journal, *The Canadian*

²⁶ Frederick Roche, “The Boston Fish Dock,” *The Canadian Fisherman* 1 no. 5 (May 1914): 133; “Central wholesale fish market for Vancouver, B.C.” *The Canadian Fisherman* 1 no 1 (January 1914): 34; McEvoy, *Fisherman’s Problem*, 168-69.

²⁷ “Handling Fresh Fish During Hot Weather” *The Canadian Grocer* 28 no. 31 (31 July 1914): 26; “Fish,” *The Canadian Grocer* 27 no. 12 (21 March 1913): 27; “How Successful Tradesmen Choose Their Shops,” *The Canadian Grocer*, “Fall Number” (25 October 1901): 84; Kathryn Graddy, “Markets: The Fulton Fish Market,” *The Journal of Economic Perspectives* 20 (Spring 2006): 208; Douglas McCalla, “A World without Chocolate: Grocery Purchases at Some Upper Canadian Country Stores, 1808-1861,” *Agricultural History* 79 (Spring, 2005): 157; “Fish,” *The Canadian Grocer & General Storekeeper* 5 no. 27 (3 July 1891): 14; Daniel M. Bluestone, “‘The Pushcart Evil’: Peddlers, Merchants, and New York City’s Streets, 1890-1940,” *The Journal of Urban History* (November 1991): 68-92.

Fisherman. Launched in January 1914, the monthly magazine devoted itself to “boosting the fish business of Canada.” While the magazine claimed to represent all interests in the fisheries, it focused on its capitalist and commercial aspects with articles on markets, merchants, and prices; it also paid special attention to marketing and advertising and their role in convincing consumers that fish was a safe and wholesome food. In 1915, the magazine helped organize the Canadian Fisheries Association (CFA), which represented the interests of fishing companies, fish wholesalers, and fish dealers.²⁸ The CFA was part of a broader movement by food producers to mobilize into associations that promoted grading and standardization; such organizations ought to shape demand through advertising and merchandising, including the use of brand names and trademarks that emphasized the purity of their products. The CFA worked to this end and closely aligned its interests with that of the state: the magazine regularly profiled fisheries department officers, including Andrew Halkett, Edward Prince, and John Cowie, and reprinted departmental reports and ministerial speeches verbatim.²⁹

Such was the case when *The Canadian Fisherman* reprinted Cowie’s screed on “non-progression” in its inaugural edition. The magazine elaborated Cowie’s ideas in an commentary entitled “The Gospel of Clean Fish.” The public, the magazine claimed, perceived fish to be a “dirty” food. “In the popular imagination, the fish business is regarded as being messy, scaly and smelly, and such ideas do an immense amount of harm by keeping down the sale of fresh fish.” One retail-grocery observer in the magazine unfavorably compared North American fish retailers to those in England

²⁸ Frederick William Wallace to W.A. Found, 22 January 1915, RG 23, Volume 643, file 711-1-3 (1), LAC.

²⁹ “Success to the Fisheries,” *The Canadian Fisherman* 1 (January 1914): 5-6; Innis, *Cod Fisheries*, 438; Richard Osborn Cummings, *The American and His Food: A History of Food Habits in the United States* (Chicago: University of Chicago Press, 1940) 147-49.

“where the fish-monger handles poultry, and also cut flowers. His shop or store is easily the most hygienic and best patronized in any community.” To counter these perceptions and practices, and to increase fish consumption, *The Canadian Fisherman* invited its wholesale and retail readers to follow what it called “the gospel of clean fish,” a trinity of “Cleanliness, Freshness, and Display.”³⁰

The gospel was similar to Cowie’s earlier proposals. While producers needed to maintain sanitary fish-wharves and carefully handle fish, it was from education and training at the consumption end of the food-chain that the most gains could be made. Retailers needed to prepare better displays of fish: instead of dumping fish in a box or barrel, *The Canadian Fisherman* suggested exhibiting fish “cleaned and laid out upon a marble slab with running water or chopped ice upon it, and tastefully decorated with parsley, red peppers and lemons.”³¹ The magazine also identified women, as Cowie had done, as a weak link in the fish-commodity chain and accused them of being ignorant “of the art of cooking fish.” If the “gospel of clean fish” echoed the link between public hygiene and morality advanced by Social Gospellers, it did so in the language of business. The “gospel” transcribed hygiene into a business principle that promised to transform Canadian fisheries into productive, profitable ones. And it was a gendered “gospel” that the fisheries department preached at the CNE.³²

³⁰ A. E. Howard, “The Selling End of the Fish Game,” *The Canadian Fisherman* 1 (July 1914): 202-03; “Gospel of Clean Fish,” 43-44.

³¹ “Gospel of Clean Fish,” 43-44; “Helping the Fish Business in Canada,” *The Canadian Fisherman* 1 (March 1914): 71.

³² Morton, “The End Man Is a Woman,” 156-7.

6.3 The CNE Fisheries Exhibit

Cowie's proposals for a fish-consumption campaign, which *The Canadian Fisherman* enthusiastically supported, remained dormant until 1913. In the spring before the exhibition, the fisheries department wrote to fish wholesalers suggesting a joint exhibit and three responded: Toronto fish dealer F.T. James, Montreal-based Maritime Fish Corporation, and Halifax's North Atlantic Fisheries Ltd.³³ The British Columbia government also agreed to participate. In August 1913, Andrew Halkett went to Toronto to supervise the exhibit's construction and operation.³⁴ Located in the CNE's Government Building, the exhibit comprised three separate units occupying space in the building's main hall, which worked together to advance the "gospel of clean fish" in the domain of fish retailing. The exhibit's central display was its most theatrical: a free-standing island that measured sixty-two-feet long and eighteen-feet wide and which was framed as a brightly-appointed retail store. This display included space for the Fisheries Museum collection, British Columbia's exhibit, and displays from F.T. James and the Maritime Fish Corporation. Standing opposite and apart from the central stand was a separate booth for the North Atlantic Fisheries Ltd. Beyond it stood an eighty-foot display of freezers and coolers, filled with fish, running along the Government Building's interior wall.

The Fisheries Museum collection and British Columbia's smaller display occupied the center of the central display, and were sandwiched between the fish dealers. The museum's fish specimens were mounted flush on a brilliant white three-sided stand that

³³ A.H. Brittain to W.A. Found, 19 March 1913, RG 23, Volume 232, file 1353, Reel T-3151, LAC.

³⁴ Andrew Halkett to W.A. Found, 11 August 1913, RG 23, Volume 232, file 1353, Reel T-3151, LAC; W.A. Found to Andrew Halkett, 13 August 1913, RG 23, Volume 232, file 1353, Reel T-3151, LAC.

bore the legend “Fishes of Canada.” The specimens were commercially valuable species and were artfully arranged around a large halibut that drew the eye into the display. “Here case after case and row upon row show off,” *The Globe* reported, “by means stuffed specimens, the piscatorial wealth of the Dominion in a graphic manner.” British Columbia occupied an adjacent space that was just large enough to contain a small counter; its tiered shelves displayed modest stacks of canned salmon and photographs depicting the province’s salmon fisheries.³⁵

Although goods were not for sale at the fish-dealer displays, the Maritime Fish Corporation and the F.T. James Company displayed products as if they were. F.T. James presented whole freshwater fish arranged on a pyramidal heap of crushed ice. Decorated with posters urging people to “EAT FISH,” the F.T. James display also integrated the company’s Beacon Brand into the stand’s layout. *The Canadian Fisherman* praised this branding in the exhibit: four model lighthouses, “with the regulation occultating flash lights,” stood at each corner of the stall and provided “a striking embodiment of the Company’s ‘Beacon’ trade mark and showed great originality in stall designing.” At the other end, stood the Maritime Fish Corporation stall, which displayed packaged fish. These were neatly arranged in a tiered display case constructed of white bead-board. The display also incorporated branding elements with life-preservers—the company’s trademark—hanging on the stand’s columns. Other objects, including a small dory and mounted swordfish heads, added visual interest.³⁶

These exhibits reflected the latest trends in retail display and demonstrated to

³⁵ “Instructive exhibits in Government Building,” *The Globe*, Wednesday September 2, 1914, 7.

³⁶ “The fisheries exhibit Canadian National Exhibition,” *The Canadian Fisherman* 9 (October 1914): 264-267.

retailers how to improve their handling of fish and build consumer confidence. The “prejudice against this article of food” was due, F.J. Hayward argued in *The Canadian Fisherman*, “to the manner in which the goods were displayed.” The fisheries exhibit provided retailers “a little education in the care of the goods,” and consumers a modicum of confidence that “messy fish” were a thing of the past.³⁷ In contrast to the North Atlantic Fisheries booth, which appeared to be an impenetrable fortress constructed out of boxes of smoked fish, the central stand was laid out as a calm, inviting space. Within this model retail space, fish products were presented in more modest aggregations, a hallmark of the transition in late-nineteenth-century retailing from bulk containers and a profusion of goods to “well-ordered shelves of canned goods, glass show cases, and a ‘waxy neatness,’” as twentieth-century food historian Richard Cummings put it.³⁸

A.E. Howard observed this transition in fish retailing and argued that both retailers and consumers preferred packaged fish products over raw bulk-goods like salt cod. Salt cod, Howard wrote, had “an appearance which is out of keeping with modern retailing.”³⁹ Packaged goods were neater and easier to store and display, and saved wear and tear on store fixtures, Howard advised. The presence of branded goods and branding in the stand also promised to deliver standardized high-quality products. Other food processors had already invested considerable effort in branding and advertising their products as “sanitary.” Fruit and vegetable canners, milk companies, and meat packers—industries that had been earlier tainted with scandal—“all dilate upon the cleanliness and sanitation

³⁷ F. J. Hayward, “Care of the Fish in the store,” *The Canadian Fisherman* 1 (November 1914): 317.

³⁸ Cummings, *The American and His Food*, 107.

³⁹ A. E. Howard, “Selling End,” 202-03.

of their establishments where their particular class of foodstuff is prepared.”⁴⁰ The fishing industry, however, lagged in adopting modern marketing methods. “Certain rules of business success are as inexorable as the laws of physics,” offered *The Canadian Fisherman*. “Producers of breakfast cereals, ready-to-eat soups, etc., who advertise systematically and intelligently in the daily press, do not complain that the market for their goods is restricted...Advertising will sell cod and haddock as well as dress goods and real estate.”⁴¹

The central stand also used techniques of modern exhibition design to promote “the gospel of clean fish.” Exhibition-stand designers in the early twentieth century, according to exhibit historian David Dean, moved “away from goods piled to goods demonstrated in miniature architectural marvels.”⁴² Stands became environments, idealized spaces that inveigled visitors into a spatial experience as much as a visual one. These exhibit spaces evinced craftsmanship and reliability that stacks of product only bluntly conveyed.⁴³ For the Fisheries Museum exhibit and its collaborators, the stand’s architecture of white-woodwork and bright lighting represented the cleanliness of an ideal fish-monger’s shop and the safety of fish as a food. The stand was also similar in design and materials to the booths of other food manufacturers selling consumer products, such as Cadbury Brothers, Kellogg Corn Flakes, Red Rose Tea, Borden Milk, and Swift Meat Packers.⁴⁴ The booth’s design also visually and architecturally emphasized the cooperation between the federal

⁴⁰ Ibid.

⁴¹ “Gospel of Clean Fish,” 43-44; “How to Sell Fish,” *The Canadian Fisherman* 1 (December 1914): 324.

⁴² David Dean, *The Architect As Stand Designer: Building Exhibitions, 1895-1983* (London: Scolar Press, 1985) 13.

⁴³ Products were as structural elements or building blocks in exhibition displays, an approach that “suggested the consistency of industrially produced items, their unvarying quality, and their absolute interchangeability.” Walden, *Becoming Modern*, 140-41.

⁴⁴ *The Canadian Grocer* 27 no. 37 (12 September 1913): 36-72.

fisheries department and the fish corporations with interior passageways in the central stand creating a continuous visual and spatial enclosure.

Fresh fish, however, posed display challenges just as they did in real stores, especially during the late summer when the CNE was held. Indeed fresh fish were as refractory an object as mounted fish were in the Fisheries Museum. Warm weather played “havoc with perishable exhibits,” and stale-looking smelly fish could undermine the confidence that a bright clean stall was supposed to instill. Exhibitors thus worked hard to maintain the exhibit’s fresh appearance. “To keep the show in A-1 order and condition and to avoid any smell likely to prejudice the public,” reported *The Canadian Fisherman*, “[f]resh fish were received daily and stale fish immediately replaced and removed.”⁴⁵ This was made possible by the exhibit’s enormous freezer and cooler, which was itself a display of modern fish handling. The freezer, supplied by a Montreal refrigeration company, was a twenty-ton unit equipped with a large plate-glass window that allowed fairgoers to peer inside. The next year a “chiller” was added to the display. It was built to allow people to view both sides of the display as if they were browsing goods in a retail store. The display showed “to retailers the ideal method of handling such fish,” and also ensured that fresh-looking fish were available for the displays in the central stand.⁴⁶

The CNE exhibit had two audiences in mind: retailers and consumers, the two groups that John Cowie proposed engaging in 1908. The two were brought together in the fisheries department’s collaborative display where retailers were shown how to properly

⁴⁵ “The Fisheries Exhibit Canadian National Exhibition,” *The Canadian Fisherman* 9 (October 1914): 264.

⁴⁶ “Fisheries Exhibit at the Canadian National Exhibition at Toronto,” in Canada, *Forty-Eighth Annual Report of the Department of Marine and Fisheries 1914-15* (Ottawa: King’s Printer, 1915) xvi.

display fish and consumers invited to purchase fish with confidence.⁴⁷ And while it was not explicit in the exhibit, the consumer was figured as a woman, culturally invested with the responsibility for household shopping and cooking.⁴⁸ In 1915, the fisheries department intensified its gendered modeling of the fisheries when it published “Fish and How to Cook It.” The cookbooklet (a term I explain below) was the Canadian government’s first such publication; freely distributed at the CNE in succeeding years, it also widened the fisheries department’s fish-consumption campaign beyond the fair.

6.4 “Fish and How to Cook It”

Printed in an edition of 250,000 copies in 1915, “Fish and How to Cook It” was compiled by Cowie, the architect of the department’s consumption campaign. Cowie modeled the publication on a cookbook used in an earlier British fish-consumption campaign, borrowing recipes and information from it and another cookbook issued by Boston’s New England Fish Exchange. Other fisheries historians have tended to dismiss the department’s consumption campaign, particularly the cookbooklet. Jennifer Hubbard, for example, argues that the fisheries department’s interest in consumption distracted it from more important work in fishermen education. Instead of technical instruction, Hubbard notes, the department “wrote fish cookbooks.” This assessment echoes Ruth Grant’s earlier denigration of the department’s publicity campaigns: “Advertising does not enhance the quality of fish.”⁴⁹

⁴⁷ Walden, *Becoming Modern*, 127.

⁴⁸ “Introduction,” *Edible Histories*, 15.

⁴⁹ Elizabeth Driver, *Culinary Landmarks: A Bibliography of Canadian Cookbooks 1835-1949* (Toronto: University of Toronto Press, 2008) xxxiv; *Fish and How to Cook It* (Ottawa: Department of the Naval Service, 1915) 7; Hubbard, *Science on the Scales*, 129; Grant, *Canadian Atlantic Fishery*, 91.

The consumption campaign and cookbooklet, however, deserve a closer look: they demonstrate the fisheries department's shift from production to consumption, and how that shift was conceived in gender terms. Through them, administrators actively engaged consumers' perceptions of fish and, as in the CNE fish exhibits, attempted to school their preferences. The term "cookbooklet" is critical here. Nathalie Cooke identifies cookbooklets as "ubiquitous and oft-overlooked small cookbooks produced for promotional purposes and published irregularly."⁵⁰ Canadian food companies, including flour mills, used these ephemeral publications to advertise their products and establish their brands. The publications were also "highly prescriptive and presumed a reader who was less knowledgeable than the booklet's author." Such was the case with "Fish and How to Cook It," which addressed women and assumed they lacked the requisite skills to properly cook fish for their husbands.⁵¹

The publication began with a piece of simple advice under the heading "SPECIAL NOTICE TO HOUSEWIVES:" "In buying fresh fish, see that the eyes are bright and prominent and the flesh firm, not flabby." It was followed by an introduction that acknowledged the many structural problems that afflicted Canadian fisheries. From lack of availability to poor retail practices, fresh fish had not historically been a trustworthy food item in Canadian markets. Women had to shoulder blame, however, because they were ignorant of fish-cooking techniques, preferring to fry and boil fish over other methods. This failure to properly cook fish also reflected on their abilities as responsible and frugal home-makers. "In these days when the cost of living has become such an

⁵⁰ Nathalie Cooke, "Cookbooklets and Canadian Kitchens," *Material Culture Review* 70 (6 June 2009): 25.

⁵¹ Elizabeth Driver, "Cookbooks As Primary Sources for Writing History," *Food, Culture & Society* 12 (2009): 260; Sherrie A. Inness, *Secret Ingredients: Race, Gender and Class at the Dinner Table* (New York: Palgrave Macmillan, 2006) 4.

important factor,” the cookbooklet advised, “it is necessary for the average housewife to give careful thought to providing for the table. The articles procured must not only be reasonably cheap, but they must be palatable and nourishing.”⁵² The cookbooklet offered women a range of tools to guide their consumption decisions. There were general instructions on cooking methods and a glossary of cooking terms. The cookbooklet also presented tables comparing the relative nutritional content of fish against other protein sources such as beef and pork.⁵³

The fisheries department was not alone in registering women as the fish-consumption campaign’s central problem. *The Canadian Fisherman*, which kept the campaign forefront in its pages, declared in an article titled “Educate the Women!” that “the whole future of the fish trade of Canada is in the hands of the women.”⁵⁴ But women could neither identify different and cheaper varieties of fish nor rationally appreciate or purchase them. The problem, however, that loomed largest was that women failed to prepare fish in a skillful manner that would please their families. Fixing women in the gendered sphere of the domestic, *The Canadian Fisherman* made them responsible for food choices and preparation. “The wife is the Dictator of the Kitchen. It is she who decrees what Hubby shall eat, and what Hubby eats, so shall Sonny and Sis and other members of the household,” the magazine declared. “Fish is a food, and as a food it comes to the table via the housewife.” The “average housewife,” however, knew “very, very little about fish.” Lacking imagination, most women fell back on frying as a standby for cooking fish. “When in doubt — fry! That is her motto.” Housewives were also as

⁵² Canada, *Fish and How to Cook It* (Ottawa: Department of Naval Service, 1915).

⁵³ *Ibid.*

⁵⁴ “Educate the Women!” *The Canadian Fisherman* 2 (October 1915): 325.

ignorant of fish varieties as cookery:

All fish look alike to her, and in her imagination must necessarily taste alike. Salmon, cod, haddock, and halibut are her commonest choices in fresh fish, and as a rule these are either fried or boiled and probably garnished with a plain egg sauce. With such a limited viewpoint and such a restricted knowledge in fish cookery, how can the Fish Trade of Canada prosper!⁵⁵

Cowie had earlier identified the “average housewife,” and her “want of a proper knowledge of the art of cooking fish,” as problems for an educational campaign to address. Cookery was the key to improving consumption, as the cookbook proclaimed: “the digestibility and nutritive value of fish depends greatly on the manner of its cooking.” What this approach did not acknowledge was that fish cookery was already represented in contemporary cookbooks or that fish had a long-standing place in Aboriginal and Canadian diets. Elizabeth Driver’s survey of Canadian cookbooks reveals that fish cookery was not a complete mystery with cookbooks containing significant selections of fish recipes. Many cookbooks also provided advice on purchasing fresh fish. *The Canadian Housewife’s Manual of Cookery*, published in 1861, advised a visual check of the gills, which should be “bright and red” rather than “brownish and slimy.” The *Manual* also provided recipes for a wide variety of marine and lacustrine fish, both fresh and preserved. “Fish and How to Cook It” was therefore circulating advice already well known to women through experience and manifested in earlier cookbooks.⁵⁶

If the shopping and preparation of the fish were coded as feminine responsibilities, the consumer of the meal was marked masculine. This coding is visible in Cowie’s

⁵⁵ Ibid.

⁵⁶ Cowie, “Non-progression,” lxxx; “Helping the Fish Business in Canada,” *The Canadian Fisherman* 1 (March 1914): 71; Dorothy Duncan, *Canadians at Table: A Culinary History of Canada* (Toronto: Dundurn Press, 2006) 27-35; Driver, *Culinary Landmarks*, 199; Richard Pillsbury, *No Foreign Food: The American Diet in Time and Place* (Boulder CO: Westview Press, 1998) 25; *The Canadian Housewife’s Manual of Cookery* (Hamilton: Henry L. Richards, 1861) 60; Cooke, “Cookbooklets,” 25.

preface to the cookbooklet: quoting liberally from the British fish cook-book that he first recommended in 1908, Cowie compared fish to fuel for the engine of production, the working man. “[F]ish contains the metal of which the engine is constructed,” the cookbooklet read, “and the fuel for getting up steam.” Since fish was cheap it was an ideal food for working men. Two salt herrings “contain as much proteid [sic] as is requisite in the daily dietary of an ordinary working man,” but were a third less expensive than beef.⁵⁷

In addressing masculine consumption, Cowie and others stressed responsibility and bodily strength. The replacement of meat with fish was represented as a responsible shift toward an affordable diet. “The man who asks for a steak nowadays is eating dollar bills,” *The Canadian Fisherman* proclaimed. “It is all very well for the wealthy man to have what he wants, but it is a great mistake for the working man to indulge his appetite at the expense of his pocket.” This type of sumptuary admonishment was, at the same time, delivered with some reassurance that fish was an appropriately masculine food. *The Canadian Fisherman* emphasized, as Cowie had done, that working men could perform “as hard a days work on fish as he can on meat,” a case that held true across racial differences. Japanese soldiers during the Russo-Japanese war of 1904-5, for example, had subsisted on dried fish “and it would be hard to find tougher men.” Likewise the “hardy fishermen of the Northern countries”—Scotland, Iceland, Norway and Sweden—endured “long hours of downright hard work” and ate a diet largely composed of fish. “Even a West India nigger will work all day in the hot sun,” *The Canadian Fisherman* continued, “on a couple of salt herring or a piece of dried codfish.” Cowie connected fish

⁵⁷ Cowie, “Non-progression,” lxxii.

consumption to military service, the most masculine of roles: increasing the consumption of fresh fish campaign would not just rescue “a languishing national industry,” Cowie argued, but develop a “hardy race of seamen” to serve in Canada’s navy.⁵⁸

This discourse of fish as a substitute for meat had to deal with the powerful gender and class associations that marked meat, especially beef, in North America and especially in Britain. A “particularly eloquent signifier of class,” beef-eating was associated with the good life of the middle- and upper-classes.⁵⁹ Beef was also strongly marked by “gender distinctions and prerogative.” In England, men ate more meat than women and children, claiming it on account of their breadwinner status. Meat was thus a symbol of men’s work and masculine privilege. Some fish, however, were also included in this breadwinner diet with kippers (or smoked herring or mackerel) marked as part of male dietary prerogative, according to Ellen Ross.⁶⁰

“Fish and How to Cook It” was a marked departure for the fisheries department, although the direction had already been pointed out by John Cowie in 1908. His advice then, and again in 1914-15, and his gendered view of consumers drove the fish consumption campaign forward. With each iteration of the campaign, the Fisheries Museum appeared less able to engage the questions that the campaign raised. The year the cookbooklet was issued the fisheries department took another step in the direction of consumption and ran a fish restaurant at the CNE. There, the modeling of fish moved from the domain of sight to the realm of taste. Like other displays, however, cookery

⁵⁸ “Beef versus Fish,” *The Canadian Fisherman* 1 (August 1914): 228-229; Cowie, “Non-progression,” lxxx.

⁵⁹ Roger Horowitz, *Putting Meat on the American Table: Taste, Technology, Transformation* (Baltimore: The Johns Hopkins University Press, 2006) 17.

⁶⁰ Ellen Ross, *Love and Toil: Motherhood in Outcast London, 1870-1918* (Oxford: Oxford University Press, 1993) 32-35.

displays and demonstrations with fish were also fraught with difficulties—and with considerations not just of gender, but of class too.

6.5 The Fish Restaurant

The same year that “Fish and How to Cook It” appeared for distribution, the fisheries department took display of consumption one step further along the commodity chain and opened a fish restaurant at the CNE. The restaurant, which the department operated between 1915 and 1918, extended the “gospel of clean fish” to directly address consumers through the act of consumption. Eating was an educational act: hungry fair-going bodies entered the restaurant and took both nourishment and instruction. Diners not only received a cheap meal but a copy of “Fish and How to Cook It,” which offered recipes and rationales to convince people to make fish consumption a regular part of their diets.

The “exhibit” mode has received close attention from scholars who have analyzed how visual object-lessons at exhibitions were used to engineer consent in consumer capitalism. Fewer have recognized the “serve” mode, particularly the service of food. Recent scholarship has noticed how exhibitions have stimulated other sensory experiences; Rhona Richman Keneally, for example, argues that restaurants built national identity at Expo 67 and reminds us that exhibitions provoked other senses in addition to sight. And while the fisheries exhibit used visual devices to model fish-retailing, it stimulated spatial sensitivities as well. The fish restaurant further extended the sensory reach of discipline and invited fairgoers to experience fish through taste. It also offered rationales for submitting to the experience that drew on the same contemporary ideas of

health, nutrition, gender, and race that the cookbooklet offered. As federal fisheries official W. A. Found noted to the CNE president, the department wanted consumers “satisfying themselves by the sense of taste as to just how desirable it is to make fish a regular article of diet.”⁶¹

The restaurant followed in the tradition of fish restaurants at earlier exhibitions. The Marine Cafe, for example, had offered fish dinners in the Fisheries Building at the 1893 Columbian Exposition in Chicago. The official exhibition guide noted that it “served sea fish of all varieties, it being intended to illustrate the value of fish as an article of diet, with the idea of popularizing it.” The fish restaurant at the London fisheries exhibition in 1883 had also featured a dining hall advertising “cheap fish dinners.” Under the supervision of the “Lady Superintendent” of the National School of Cookery, fish dinners were served on custom-designed china and supplemented by daily lectures from an “experienced instructress” at the school. The “cheap Fish Dining Room” was intended to school the poor in eating fish although the meal’s six-penny cost exceeded the cost of fish-and-chips that could be bought for a pence or two. Similar glimpses of the gendered tutelage of consumption and cookery, in the service of class-conscious home economy, are also visible in the CNE dining room.⁶²

The fish restaurant was first proposed for the 1914 CNE, but the outbreak of war in August dashed those plans. The fisheries department resurrected the idea for the 1915

⁶¹ Elizabeth Heamen, *The Inglorious Arts of Peace: exhibitions in Canadian society during the 19th century* (Toronto: University of Toronto Press, 1999) 27; Walden, *Becoming Modern*; Rhona Richman Kenneally, “‘The Greatest Dining Extravaganza in Canada’s History’: Food, Nationalism, and Authenticity at Expo 67,” in *Expo 67: Not Just a Souvenir*, edited by Rhona Richman Kenneally and Johanne Sloan (Toronto: University of Toronto Press, 2010) 28-29; W.A. Found to P.W. Rodgers, 16 May 1914, RG 23, volume 1146, file 722-2-4, LAC.

⁶² *Official Guide to the World’s Columbian Exposition*, ed. John Flinn (Chicago: The Columbian Guide Co., 1893) 165; *The Great International Fisheries Exhibition of 1883*, edited by Arthur Trendell (London: William Clowes and Sons, 1883) xxxix.

exhibition and contracted with Nasmiths Ltd., an established Toronto bakery and experienced CNE food concessionaire, to run a restaurant “devoted to the purpose of advertising ‘Fish as Food.’” The department agreed to pay the rent and supply all the fish: in return, Nasmiths promised to equip the restaurant, hire staff, and deliver a 25-cent meal that consisted of “fish, sauces, potatoes, bread, butter and biscuits, pie, tea, coffee or milk.” The department also contracted with F.T. James Company and the Maritime Fish Corporation, the fish dealers who cooperated in the fisheries exhibit, for daily deliveries of fresh and frozen fish.⁶³

The restaurant opened for business on the first day of the fair, August 30, 1915, and welcomed 395 diners. Within a few days it was serving more than 1,000 fish meals a day and on September 6 served almost 5,200 diners, which a fisheries official claimed was “the largest number ever handled by one restaurant in one day in Canada.” The promise of “a generous helping” of fish and potatoes attracted hungry fairgoers throughout the exhibition; in its first year the restaurant served more than 25,000 meals. Diners were also served a generous dollop of education and instruction concerning fish consumption.⁶⁴

While taste was the primary evidence on display at the restaurant, it was reinforced by messages throughout the restaurant that prepared diners for the wholesome act of eating fish. Drawing on late nineteenth century ideas of “scientific food,” the fisheries department emblazoned the marquee tent that sheltered the restaurant with slogans about fish’s digestibility, its protein content, and its comparative value in relation to meat.

⁶³ Canadian National Exhibition to G.J. Desbarats 26 April 1915, RG 23, volume 1146, file 722-2-4, LAC; “Memorandum re restaurant at Toronto Exhibition” 16 April 1915, RG 23, volume 1146, file 722-2-4, LAC.

⁶⁴ Alex Finlayson to W.A. Found, 6 September 1915, RG 23, volume 1146, file 722-2-4, LAC; “Fisheries Exhibit at the Canadian National Exhibition, Toronto,” in Canada, *Forty-Ninth Annual Report of the Department of Marine and Fisheries 1915-16* (Ottawa: King’s Printer, 1916) xvii.

These were the same messages offered in the cookbooklet. One canvas banner stressed the cheapness of fish as a source of protein, “the chief food constituent in meat or fish,” and provided a cost comparison to beef: a one-pound serving of protein from cod cost seventy-two cents while the same measure from beefsteak cost two dollars and thirty-three cents. Another banner declared that fish was easier to digest than meat, “[t]herefore, for your health’s sake, use more fish.”⁶⁵

Inside the tent, the restaurant menu continued the lesson in frugality. Designed by Frederick William Wallace, editor of *The Canadian Fisherman*, the folding menu cover depicted the geographical sweep of Canadian fisheries, with three important commercial species: Pacific salmon, freshwater whitefish, and Atlantic cod. In between the covers, the menu listed the bill-of-fare and stressed the economic benefits of a fish diet over meat. “Are you anxious to reduce your food bill without detracting from the tastiness or nourishment of the meals?” the menu asked. “You can do so by largely substituting fish for meat.” Anxieties about fish spoilage were also addressed: cold storage and rapid transportation made “fresh fish in prize condition and at moderate prices” available across Canada. “[T]here is no longer good reason,” the menu declared, “why fish should not daily have an important place on the bill-of-fare of every home.”⁶⁶

Deliberations over fish and dish selection show the department calibrating the restaurant’s offerings to appeal to consumers who would most benefit from—and afford—its instruction. The fisheries department, for example, stipulated that the restaurant would not serve expensive items such as Atlantic salmon and lobsters. But nor

⁶⁵ “Memorandum,” 9 June 1915, RG 23, volume 1146, file 722-2-4, LAC.

⁶⁶ Frederick William Wallace to W.A. Found, 30 July 1914, RG 23, volume 1146, file 722-2-4, LAC; “Memorandum,” 9 June 1915, RG 23, volume 1146, file 722-2-4, LAC.

would it serve too cheap a fish. Canned Pacific salmon, an inexpensive staple of English working-class diets, represented a promotional conundrum. Nasmiths, the restaurant operator, did not want to serve canned salmon at all; it was, the contractor protested, an unsuitable entree for “hearty 25-cent dinner.” The other problem with canned salmon was its appearance. The fisheries department was concerned about serving a tin of salmon turned out on a plate. “It is not likely that most of those visiting the restaurant would like the appearance of the salmon if it were served directly from the can,” a fisheries official noted. The department ask the caterer to serve the canned salmon “in some prepared way” to thus make it “more attractive to the patrons of the restaurant.” The fisheries department, however, wanted to occasionally serve canned salmon because the free cookbooklet contained many recipes for the product.⁶⁷

Yet even within the category of canned salmon, some varieties were more acceptable than others. The fisheries department did not want to promote sockeye salmon, the most expensive Pacific salmon, nor Chum salmon, the cheapest. Sockeye salmon already enjoyed a large market. It was also expensive with a one-pound tin costing twenty-one cents; by comparison a tin of Pink salmon only cost eight cents. Chum salmon were cheaper and were, moreover, associated with race-specific diets since only native and Japanese fishermen pursued the fish. According to the fisheries department, Chum salmon did not “appear to the same advantage” as other salmon and were left off the restaurant menu altogether.⁶⁸

⁶⁷ James Calder to G.J. Desbarats 30 July 1915, RG 23, volume 1146, file 722-2-4, LAC; G.J. Desbarats to James Calder, 11 August 1915, RG 23, volume 1146, file 722-2-4, LAC; Elizabeth Driver, “Regional Differences in the Canadian Daily Meal? Cookbooks Answer the Question,” in *What's to Eat? Entrees in Canadian Food History*, edited by Nathalie Cooke (McGill-Queen's University Press, 2009) 199.

⁶⁸ Geoff Meggs, *Salmon: The Decline of the British Columbia Salmon Fishery* (Vancouver: Douglas & McIntyre, 1991) 105.

The anxiety about promoting “cheap fish” was that it would link fish consumption with meanness and poverty. That fish were marked as an appropriate food for respectable working and middle-class people is also apparent in discussions about the types of fish the department would serve, as well as preparation methods. Before proposing a fish restaurant in 1914, the department had planned to operate a “fried fish counter,” which was sketched into blueprints for the 1913 fisheries exhibit. The CNE, however, asked the fisheries department to cancel the concession. As fisheries official W.A. Found put it, “we would not likely attract to it the class of people whom we want to reach which we no doubt would do by having a thoroughly up-to-date restaurant.”⁶⁹ Found’s characterization of fish-and-chips eaters suggests he may have agreed with English reformers who viewed fish-and-chips as a disreputable food associated with lower-class street culture. In England, fish-and-chips were considered an unsanitary food served in unsanitary conditions; that working-class families took at least one weekly meal from such shops was evidence to reformers that lower-class families were unable to responsibly manage household resources. Fish-and-chips shops were classified as an “offensive trade” in England that reformers connected to a lower-class “pathology of culinary ignorance.” Although it is unclear when fish-and-chips arrived in Canada, they were present at the CNE before the meal gained middle-class respectability in England. In rejecting fish-and-chips, the fisheries department also rejected the lowest of the lower classes as an audience for their instructional efforts. Instead, the department focused on working- and middle-class consumers who patronized the exhibition and who may have agreed with the department that dishes such as “Boiled Haddock with Egg Sauce” were more respectable

⁶⁹ “Memorandum,” 6 May 1914, RG 23, volume 1146, file 722-2-4, LAC; P.W. Rodgers to W.A. Found, 20 April 1914, RG 23, volume 1146, file 722-2-4, LAC.

and economical.⁷⁰

As *The Canadian Fisherman* put it, “‘Cheap fish’ sounds like it. It is invariably associated with cheap dress goods, cheap furniture and cheap other things—in fact it falls under the odium of cheapness as applied to mean and worthless articles.”⁷¹ The fisheries department recognized the challenge as one of differentiating “cheap fish” from “fish cheap.” Just as gender figured into the modeling of fisheries at the CNE, so too did class. Modeling fish as food, however, was not without its challenges. Fish were just as refractory in the restaurant as they were in the Fisheries Museum.

6.6 Controlling Food

From its inception in 1915 the restaurant proved to be popular. Twenty-five thousand fairgoers ate there in its first year and the fish industry praised its operation and promotional efficacy. *Canadian Fisherman* editor Frederick William Wallace attended a special press dinner and was “very much impressed by the tasteful manner in which the fish was cooked.” The restaurant was an example of “splendid educational work.”⁷² Despite this initial success, restaurant contractor Nasmiths did not find the fish restaurant profitable enough to warrant another year’s operation. The company complained of war-related labour shortages and increased wage costs, and declined the contract for 1916.⁷³

From 1916, a Toronto contractor named J.A. Mumby operated the restaurant on the fisheries department’s behalf. But as a model of “the gospel of clean fish” the fish

⁷⁰ John K. Walton, *Fish and Chips & the British Working Class 1870-1940* (Leicester University Press: Leicester, 1992) 141-50.

⁷¹ “Cheap fish or fish cheap,” *The Canadian Fisherman* 5 (June 1918): 771-72.

⁷² D.J. Byrne to John D. Hazen, 9 September 1915, RG 23, volume 1146, file 722-2-4, LAC.

⁷³ John Turnbull to G.J. Desbarats, 13 May 1916, RG 23, volume 1146, file 722-2-4, LAC.

restaurant appeared to fall victim to its own success. Even with the price of the dinner raised ten cents to thirty-five cents, the restaurant served 37,417 meals in 1916, an increase of almost fifty percent over the previous year. Mumby reported “[t]remendous difficulties” in serving so many customers and maintaining standards of service and food. “Indeed, the patronage was too great to enable the service to be as satisfactory as desirable,” the fisheries department reported. “On several days it was necessary to shut the door at times, and keep people standing in line until accommodation was available inside.”⁷⁴

While the department prided itself on delivering “the cheapest full dinner on the grounds,” others found the restaurant unsanitary and unsatisfactory. Under the headline “Government Fish Dinners Very Bad,” the *Toronto Star Weekly* published a scathing review of the fish restaurant. Two *Star* reporters ate at the restaurant and both found the food and service equally deficient. The fish were “far from clean and the service the same,” the newspaper reported. One fish dinner “was burned to a cinder,” while the other was “almost rare.”⁷⁵ Similar criticisms came from the Office of the Food Controller, the federal government’s wartime rationing authority. While the Food Controller’s fish officer supported the restaurant’s mission, it too found the restaurant unsanitary and unappealing. From the waiters to the “cleanliness of dishes, cutlery, napery, etc,”⁷⁶ the Controller declared the restaurant a mess. Flooding exacerbated these problems: plugged drains “made it difficult to keep the place clean and wholesome.”⁷⁷ “It would be better not to have the dining-room at all,” wrote the Controller’s fish committee chairman,

⁷⁴ “Memorandum,” 27 January 1917, RG 23, volume 1146, file 722-2-4, LAC.

⁷⁵ “The Exhibition can still be improved in many ways,” *The Toronto Star Weekly*, 9 September 1916, 9.

⁷⁶ G.F. Beer to G.J. Desbarats, 19 July 1917, RG 23, volume 1146, file 722-2-4, LAC.

⁷⁷ G.J. Desbarats to G.F. Beer, 24 July 1917, RG 23, volume 1146, file 722-2-4, LAC.

“than to have it conducted as I am afraid it was conducted last year.”⁷⁸

Difficulties with keeping “the gospel of clean fish” were not the restaurant’s only issues. Other fish dealers at the fair resented the restaurant’s attempt to stimulate the fish industry. Toronto fish-dealer M. Doyle Fish Co., which supplied the exhibition’s fish-and-chips concessions, protested that the restaurant enjoyed an unfair advantage because the department supplied fish at no charge. Concessionaires “have been unable to compete,” Doyle complained, “...and have had to quit the exhibition.” He demanded that the department also provide free fish to the fish-and-chips stalls. Doyle also cast aspersions on the quality of fish served at the restaurant. Diners were served frozen fish, the company claimed, rather than the advertised fresh fish.⁷⁹

The restaurant’s mission to educate fairgoers about fish, and inculcate fish-eating habits, faced other challenges. The 1916 menu, for example, was riddled with errors. Some of them were minor. The fisheries department preferred the term “chicken” to “baby” to describe smaller fish, as in “chicken halibut” rather than “baby halibut.” Other errors were more glaring, particularly the menu item called “Boiled Ontario Haddock.” “As you must know,” the department informed contractor J.A. Mumby, “haddock is not a fresh water fish and indeed is found on the Atlantic coast of Canada.” “Kennebec Salmon” was also problematic as Kennebec was the name of a river in Maine. The department told Mumby, “you will appreciate that it was not the desire of the Department to advertise such.”⁸⁰ The restaurant must, if it was to fulfill the department’s goals, spotlight and serve Canadian fish.

⁷⁸ Ibid.

⁷⁹ M. Doyle Fish Co. Ltd to Minister of Fisheries, 24 August 1916, RG 23, volume 1146, file 722-2-4, LAC.

⁸⁰ W.A. Found to J.A. Mumby, 7 October 1916, RG 23, volume 1146, file 722-2-4, LAC.

The restaurant and the department's fish-consumption campaign came under greater scrutiny after 1917, when Canada instituted wartime programs to stimulate food production and mobilize food conservation. Efforts included advertising campaigns to recruit consumers as domestic soldiers. "Fight with Food," urged one Canadian government advertisement, "We cannot achieve victory without food." This ad, along with posters, asked Canadians to conserve foodstuffs such as wheat, meat, dairy products, and beans, which "should largely be reserved for the fighting men." In their stead Canadians were asked to increase their consumption of vegetables, fruits, other cereals, and fish. The department had been promoting fish as a meat substitute since 1913 which made its promotional campaign readymade for wartime deployment. In 1917 the fisheries department's fish-consumption campaign was officially integrated into the Canadian government's wartime food strategy.

As Richard Osborn Cummings noted in 1940, "eating habits once regarded as private matters are now recognized by governments...to be of public concern."⁸¹ War brought foods, diets, and bodies under closer inspection as they figured into domestic and frontline military strategy. Governments had begun regulating the food supply through inspection and handling regulations before the war, but WWI inaugurated direct governmental intervention into food production and consumption. In Canada, the Office of the Food Controller was created in 1917 to supervise Canada's food supply; its Fish Commissioner had specific authority over fisheries and could "purchase, requisition, store, sell and deliver" fish to meet Canadian needs. The office also inspected fish consumption in "hotels, restaurants, cafes, private houses, clubs and other places," which

⁸¹ Cummings, *The American and His Food*, 7.

brought the fish restaurant and the department's fish-consumption campaign under its supervisory gaze.⁸² In 1918, the Canada Food Board replaced the food controller and assumed more extensive powers, including the licensing of all retail dealers of fish. As these bodies absorbed the fisheries department's consumption campaign, they also broadened its distribution in other media and intensified its use of gendered norms to rally citizens to wartime food strategy.⁸³

6.7 Fish and War

Fisheries department officials had earlier recognized that the war presented a unique opportunity to increase fish consumption in Canada. In an address to the Canadian Fisheries Association at the CNE, fisheries minister Douglas Hazen emphasized that war and its "forced economies" delivered the "psychological moment to impress upon the people the advantages of Canadian fish as an economical and healthful diet."⁸⁴ But the Office of the Food Controller and the Canada Food Board found the fisheries department's campaign, which they carefully watched, wanting in several respects. As noted above, the Food Controller had criticized the lack of cleanliness in the CNE fish restaurant. The Controller also took issue with the department's cookbook distributed through the restaurant. "The book issued by your Department on 'Fish and How to Cook It,'" while admirable," the Food Controller wrote, "is expensive in form and contains a good deal of information, etc. not essential to the purpose in mind, namely to increase the

⁸² "Commissioners to deal with fish foods," *The Canadian Fisherman* 4 (July 1917): 250.

⁸³ Donica Belisle, "Buyers of the Nation: Women and the Rise of Consumer Citizenship in the Global North," Future of Consumerism and Well-Being in a World of Ecological Restraints Conference, June 12, 2013, 5-6.

⁸⁴ "Canada's Fisheries Need Advertising," *The Canadian Fisherman* 2 (October 1915): 324.

use of fish.”⁸⁵

The Controller’s fish officer, G.F. Beers, recommended the department use a less “elaborate” publication such as a cheaper eight-page pamphlet. The fisheries department defended its book and claimed that such pamphlets were thrown away without being read “whereas this little booklet is kept in the homes and used as a reference book, and has done a great deal to spread the use of fish as food.”⁸⁶ Moreover many thousands of copies had already been distributed at the CNE and through “Industrial and Cooking schools.” The department conceded that a pamphlet on “certain phases of the fish question” might be helpful and the controller’s criticisms would be taken into account but that it planned to re-issue the cookbook in its current format. The revised edition, however, never came to pass, suggesting the fisheries department’s waning control over the fish-consumption campaign.⁸⁷

In 1918 the Food Controller’s successor, the Canada Food Board, issued its own fish cookbook that an anonymous *Canadian Fisherman* reviewer praised as being a “vast improvement over former cook books.” Illustrated with images of fish, the cookbook contained “simple and revised recipes” for Pacific cods and flatfishes, the cheaper fish that both the Food Board and the fisheries department were united in promoting over more expensive halibut and salmon. But unlike the fisheries department’s free recipe book, the Canada Food Board’s cost five cents. The Canada Food Board also close kept a close eye on the restaurant’s menu. When halibut and salmon were discovered on it, the board’s chairman wired the fisheries department to complain that these expensive fish

⁸⁵ G.F. Beer to G.J. Desbarats, 19 July 1917, RG 23, volume 1146, file 722-2-4, LAC

⁸⁶ Ibid.

⁸⁷ G.J. Desbarats to G.F. Beer, 24 July 1917, RG 23, volume 1146, file 722-2-4, LAC.

were being served at the CNE. The fisheries department in turn telegraphed the restaurant and its supplier, and ordered the restaurant to remove the offending items and “to procure and feature cod, haddock, flounders, etc.” Cheaper fish, however, were hard to find; according to the restaurant’s fish supplier, “the submarine menace” limited the supply of Atlantic fish the department urgently demanded.⁸⁸

By mid-1918 the Canada Food Board had effectively commandeered the fisheries department’s fish-consumption campaign. The Board expanded the campaign beyond the CNE restaurant exhibit and cookbook to include large-scale fish purchases, and mass advertising and poster campaigns.⁸⁹ In June it brought three rail-car loads of fresh haddock—75,000 pounds in all—to Toronto where they were “rapidly disposed of” at ten cents per pound. The Board also transported and sold other fish such as mackerel and Pacific flat-fishes at “cut-rate prices” to introduce these cheaper varieties to Ontario consumers.⁹⁰ The Food Board also produced campaign materials in other mediums. It hired Frederick William Wallace, editor of *The Canadian Fisherman* and an experienced photographer, to make films about Canada’s fisheries. One film was devoted to Pacific flat-fish and cods, fish that Food Board wanted consumers to eat more of, and thus divert demand from halibut and salmon. The film followed these cheaper fish through the commodity chain from the moment “the steam trawler leaves the dock for the Banks until the fish are sold over the retail counter.”⁹¹ Wallace also produced a film about trawler and schooner-dory fishing in Atlantic Canada; both films were shown at the CNE.

⁸⁸ “Food Board issues new cook book,” *The Canadian Fisherman* 5 (June 1918): 778; W.A. Found to A.B. Brittain, 16 September 1918, RG 23, volume 1146, file 722-2-4, LAC.

⁸⁹ “Canada Food Board’s Fish Section Bulletin,” *The Canadian Fisherman* 5 (June 1918): 777. See also LAC Finding Aid for information on the Office of the Food Controller and the Canada Food Board.

⁹⁰ “Fish campaign in Toronto,” *The Canadian Fisherman* 5 (June 1918): 778.

⁹¹ “Canada Food Board’s Fish Section Bulletin,” *The Canadian Fisherman* 5 (June 1918): 777.

The Canada Food Board also produced a series of advertisements and posters, which replicated the dichotomy of masculine producer and feminine consumer. One series of posters featured the same photograph of a bearded fisherman in sou'wester and yellow rain-slicker hailing consumers with the tag line "Ahoy Canadians!" One poster asked "Have you tried Pacific Flat-Fish and Codfish yet?" while another wanted to know if people were eating more fish "these war time days?" Both implored people to consume more fish "and save meat for the fighters." The board's most colorful poster was headlined: "Buy Fresh Fish—Save the Meat for our Soldiers and Allies." The poster featured an illustration of a fashionably-dressed woman admiring a display of fresh fish in a butcher shop. The butcher was depicted smiling and pointing to the fish, ignoring the large cuts of beef arranged on the shelf behind him. The shelf also displayed a sign that read "A Good Butcher."

These posters showed how seamlessly the fisheries department's consumption campaign was integrated into the wartime food-conservation program. These materials also reflected the gendered and classed ideas concerning food that animated Cowie's original campaign and how they were reframed within wartime patriotism. Barbara Wilson and Donica Belisle note how white middle-class women were recruited into the war effort through food-conservation campaigns that enjoined them to substitute foods and sacrifice accustomed eating habits to guarantee victory. Viewed as "buyers of the nation," women were considered central to food rationing because they were seen as being entirely responsible for food-consumption choices.⁹² And while wartime appeals to female consumers may have granted them recognition as "important civic actors," as

⁹² Belisle, "Buyers of the Nation," 1-3.

Belisle claims, the campaign also played on contemporary notions of feminine nature that posited vanity as an essential womanly trait.⁹³ Victory through food substitution could only be accomplished, Canadian war propaganda suggested, by overcoming femininity. As one wartime cookbook put it, “[f]ood must be conserved... women must sacrifice their vanity, their mean self-indulgence and criminal selfishness on the altar of their country’s safety.”⁹⁴

Pleas to substitute fish for meat also had to contend with understandings of beef as an essentially masculine food. Simply put, beef fueled manly warrior bodies. The fisheries department’s fish-consumption campaign had earlier attempted to counter this discourse by stressing fish’s protein content and noting how fish diets sustained “hardy” sea-going men as noted above. The Canada Food Board eschewed such parallels and stressed that meat should be reserved for men in the front-lines, a message taken up and reproduced in other quarters. The Women’s Convention for Food Conservation issued a cookbook took as its premise that “without beef, of course, no army can fight.”⁹⁵ Women were brow-beaten to substitute foods such as fish for meat to guarantee victory: “Could your family refuse mutton, kidneys, liver, pigs’ feet, tripe, or fish, thoroughly understanding that a shortage of muscle and strength-giving beef would mean a weakened, inefficient army, and anaemic, incompetent munition workers?”⁹⁶ This discourse figured women and their domestic vanity as a weak link in national mobilization; it also drew on anxieties about malnourished male bodies such as those

⁹³ Ibid., 15.

⁹⁴ Barbara M. Wilson, editor, *Ontario and the First World War 1914-1918*, (Toronto: The Champlain Society for the Government of Ontario, 1977) xcii; quoted in Wilson 123.

⁹⁵ Ibid., 125.

⁹⁶ Ibid., 127.

expressed in England over the poor physical fitness of British army recruits.⁹⁷

The Canada Food Board thus intensified the discourse already active in the fisheries department's campaign. The board issued a broad range of new materials, including posters, advertisements, films, and cookbooks, that appropriated the fisheries department's consumer-focused campaign. The appropriation of the campaign extended to the CNE: in 1919 the fisheries department ceded its central place in the CNE fisheries exhibit to the Canada Food Board and the Canadian Fisheries Association. Those two organizations, along with the Ontario provincial government, mounted its own joint exhibit which replaced the fisheries department's exhibits. Like the federal fisheries department display, the new exhibit preached "the gospel of clean fish" with displays of fresh, frozen, and cured fish that promised "absolute cleanliness and sanitation." There were also displays of "fresh sea and lake fish on ice" by T. Eaton Co. and Simpsons, whose presence signaled a sea-change in Canadian food retailing as chain stores began catering to food shoppers. The exhibit also featured novel displays and demonstrations that continued to gender the fisheries. Fish-cookery demonstrations given by female "Domestic Science experts," for example, "cooked and prepared [fish] before the eyes of the public." This form of gendered display—a part of the emerging practice of home economics—later became popular at other fisheries exhibitions.⁹⁸

The fisheries department rationalized its withdrawal from the CNE by claiming that the restaurant, and Fisheries Museum exhibit, had been so successful "to make it

⁹⁷ Cummings, *The American and His Food*, 120.

⁹⁸ "Fisheries Exhibit at the Canadian National Exhibition," *The Canadian Fisherman* 5 (September 1918): 991; Belisle, *Retail Nation*, 11; Morton, "The End Man Is a Woman," 157.

unnecessary for it to continue either.”⁹⁹ For the Fisheries Museum, however, the CNE proved to be challenging. CNE officials lamented the closure of the restaurant, but not the withdrawal of the museum collection. The exhibition’s general manager asked the department to reconsider closing the restaurant as it had provided “invaluable assistance in schooling the public to the use of fish as a diet.”¹⁰⁰ The fisheries department agreed and acknowledged the waning popularity of mounted fish displays. “The restaurant has proved an eminent success,” went one fisheries memorandum, “and is possibly far more efficacious in advertising fish than the exhibit.”¹⁰¹ *The Canadian Fisherman* shared this view and extended it to the museum which the publication condemned. “It is true many of us have never heard of [the museum],” the publication claimed, “and those few who have discovered its location have failed to find anything of educational value to fisheries in it.”¹⁰² The critique forecast the museum’s doom. In March of 1918 the museum building was demolished and the collection dispersed or destroyed.

6.8 Conclusion

In this chapter I sought to demonstrate how the Fisheries Museum was overshadowed by the CNE fish exhibit and fish-consumption campaign. This campaign began with John Cowie, a Scottish fish curer and modernization advocate, who argued that Atlantic Canada’s fisheries were stagnant; he proposed a campaign, modeled on British “publicity propaganda,” to improve the marketable quality of fish, its retailing,

⁹⁹ G.J. Desbarats to John G. Kent, 2 December 1918, RG 23, volume 1146, file 722-2-4, LAC.

¹⁰⁰ John G. Kent to C.C. Ballantyne, 15 December 1918, RG 23, volume 1146, file 722-2-4, LAC.

¹⁰¹ “Memorandum,” 27 March 1918, RG 23, volume 1146, file 722-2-4, LAC.

¹⁰² “The Need for Technical Education in Our Fishing Industry,” *The Canadian Fisherman* 5 (January 1918): 578

and cooking by the nation's women. The CNE provided a public nexus for this campaign, an annual fair in Canada's second-largest city that welcomed nearly a million visitors. A grand fair of consumer capitalism, the exhibition was a logical theatre to convince people that fish were a sanitary and wholesome food—a message that the fisheries exhibit, restaurant, and cookbook articulated through vision, space, and taste.

The stand-alone display arranged fish commodities and scientific specimens in a new type of display for the fisheries department: a sparkling-white architectural space that shifted fairgoers' attention from production to consumption, from the hatchery to the retail store. The model shop offered not just a visual guarantee, but a spatial one that assured visitors that fish were sound to consume. The restaurant in particular proved a public success: it served more people in two weeks than the Fisheries Museum received through an entire year. Along with the cookbook, the restaurant drew on class-inflected, gendered discourses of health and nutrition to promote fish consumption. They offered an encounter with fish that the Fisheries Museum did not consider—a multi-sensory one that rendered consumption as a gendered affair.

Chapter Seven: Conclusion

In mid-February of 1918, the federal Public Works department advised fisheries officials that “it will be necessary to remove the Fisheries Exhibit” as the Fisheries Building was going to be demolished.¹ In early March the Fisheries Museum’s collection, including the whale skeleton and the collection of ship models, was dispersed to storage and to other museums and institutions. The museum’s demolition appeared to have surprised curator Andrew Halkett, who packed up the collection amidst the confusion of demolition. “The work of pulling down the museum building was underway,” he reported, “even when the material was being removed.”²

Fisheries officials initially believed the museum’s closure was temporary. Halkett thus arranged to loan the museum’s fish “wet” specimens and bird-skin collection to the Victoria Memorial Museum, while the fisheries department waited upon the time “when we shall have a proper Fisheries Museum.” When it became apparent that the museum would not re-open, Halkett began to freely distribute the museum collection of mounted fish. They were “worthless for scientific purposes,” Halkett admitted, but “might be serviceable as natural history object lessons for educational institutions.” These objects went to schools and colleges in Ottawa and Toronto, the Canadian Fisheries Association, and to exhibitions associations in Toronto and Vancouver.³

¹ E.L. Horwood to G.J. Debarats, 15 February 1918, RG 23, volume 1147, file 722-3-7, LAC, Ottawa.

² Andrew Halkett, memorandum, 18 March 1918, RG 23, volume 1147, file 722-3-7, LAC, Ottawa.

³ W. A. Found to James Macoun, 25 February 1918, RG 23, volume 1146, file 722-3-2, LAC; W. A. Found, memorandum, 6 May 1919, RG 23, volume 1147, file 722-3-4, LAC; Memorandum, 15 August 1919, RG 23, volume 1147, file 722-3-4, LAC.

Between 1919 and 1922, the remainder of the collection was moved several times from one storage location in Ottawa to another. In 1922 the fisheries department instructed Public Works to complete the “final disposal of the residue...of the Canadian Fisheries Museum.”⁴ The remaining objects were itemized in a list and tagged for auction or destruction. Some objects—such as the valuable ship models—were returned to the fisheries department for display in various government offices. A penciled annotation in the list’s margin instructed that the sword from a swordfish specimen was to be sawn off and retained. A few rare specimens were saved for long-term storage, including a “left-eyed Halibut.” The 50-foot finback whale skeleton—once the museum’s pride—was also listed: it was described as “Bones of whale’s skeleton (ruined).”⁵

The museum’s demise closed the question of its authority to model Canadian fish and fisheries. At the same time the Fisheries Museum was being demolished, the Civil Service Commission was considering the question of Andrew Halkett’s expertise. In 1917, he had launched another bid for the promotion that the Commission had refused in 1910. In his appeal Halkett stressed the development of his expertise as a naturalist and curator who had faithfully served the state: he had participated in the Neptune expedition and made expeditions to Alberta and Saskatchewan that had resulted in the introduction of black bass. He had also served the local natural history community through the Ottawa Field-Naturalists’ Club; he had been president in 1910-11 and contributed “scientific articles” to *The Ottawa Naturalist*. As a curator, Halkett had assembled award-winning fisheries exhibits in Europe and Canada, and had remodeled the Canadian Fisheries

⁴ Memorandum, 29 May 1922, RG 23, volume 1146, 722-3-4, LAC.

⁵ Memorandum, 7 June 1922, RG 23, volume 1147, file 722-3-7, LAC.

Museum, a “thing of permanent importance,” which was backed by the publication of his authoritative *Checklist* in 1913.⁶

In 1918, the Civil Service Commission accepted Halkett’s appeal and promoted him to the position of “Associate Zoologist.” He ascended from the Civil Service’s clerical Second Division to Subdivision “B” of the First Division, a category that included “lesser technical and administrative and executive officers.”⁷ The promotion finally recognized Halkett’s authority, hard-won over many years of work, as the museum came down. The promotion also represented Halkett’s transit across the civil service’s emerging gendered division. Women in increasing numbers filled clerical jobs and had begun working in the fisheries department. In 1890 there was no women listed as working in Canada’s fisheries department; in 1929 they organized Halkett’s retirement party and served tea, the “first tea party” in the history of the Game and Fisheries Department,” the Toronto *Globe* claimed in its celebration of Halkett’s career.⁸ As a retirement gift the fisheries department gave Halkett a leather chair and christened a fisheries vessel in his name, the “A. Halkett,” which reflected the respect that the man, a “right good fellow,” had earned over his long career.⁹

Halkett’s retirement party probably took place in the Hunter Building, which stood on the ground once occupied by the Fisheries Building. The Hunter Building was a nine-story steel-frame building and the first Canadian government block constructed to

⁶ Andrew Halkett to G.J. Desbarats, 30 November 1917, RG 32, volume 119, file 391, LAC, Ottawa.

⁷ J. E. Hodgetts, William McCloskey, Reginald Whitaker, and V. Seymour Wilson, *The Biography of An Institution: The Civil Service Commission, 1908-1967* (Montreal & London: McGill-Queen’s University Press, 1972) 27.

⁸ Canada, *The Civil Service List of Canada* (Ottawa: Queen’s Printer, 1890) 133; “Zoologist honored on his retirement after long service,” *The Globe*, May 6, 1929, 16.

⁹ “Who’s Who in the Fishing World,” *The Canadian Fisherman* 1 no 4 (April 1914): 110. The “A. Halkett” went into service surveying scallop grounds and perpetuated the loyal civil servant’s name after his death in 1937 until 1954 when the boat was decommissioned and sold.

commercial office standards.¹⁰ Designed for the fisheries department, it answered Ottawa's war-time shortage of office space and accommodated the government's expanding civil service. Janet Wright described the Hunter Building in her history of government architecture as "solid, serviceable yet architecturally undistinguished." It was not, Wright claims, "a monument to government."¹¹ Yet the Hunter Building's unornamented utilitarian form matched if not celebrated a new style of government that civil-service reformers had long hoped to institute: modern, rational, and professional.¹² It was not a type of government that the Fisheries Museum survived.

The replacement of the Fisheries Building by the Hunter Building dramatizes, in material form, the changing terrain of authority that shaped the Canadian Fisheries Museum. Following the example of museum studies by Leanne McTavish, Samuel Alberti, and Kate Hill, I have paid close attention to curating, collecting, cataloguing, modeling, and exhibiting within the precincts of a small museum. At this scale, museological power looks less confident and stable. Jens Andermann claims that natural history museums "were national not because they showcased the nation-state but rather because they represented its capacity to represent. They formulated a claim to sovereignty by forging images of order."¹³ But the capacity to represent, and to produce "images of order" were not given in the Fisheries Museum: as I have shown, they were

¹⁰ Janet Wright, *Crown Assets: The Architecture of the Department of Public Works, 1867-1967* (Toronto: University of Toronto Press, 1997) 129.

¹¹ *Ibid.*, 150.

¹² David L.A. Gordon, "From Noblesse Oblige to Nationalism: Elite Involvement in Planning Canada's Capital," *Journal of Urban History* 28, 3 (2001): 9.

¹³ Jens Andermann, *The Optic of the State: Visuality and Power in Argentina and Brazil* (Pittsburgh: University of Pittsburgh Press, 2007) 33.

contingent, shaped within the changing contexts of authority in fisheries administration, museums, and gender roles.

This dissertation has documented the museum's negotiation of these changing contexts and the challenges it faced. They included the museum's spatial constraints; its variable forms of collecting; the durability, credibility, and provenance of its fish models; the museum's competing local and national roles; the impact of professionalization on curatorship and natural history; and the gendering of consumption. All of these issues complicated, in one form or another, how the Fisheries Museum modeled Canadian fish and fisheries. After the fisheries collection's installation in Ottawa, constant work was required to stabilize and maintain the foundations of its authority. Remodeling was not just about material objects; it was also about curatorial reputation and its embodiment in authoritative men.

The museum is, as Samuel Alberti argues, "not a static mausoleum but a dynamic, mutable entity."¹⁴ George Brown Goode, the American ichthyologist museum administrator and New Museum advocate, would have agreed: "A finished museum is a dead museum," he declared in 1891, "and a dead museum is a useless museum."¹⁵ Goode's view rationalized the acquisitive logic of nineteenth-century natural history museums; for contemporary scholars it opens questions about museum practices and efforts to renew museum authority. Larger national and metropolitan museums were not free of conflict or challenge; but smaller institutions provide an ideal setting to inquire

¹⁴ Samuel J. M. M. Alberti, "Constructing Nature Behind Glass," *Museum and society* 6, no. 2 (2008): 82.

¹⁵ George Brown Goode, *The Museums of the Future* (Washington: Government Printing Office, 1891) 437.

into museum life at the ground level.¹⁶ With smaller collections and staffs, the arena is perhaps more intimate, the gap between the museum as idea and the museum as material manifestation more visible. That gap is, in effect, the arena: the space where ideas about the museum and authority are tested and contested, as people worked to close the distance between ideal and practice.

In engaging questions of authority at smaller institutions, I have also addressed matters overlooked in fields such as the environmental history of fisheries. As I noted in the introduction, North American historians of fisheries and fisheries science have generally ignored the role of exhibitions and museums in constructing administrative regimes. Joseph Taylor's description of them as "didactic dioramas" is apt, but this dissertation provides a fuller account of their role in fisheries administration. Considering the Fisheries Museum as an "environmental threshold" broadens our understanding of these displays: they become visible as more complicated places that helped construct ideas about nature, and particularly about fisheries and its formation as an administrative discipline. Although it was a fraught enterprise, the Fisheries Museum nevertheless reveals how nineteenth-century administrators understood fish in relation to the nation, and how they understood, and carried out, environmental interventions such as acclimatization. As I have shown, fisheries exhibits are also fruitful places to register changes in fisheries administration. This is especially evident in the last chapter, which shows how the Fisheries Museum was bound up in the shift from production to

¹⁶ This may be an archival artefact: in the case of the Fisheries Museum, its institutional archive is significantly smaller than that of the Victoria Memorial Museum or the American Museum of Natural History, two archives I also consulted. Practices and personalities are perhaps easier to track in less comprehensive record groups. Gaps in smaller records however are also perhaps more difficult to navigate around.

consumption in Canadian fisheries administration. As a case study, this final chapter also support's Steven Conn's argument that museums invite failure if they neglect contemporary intellectual and social concerns. As Conn shows, the Philadelphia Commercial Museum lost its purpose during the transition from "a producer-oriented economy to a consumer one," an argument that also makes sense of the Fisheries Museum.¹⁷

This dissertation has also situated the Fisheries Museum in relation to changes in gender models in the late nineteenth and early twentieth centuries. As McTavish notes, the museum played an important role in the formation of middle-class gendered identities, both constraining and enabling their formation.¹⁸ This dissertation contributes to that analysis by focusing on men in service to the state; it also extends the gender analysis of Canadian fisheries already undertaken by other historians such as Suzanne Morton and Barbara Neis. In particular my work extends Morton's work on how women were constructed as consumers through exhibitions. For Samuel Wilmot, Edward Prince, and Andrew Halkett, the Fisheries Museum was an arena for contending constructions of male authority, especially as professionalization began to rewrite the requirements for career advancement in Canada's male-dominated fisheries administration. As an arena of male authority, the Fisheries Museum exemplifies the contingent modeling of male authority and the overlapping forms of in the late nineteenth century. As J.A. Mangan argued, manly identity "embraced a variety of overlapping ideologies, regionally interpreted, which changed over time, and which at specific moments appear to be

¹⁷ Steven Conn, *Do Museums Still Need Objects?* (Philadelphia: University of Pennsylvania Press, 2010) 185.

¹⁸ McTavish, *Defining the Modern Museum*, 5.

discrete, even conflicting, in emphasis.”¹⁹ By paying attention to the gender dynamics of the Fisheries Museum, this dissertation begins to take account of men in Canadian fisheries as gendered beings, “socially constructed and reproduced,” as Jeff Hearn puts it, “not just agendered, asexual, ‘neutral’ adults, citizens or people, as in most standard economics or political science textbooks.”²⁰

This dissertation has also furthered understandings of smaller museums and their less certain ability to produce “hegemonic figurations” of nature and nation. It has contributed to the Canadian historiography of museums and filled a gap by putting a nominally national institution under the microscope. Although Kate Hill argued that her study of English municipal museums was an attempt to draw attention away from national institutions, the Canadian context requires an opposite move. As exemplified by McTavish’s *Defining the Modern Museum*, the focus of Canadian historians on nineteenth-century museums has been on provincial and university museums.²¹ Although the Victoria Memorial Museum figures in studies about the Geological Survey of Canada—the museum’s administrator—and its staff, it has not yet received a critical study devoted to it. The larger literature on natural history museums has also ignored

¹⁹ J. A. Mangan and James Walvin, “Introduction,” in *Manliness and Morality: Middle-Class Masculinity in Britain and America*, J. A. Mangan and James Walvin, editors (Manchester: Manchester University Press, 1987) 3.

²⁰ Jeff Hearn, “From Hegemonic Masculinity to the Hegemony of Men,” *Feminist Theory* 5, no. 1 (2004): 51.

²¹ Eileen Diana Mak, “Patterns of Change, Sources of Influence: An Historical Study of the Canadian Museum and the Middle Class, 1850-1950,” (Ph.D., University of British Columbia Press, 1996); Herve Gagnon, “The Natural History Society of Montreal’s Museum and the Socio-Economic Significance of Museums in 19th-Century Canada,” *Scientia Canadensis* 18, no. 2 (1994): 103-135; Raymond Duchesne and Paul Carle, « L’ordre des choses : cabinets et musées d’histoire naturelle au Québec (1824-1900) » *Revue d’histoire de l’Amérique française* 44, 1 (1990): 3-30; Gerald Killan, *David Boyle: From Artisan to Archaeologist* (Toronto: University of Toronto Press, 1983); J. Lynne Teather, *The Royal Ontario Museum: A Prehistory, 1830-1914* (Toronto: Canada University Press, 2005); Dennis Duffy, “Triangulating the ROM,” *Journal of Canadian Studies* 40, no. 1 (2006): 157-181; Lovatt Dickson, *The Museum Makers: The Story of the Royal Ontario Museum* (Toronto: Royal Ontario Museum, 1986).

Canada's nascent national institutions. Susan Sheets-Pyenson did not consider the Geological Survey museum in her comparative study of colonial museum, nor did John MacKenzie in his recent book on the same subject, *Museums and Empire*, which treated the Royal Ontario Museum and the British Columbia Provincial Museum. And Tony Bennett neglected Canada altogether in his *Pasts Beyond Memory*, which focused on natural history museums in the United Kingdom, the United States, and Australia.²²

Why has little or no attention been paid to Canadian national museums in this period? One reason may be ascribed to their slow formation and because they lacked purpose-built structures. Sheets-Pyenson, for example, focused on the Redpath Museum in Montreal, in part because it boasted of an architectural monument. Both the Geological Survey museum, at least until 1911, and the Fisheries Museum lacked such facilities; this, of course, should not disqualify them as museums and indeed makes them all the more worthy of study as it sheds light on the role of architecture in consecrating collections. In the case of the Fisheries Museum, the neglect is perhaps more understandable. It is a "lost museum" that never achieved a high profile: nominally a national museum, it was smaller than several of its provincial and university counterparts such as the Redpath Museum. Its physical scale was out of proportion to the geographic scale of its object of representation, the fish and fisheries of Canada. The Fisheries Museum also had only one patron: the Canadian fisheries department and the arena it constituted were circumscribed. Whereas Hill and McTavish could define the arena of their respective museums in broader societal terms, the Fisheries Museum, as a branch of the fisheries

²² Susan Sheets-Pyenson, *Cathedrals of Science* (Kingston and Montreal: McGill-Queen's University Press, 1988); Tony Bennett, *Pasts Beyond Memory: Evolution, Museums, Colonialism* (London: Routledge, 2004).

department, was an arena limited to men within the fisheries department. These reasons, of course, make it an interesting object of study, but for historians who compare national museums, the Fisheries Museum is perhaps an anomalous creature.

The Fisheries Museum, however, opens up a larger question about the modeling of nature and nation in Canada, which deserves more study. As the history of the Victoria Memorial Museum suggests, the Canadian Fisheries Museum's material and curatorial challenges were not unique to it. The Victoria Memorial Museum, which the government intended would include the fisheries collection, also struggled to model Canada's nature. Of its many challenges, the most pressing was the museum's physical instability. Built atop wet clay soils, the museum was slowly sinking into the ground. In 1914, the building's massive central tower had to be torn down to prevent further sinking. In 1916, the Victoria Memorial Museum was closed when it was converted into a temporary home for Canada's houses of parliament after fire destroyed the state buildings. Fisheries officials had then renewed their lobbying for room in the Survey museum, reasoning that a re-organization of the museum's space would occur when the building was restored as a public museum. But the Survey rejected any such notion. "The present condition of the Museum building is...the most serious factor in the situation," Survey officials told the fisheries department. "It is still sinking and it is useless to make plans for the future."²³

The Victoria Memorial Museum continued to struggle after it was re-opened in 1920. Wars and economic crises exacerbated institutional conflicts over funding and facilities for natural history work. Displays and dioramas were proposed but never completed, while fieldwork was often curtailed or cancelled. Long-serving ornithologist

²³ R. G. McConnell to G.J. Desbarats, 28 June 1916, RG 23, volume 1146, file 722-3-7, LAC.

Percy Taverner and chief zoologist R. M. Anderson complained bitterly throughout their tenures about the museum's failure to conduct expeditions and mount exhibitions that were commensurate to the museum's status as a national institution. Percy Taverner lamented in 1932 "that we have not in the National Museum of Canada a more satisfactory representative of natural science development in the Dominion."²⁴ Modeling nature and nation in Canada's national museums was a challenging task; the Fisheries Museum points the way to more studies of natural history museums in Canada and their particular contexts and contingencies.

The history of the Fisheries Museum also points toward further studies of fisheries exhibits. Although the demise of the Canadian Fisheries Museum suspended the modeling of fish in the national capital, it did not end fisheries exhibits, which continued at the local and provincial level. Without the Fisheries Museum collection to draw on, the department of fisheries arranged for displays of live game-fish at provincial fairs with fish borrowed from the department's regional hatcheries. The fisheries department also developed consumer-themed exhibitions following the pattern of its CNE displays. A plan for a traveling fish exhibit and restaurant in a railway car fell through, but the department did build a traveling gallery of illuminated fish photographs and flashing lights that spelled out "Eat Fish for Health."²⁵ This traveled across the country and was supplemented in the 1930s with fish-cooking demonstrations led by women. In the 1950s, a "cooking school" became a regular feature of the Lunenburg fisheries exhibition; the fisheries department constructed a bright and shiny model kitchen with new appliances—

²⁴ Percy Taverner to William Collins, memorandum, 1932, Taverner Correspondence, CMNAC/96-021, Canadian Museum of Nature, Aylmer, PQ.

²⁵ "Fish Exhibits in Montreal Show," *The Canadian Fisherman* 2 (February 1934): 34.

the ideal post-war middle-class kitchen—while female demonstrators modeled appropriate gender expertise in cooking fish.²⁶ Further analysis of these exhibitions would provide a fuller understanding of how gender was used by Canadian fisheries administrators to broaden demand and underwrite the expansion of trawler fisheries in the Atlantic Ocean after WWII.²⁷

At the beginning of this dissertation, I noted how the Fisheries Museum had been erased in public memory as early as 1929. In 1955, the Canadian fisheries department resurrected the Fisheries Museum, albeit unknowingly, when it revealed a permanent fisheries exhibit at Toronto's Royal Ontario Museum (ROM). The exhibit, called the Gallery of Canadian Fishes, was designed and built by an Ottawa exhibition designer who used contemporary methods and materials. Instead of decaying mounted fish, the Gallery presented plastic fish casts displayed in modernist display cases. Fish models were shown systematically, as the Fisheries Museum had done, and in habitat groups. The gallery also presented models of fishing vessels, built in England like those commissioned by Halkett, that illustrated how fish were caught with different gear types across Canada. A fisheries official proudly proclaimed the ROM exhibit to be "the first of its kind ever attempted by the Department." The erasure of the Canadian Fisheries Museum from the department's institutional memory was complete.²⁸ Yet the Gallery kept alive Fisheries Museum's model of fisheries as a progressive technological

²⁶ "Report on the participation by the department of Fisheries in the 1954 Nova Scotia Fisheries Exhibition at Lunenburg," 1 October 1954, RG 23 volume 1150, file 722-5-30, LAC; Joy Parr, "Modern Kitchen, Good Home, Strong Nation," *Technology and Culture* 43, no. 4 (2002): 666.

²⁷ For two studies of this topic see Miriam Wright, *A Fishery for Modern Times: The State and the Industrialization of the Newfoundland Fishery, 1934-1968* (Toronto: University of Toronto Press, 2001) and Dean Bavington, *Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse* (Vancouver: UBC Press, 2010).

²⁸ "Canadian Fisheries Display," 22 December 1954, RG 23, vol. 1149, file 722-9-1, LAC.

endeavour under rational administration. The exhibit's modernist design helped smooth the lines of this conceptual model, streamlining its production-oriented message through the visual language of consumerism. The Gallery of Canadian Fishes also represented fisheries as a national model: the fisheries department wanted to show how the "growth of the fishing industry played in knitting our vast domain into one country."²⁹ The Gallery of Canadian Fishes, however, had an even shorter life than the Fisheries Museum, being removed sometime in the mid-1960s. The arena had once again been built and dispersed; another episode in the perpetual reconstruction of arenas for the modeling of Canadian fisheries.

²⁹ Gordon Fairbairn to T.M. Shortt, 4 February 1954, RG 23, vol. 1149, file 722-9-1, LAC

Bibliography

I. PRIMARY SOURCES

i) Archival

American Museum of Natural History

Central Archives. CA 115. CA 988. CA 1008. CA 2622.

Papers of Department of Preparation. 1923-1960.

Vertical Files.

Archives of Ontario

Frederick George Mackenzie Fraser fonds. F 1034.

Canadian Museum of Nature

Percy Taverner Fonds. CMNAC/96-021.

R. M. Anderson Fonds. CMNAC/1996-077 Series A. CMNAC/1992-001 Series B.

Library and Archives Canada (LAC)

Department of Agriculture. RG 17.

Department of Marine and Fisheries. RG 23.

Historical personnel files Collection. RG 32-C-2.

Office of the Minister of State for External Relations. RG 25 A-1.

Ottawa Field-Naturalists' Club Fonds. MG 28.

Privy Council Office. RG 2. Series A-1-a.

Sir John A. Macdonald Fonds. MG 26 A.

Royal Ontario Museum

Department of Ichthyology and Herpetology. RG 83.

Gallery of Canadian Fishes. RG 61 Box 2.

Royal Ontario Museum of Zoology 1912-50. RG 17.

Natural History Museum London.

Department of Zoology Fonds. Fish Section Correspondence. A-O 1906-1916.

ii) Government Reports

Canada. *Annual Report of the Department of Marine and Fisheries*. 1868-1918.

— — —. *Fish and How to Cook It*. Ottawa: Department of Naval Service, 1915.

— — —. *The Civil Service List of Canada*. Ottawa: Queen's Printer, 1890.

— — —. *Debates of the House of Commons, 5th Parliament, 2nd Session*. Ottawa: MacLean, Roger, 1884.

Ontario. *Final Report of the Ontario Game and Fisheries Commission 1909-11*. Toronto: L.K. Cameron, 1912.

— — —. *Report of the Ontario Game and Fish Commissioners 1898*. Toronto: Warwick Brothers & Rutter, 1900.

iii) Newspapers and Periodicals

The Canadian Fisherman. Ste. Anne-de-Bellevue, 1914-1918.

The Canadian Grocer. Toronto, 1891-1918.

Illustrated London News. London, 1883.

Nature. London. 1883-1918.

The Ottawa Citizen. 1886-1937.

The Ottawa Naturalist. 1895-1939.

Science. London. 1883-1918.

The Globe. Toronto. 1883-1918.

iv) Published Sources: Books

Adams, W. M. *A Popular History of Fisheries and Fishermen of All Countries: From the Earliest Times*. London: W. Clowes, 1883.

Andrews, Roy Chapman. *Whale Hunting with Gun and Camera*. New York: D. Appleton and Company, 1916.

Bean, Tarelton. "World's Fisheries Congress." *Bulletin of the United States Fish Commission* 13, no. 1 (1893): 1-14.

Bertram, James G. *The Unappreciated Fisher Folk: Their Round of Life and Labour*. Papers of the International Fisheries Exhibition. London: William Clowes and Sons, Limited, 1883.

— — —. *The Harvest of the Sea: A Contribution to the Natural and Economic History of the British Food Fishes*. Third ed. London: John Murray, 1873.

Bompas, George C. *Life of Frank Buckland*. London: Smith, Elder, & Co., 1885.

Bourinot, J. G. *Canada's Marine and Fisheries*. London: Royal Colonial Institute, 1871.

Butler, H. D. *The Family Aquarium*. London: Dick & Fitzgerald, 1858.

The Canadian Housewife's Manual of Cookery. Hamilton: Henry L. Richards, 1861.

Cowie, J.J. "Sea-Fisheries of Eastern Canada." In *Commission of Conservation*. Clifford Sifton and James White, editors. Ottawa, 1912.

Cox, Philip. "Catalogue of the marine and freshwater fishes of New Brunswick." *Bulletin of the Natural History Society of New Brunswick* 8 (1896): 62-75.

— — —. "History and present state of the ichthyology of New Brunswick." *Bulletin of the Natural History Society of New Brunswick* 8 (1896): 28-29.

Dewhurst, Henry William. *The Natural History of the Order Cetacea*. London, 1834.

Eifrig, Rev. C.W.G. "Ornithological Results of the Canadian 'Neptune' Expedition to Hudson Bay and Northward, 1903-1904." *The Auk* 22 no. 3 (July 1905): 233-241.

- Eigenmann, Carl H. "Results of Explorations in Western Canada and the North Western United States." *Bulletin of the United States Fish Commission* No. 14 (1894): 101-132.
- Evermann, Barton Warren, and Edmund Lee Goldsborough. "A Check List of the Freshwater Fishes of Canada." *Proceedings of the Biological Society of Washington* 20 (1907): 89-120.
- Fleming, Sandford. *England and Canada: A Summer Tour Between Old and New Westminster*. London: Sampson Low, 1884.
- Flower, W. H. *Essays on Museums and Other Subjects Connected with Natural History*. London: Macmillan, 1898.
- Fortin, Pierre. *Annual Reports of Pierre Fortin, Esq. 1861 and 1862*. Quebec: Hunter, Rose & Lemieux, 1863.
- — —. *Rapports Annuels de Pierre Fortin, Ecr., 1861 et 1862*. Quebec: Hunter, Rose et Lemieux, 1863.
- — —. *Annual Report of Pierre Fortin Esq. 1859*. Quebec: Queen's Printer, 1860.
- — —. *Annual Report of Pierre Fortin, Esquire, 1857*. Toronto: John Lovell, 1858.
- Franklin, Dwight. "A Method of Preparing Fishes for Museum and Exhibition Purposes." In *4th International Fisheries Congress*. Government Printing Office, 1908.
- Fulton, Thomas Wemyss. *The Sovereignty of the Sea*. Edinburgh: W. Blackwood and Sons, 1911.
- Gard, Anson A. *The Hub and the Spokes or, The Capital and its Environs*. Ottawa and New York: The Emerson Press, 1914).
- Gemmill, J.A., editor. *The Canadian Parliamentary Companion*. Ottawa: J. Durie & Son, 1889.
- Gill, Theodore. "The Principles of Zoogeography." *Proceedings of the Biological Society of Washington* 2 (1884): 1-39.
- Goode, George Brown. *The Smithsonian Institution 1846-1896. The History of Its First Half-Century*. Washington: Government Printing Office, 1897.
- — —. *First draft of a system of classification for the World's Columbian Exposition*. Washington: Government Printing Office, 1893.

- — —. *The Museums of the Future*. Washington: Government Printing Office, 1891.
- — —. *Museum-History and Museums of History*. New York: The Knickerbocker Press, 1889.
- — —. *The Fisheries and Fishery Industries of the United States*. Washington: Government Printing Office, 1884.
- Gordon, Arthur. *Wilderness Journeys in New Brunswick, in 1862–3*. Saint John: J. & A. M'Millan, 1864.
- Gosse, Philip Henry. *The Aquarium: An Unveiling of the Wonders of the Deep Sea*. 2nd ed. London: John van Voorst, 1856.
- The Great International Fisheries Exhibition of 1883*. London: William Clowes and Sons, Limited, 1883.
- Guide to the Aquarium of the Zoological Station at Naples*. 8th ed. Leipzig: Breitkopf & Hartel, 1913.
- Halkett, Andrew. *Check List of the Fishes of the Dominion of Canada and Newfoundland*. Ottawa: C.M. Parmelee, King's Printer, 1913.
- Hallock, Charles. *The Sportsman's Gazetteer and General Guide*. New York: Forest and Stream, 1877.
- Henshall, James. *Book of the Black Bass*. Cincinnati: R. Clarke & Co., 1881.
- Hibberd, S. *The Book of the Aquarium and Water Cabinet*. London: Groombridge & Sons, 1856.
- Holdsworth, Edmund W H. *Deep-Sea Fishing and Fishing-Boats*. London: Edward Stanford, 1874.
- Huntsman, A. G. "Dr. E. E. Prince." *Nature* 139 (1937): 141-42.
- Huxley, T. H. "Address by Professor Huxley, F.R.S." *The Fisheries Exhibition Literature*. Vol. 4. London: William Clowes and Sons, 1884.
- Inventory of the Food Collection Arranged in Alphabetical Order*. Science and Art Department of the Committee of Council on Education. London: Her Majesty's Stationery Office, 1869.
- Ives, H C. *The Dream City: A Portfolio of Photographic Views of the World's Columbian Exposition*. St. Louis: N.D. Thompson Co., 1893.

- Joncas, L. Z. "The Fisheries of Canada." *Bulletin of the United States Fish Commission* 13, no. 1 (1893): 341-348.
- Jones, J. M. "List of the fishes of Nova Scotia." *Proceedings and Transactions of the Nova Scotian Institute of Natural Science* 5 no. 1 (1879): 87-97.
- Jordan, David Starr. *A Guide to the Study of Fishes*. Volume 1. New York: Henry Holt and Company, 1905.
- — —. "The History of Ichthyology." *Science (New York, N.Y.)* 16, no. 398 (1902): 241-258.
- Jordan, David Starr and Barton Evermann. *The Fishes of North and Middle America: A Descriptive Catalogue*. 4 volumes. Washington: Government Printing Office, 1896-1900.
- Kofoed, Charles Atwood. *The Biological Stations of Europe*. United States Bureau of Education Bulletin 4. Washington: Government Printing Office, 1910.
- Lankester, E. Ray. *Scientific Results of the Fisheries Exhibition*. London: William Clowes and Sons, 1883.
- Low, A P. *The Cruise of the Neptune. Report on the Dominion Government Expedition to Hudson Bay and the Arctic Islands, 1903-1904*. Ottawa: Government Printing Bureau, 1906.
- Lucas, F. A. "Outline for An Educational Exhibit of Fishes." In *Proceedings of the Fourth International Fishery Congress, Washington, 1908*. Washington: Government Printing Office, 1908.
- MacCallum, G. A. "Assimilation of the Fishery Laws of the Great Lakes." *Bulletin of the United States Fish Commission* 13, no. 1 (1893): 17-20.
- Macoun, John. *Autobiography of John Macoun*. Ottawa: Ottawa Field-Naturalists' Club, 1922.
- — —. *Catalogue of Canadian Plants*. Montreal: Dawson Brothers, 1883.
- Macoun, John and James Macoun. *Catalogue of Canadian Birds*. Ottawa: Government Printing Bureau, 1909.
- Meek, S.E., and D.G. Elliot. *Notes on a Collection of Fishes and Amphibians From Muskoka and Gull Lakes*. Zoological Series 41. Chicago: Field Columbian Museum, November, 1899.

- Millspaugh, Charles F. "Botanical Installation." *Proceedings of the American Association of Museums* 4 (1910): 52-58.
- Miner, R W. "A Plan for An Educational Exhibit of Fishes." In *Bulletin of the Bureau of Fisheries*. Government Printing Office, 1908.
- Montpetit, André-Napoléon. *Les Poissons D'eau Douce Du Canada*. Montreal: C.O. Beauchemin, 1897.
- Nash, C. W. *Fishes. Check List of the Vertebrates of Ontario and Catalogue of Specimens in the Biological Section of the Provincial Museum*. Toronto: King's Printer, 1908.
- Official Guide to the World's Columbian Exposition*. John Flinn, editor. Chicago: The Columbian Guide Co., 1893.
- Penck, Prof. Dr. Albrecht. "Das Museum Für Meereskunde Zu Berlin." In *Meereskunde Sammlung Volkstümlicher Vorträge Zum Verstandnis Der Nationalen Bedeutung Von Meer Und Seewesen*. Berlin: Ernst Siegfried Mittler und Sohn, 1907.
- Perley, Moses H. *Reports on the Sea and River Fisheries of New Brunswick*. 2nd edition. Fredericton: Queen's Printer, 1852.
- — —. *Report Upon the Fisheries of the Bay of Fundy*. Fredericton: J. Simpson, 1851.
- — —. *Report on the Fisheries of the Gulf of Saint Lawrence*. Fredericton: J. Simpson, 1849.
- — —. *Reports on Indian Settlements, &c: Extracts*. Fredericton: J. Simpson, 1842.
- Practical Fisherman's Congress*. Papers of the Conferences held in connection with the Great International Fisheries Exhibition. London: William Clowes and Sons, 1884.
- Prince, E. E. "The Propagation and Planting of Predaceous Fish." *Thirty-Fourth Annual Report of Department of Marine and Fisheries 1901*. Ottawa: King's Printer, 1902.
- — —. "Fish: Some thoughts on Canadian Fisheries and the Canadian Public. An Address to the Canadian Club of Regina, Saskatchewan." 1910.
- — —. "Acclimatization of Fish." *Thirty-third Annual Report of the Department of Marine and Fisheries 1900*. Ottawa: Queen's Printer, 1901.
- — —. "A Marine Scientific Station for Canada." *Twenty-sixth Annual Report of the Department of Marine and Fisheries 1893*. Ottawa: Queen's Printer, 1894.

- Provancher, L'Abbé Léon. "Les poissons." *Le Naturaliste Canadien*. 7 no. 4 (April 1875): 98-108.
- Rothrock, Boyd P. "A New Method of Preparing Exhibits of Fishes." *Proceedings of the American Association of Museums* 9 (1914): 86-89.
- Rowley, John. *The Art of Taxidermy*. New York: D. Appleton and Company, 1898.
- Shufeldt, R. W. *Scientific Taxidermy for Museums*. Washington: Government Printing Office, 1894.
- Silcox, S. and O. J. Stevenson. *Modern Nature Study: A First Book for Use in Canadian Schools*. Toronto: Morang & Co., 1902.
- Small, H. Beaumont. *The Animals of North America: Fresh-Water Fish*. Montreal: M. Longmore & Co., 1865.
- Stewart, W. R. "Canada at the Paris Exposition." *The Canadian Magazine* 25 (September 1900): 391-394.
- Taylor, J. E. *The Aquarium; Its Inhabitants, Structure, and Management*. 2nd ed. London: David Bogue, 1881.
- Whitcher, W.F. "Practical Results of Fish Culture in the Dominion of Canada." *Forest and Stream* 20 (1883): 408
- Whiteaves, J. F. *Catalogue of Canadian Pinnipedia, Cetacea, Fishes and Marine Invertebrata*. Ottawa: 1886.
- Whymper, Frederick. *The Fisheries of the World: An Illustrated and Descriptive Record of the International Fisheries Exhibition, 1883*. London: Cassell & Company, 1884.
- Wilmot, Samuel. *Canada at the Great International Fisheries Exhibition, London, 1883: Letters From Eminent Men in England on the Standing and Management of the Canadian Branch of the Great International Fisheries Exhibition, 1883*. Ottawa: A.S. Woodburn, 1884.
- — —. "Introduction of California salmon into Ontario." *Bulletin of the United States Fish Commission 1881*. Washington: Government Printing Office, 1882.
- — —. "Aquaculture and Fish Protection," *Transactions of the American Fisheries Society* 4 (1875): 23-34.
- Wright, Ramsay. "Preliminary Report on the Fish and Fisheries of Ontario." In *Ontario Game and Fish Commission*. Toronto: 1892.

v) Unpublished Primary Sources

Kerr, John W. *Journals 1865-1870*. 4 volumes in microfiche. Collection of Dr. Tom Whillans. Trent University, Peterborough, Ontario

II. SECONDARY SOURCES

i) Books

Adams, Carol J. *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. New York: Continuum, 1990.

Ainley, Marianne G. "Last in the Field? Canadian Women Natural Scientists, 1815-1965." In *Despite the Odds: Essays on Canadian Women and Science*. Ed. Marianne G. Ainley. Montreal: Vehicule Press, 1990.

Alberti, Samuel J. M. M. "The Dead Ark." In *The Afterlives of Animals*. Ed. Samuel J. M. M. Alberti. Charlottesville and London: University of Virginia Press, 2011.

— — —. *Nature and Culture: Objects, Disciplines and the Manchester Museum*. Manchester: Manchester University Press, 2009.

Alexander, Edward P. *Museums in Motion: An introduction to the History and Functions of Museums*. Nashville: American Association for State and Local History, 1979.

Allard, Dean C. *Spencer Fullerton Baird and the U.S. Fish Commission* (New York: Arno Press, 1978)

Allen, David E. *The Naturalist in Britain: A Social History*. 2nd ed. Princeton: Princeton University Press, 1994.

Altick, Richard. *The Shows of London: A Panoramic History of Exhibitions, 1600-1862*. Cambridge, MA: Harvard University Press, 1978.

Andermann, Jens. *The Optic of the State: Visuality and Power in Argentina and Brazil*. Pittsburgh: University of Pittsburgh Press, 2007.

Anderson, Benedict. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Revised ed. London: Verso, 2006.

Auslander, Leora. "The Gendering of Consumer Practices in Nineteenth-Century France." In *The Sex of Things*. Eds. Victoria De Grazia and Ellen Furlough. Berkeley and Los Angeles: University of California Press, 1996.

- Bailey, Peter. *Leisure and Class in Victorian England: Rational Recreation and the Contest for Control 1830-1885*. Toronto: University of Toronto Press, 1978.
- Balcom, J.A. "Technology Rejected: Steam Trawlers and Nova Scotia, 1897-1933." In *How Deep Is the Ocean? Historical Essays on Canada's Atlantic Fishery*. Eds. James E. Candow and Carol Corbin. Sydney, NS: University College of Cape Breton Press, 1997.
- Barringer, Tim. "The South Kensington Museum and the Colonial Project." In *Colonialism and the Object: Empire, Material Culture, and the Museum*. Eds. Tim Barringer and Tom Flynn. London: Routledge, 1998.
- Barrow, Mark V. *A Passion for Birds: American Ornithology After Audubon*. Princeton: Princeton University Press, 1998.
- Bavington, Dean. *Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse*. Vancouver: UBC Press, 2010.
- Beardsworth, Alan, and Teresa Keil. *Sociology on the Menu: An Invitation to the Study of Food and Society*. London: Routledge, 1997.
- Bederman, Gail. *Manliness and Civilization: A Cultural History of Gender and Race in the United States 1880-1917*. Chicago: University of Chicago Press, 1995.
- Belasco, Warren. "Food Matters: Perspectives on An Emerging Field." In *Food Nations: Selling Taste in Consumer Societies*. Eds. Warren Belasco and Philip Scranton. New York & London: Routledge, 2002.
- Belisle, Donica. *Retail Nation: Department Stores and the Making of Modern Canada*. Vancouver: UBC Press, 2011.
- Bennett, Tony. *Pasts Beyond Memory: Evolution, Museums, Colonialism*. London: Routledge, 2004.
- — —. *The Birth of the Museum: History, Theory, Politics*. London: Routledge, 1995.
- Benson, Keith R. "From Museum Research to Laboratory Research: The Transformation of Natural History Into Academic Biology." In *The American Development of Biology*. Eds. Ronald Rainger, Keith R Benson and Jane Maienschein. Philadelphia: University of Pennsylvania Press, 1988.
- Bentley, Amy. *Eating for Victory: Food Rationing and the Politics of Domesticity*. Urbana and Chicago: University of Illinois Press, 1998.
- Berger, Carl. *Science, God, and Nature in Victorian Canada*. Toronto: University of Toronto Press, 1983.

- Bloom, Lisa. *Gender on Ice: American Ideologies of Polar Expeditions*. Minneapolis: University of Minnesota Press, 1993.
- Bogue, Margaret Beattie. *Fishing the Great Lakes: An Environmental History, 1783-1933*. Madison: University of Wisconsin Press, 2000.
- Bolster, W. Jeffrey. *The Mortal Sea: Fishing the Atlantic in the Age of Sail*. Cambridge, MA: Harvard University Press, 2012.
- Bowler, Peter J. *Life's Splendid Drama: Evolutionary Biology and the Reconstruction of Life's Ancestry, 1860-1940*. Chicago: University of Chicago Press, 1996.
- Boyd, Cynthia. "Come on All the Crowd on the Beach!' the Working Lives of Beachwomen in Grand Bank Newfoundland 1900-1940." In *How Deep Is the Ocean? Historical Essays on Canada's Atlantic Fishery*. Eds. James E. Candow and Carol Corbin. Sydney, NS: University College of Cape Breton Press, 1997.
- Braun, Bruce. *The Intemperate Rainforest: Nature, Power and Culture on Canada's West Coast*. Minneapolis: University of Minnesota Press, 2002.
- Breen, David, and Kenneth Coates. *Vancouver's Fair: An Administrative & Political History of the Pacific National Exhibition*. Vancouver: University of British Columbia Press, 1982.
- Briggs, John C. "Introduction to the Zoogeography of North American Fishes." In *The Zoogeography of North American Freshwater Fishes*. Eds. Charles H. Hocutt and E.O. Wiley. New York: John Wiley & Sons, 1986.
- Browne, Janet. "History of Biogeography." *Encyclopedia of Life Sciences*. Wiley Online Library, April 25, 2001. 9780470015902 (accessed October 29, 2012).
- — —. *The Secular Ark*. New Haven: Yale University Press, 1983.
- Brunner, Bernd. *The Ocean at Home: An Illustrated History of the Aquarium*. Baltimore and London: Princeton Architectural Press, 2005.
- Burnett, D. Graham. *The Sounding of the Whale: Science and Cetaceans in the Twentieth Century*. Chicago: University of Chicago Press, 2012.
- Butler, T. H. *Re-Examination of the Results of Past Attempts to Introduce Atlantic Lobsters on the British Columbia Coast*. Nanaimo: Fisheries Research Board of Canada, 1964.
- Cameron, Christina, and Janet Wright. *Second Empire Style in Canadian Architecture*. Canadian Historic Sites, Occasional Papers in Archaeology and History 24. Hull,

- Quebec: Canadian Government Publishing Centre, Supply and Services Canada, 1980.
- Carl, Clifford G., and C. J. Guiget. *Alien Animals in British Columbia*. Department of Education Handbook 14. Victoria: British Columbia Provincial Museum, 1958.
- Carroll, Patrick. *Science, Culture, and Modern State Formation*. Berkeley: University of California Press, 2006.
- Castonguay, Stéphane. "Naturalizing Federalism: Insect Outbreaks and the Centralization of Entomological Research in Canada, 1884-1914." *Canadian Historical Review* 85, no. 1 (2004): 1-34.
- — —. *Protection Des Cultures, Construction De La Nature*. Sillery: Septentrion, 2004.
- Castonguay, Stéphane and Darin Kinsey. "The Nature of the Liberal Order: State Formation, Conservation, and the Government of Non-Humans in Canada." In *Liberalism and Hegemony: Debating the Canadian Liberal Revolution*. Eds. Michel Ducharme and Jean-François Constant. Toronto: University of Toronto Press, 2009.
- Chalmers, Lee V. *Marketing Masculinities: Gender and Management Politics in Marketing Work*. Westport CN: Greenwood Press, 2001.
- Coates, Peter. *Strangers on the Land: American Perceptions of Immigrant and Invasive Species*. Berkeley and Los Angeles: University of California Press, 2006.
- Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*. Eds. Alan Greer and Ian Radforth. Toronto: University of Toronto Press, 1992.
- Colpitts, George. *Game in the Garden: A Human History of Wildlife in Western Canada to 1940*. Vancouver: UBC Press, 2002.
- Conn, Steven. *Do Museums Still Need Objects?* Philadelphia: University of Pennsylvania Press, 2010.
- Corrigan, Philip, and Derek Sayer. *The Great Arch: English State Formation As Cultural Revolution*. Oxford: Basil Blackwell, 1985.
- Craske, Matthew. "'Unwholesome' and 'Pornographic': A Reassessment of the Place of Rackstrow's Museum in the Story of Eighteenth-Century Anatomical Collection and Exhibition." *Journal of the History of Collections* 23, no. 1 (2011): 75-99.
- Cummings, Richard Osborn. *The American and His Food: A History of Food Habits in the United States*. Chicago: University of Chicago Press, 1940.

- Curtis, Bruce. *The Politics of Population: State Formation, Statistics, and the Census of Canada, 1840-1875*. Toronto: University of Toronto Press, 2001.
- — —. “Class Culture and Administration: Educational Inspection in Canada West.” In *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*. Eds. Alan Greer and Ian Radforth. Toronto: University of Toronto Press, 1992.
- — —. *True Government by Choice Men? Inspection, Education, and State Formation in Canada West*. Toronto: University of Toronto Press, 1992.
- Daston, Lorraine. “The Glass Flowers.” In *Things That Talk: Object Lessons From Art and Science*. Ed. Lorraine Daston. New York: Zone Books, 2008.
- Davidoff, Leonore and Catherine Hall. *Family Fortunes: Men and Women of the English Middle-Class, 1780-1850*. Chicago: University of Chicago Press, 1987.
- Dean, David. *The Architect As Stand Designer: Building Exhibitions, 1895-1983*. London: Building Trades Exhibition, Scolar Press, 1985.
- Desmond, Jane. “Displaying Death Animating Life: Changing Fictions of “Liveness” From Taxidermy to Animatronics.” In *Representing Animals*. Ed. Nigel Rothfels. Bloomington: Indiana University Press, 2002.
- Dickson, Lovatt. *The Museum Makers: The Story of the Royal Ontario Museum*. Toronto: Royal Ontario Museum, 1986.
- Dorsey, Kurkpatrick. *The Dawn of Conservation Diplomacy: U.S.-Canadian Wildlife Protection Treaties in the Progressive Era*. Seattle: University of Washington Press, 1998.
- Driver, Elizabeth. “Regional Differences in the Canadian Daily Meal? Cookbooks Answer the Question.” In *What's to Eat? Entrees in Canadian Food History*. Ed. Nathalie Cooke. McGill-Queen's University Press, 2009.
- — —. *Culinary Landmarks: A Bibliography of Canadian Cookbooks 1835-1949*. Toronto: University of Toronto Press, 2008.
- Dummitt, Christopher. *The Manly Modern: Masculinity in Postwar Canada*. Vancouver: UBC Press, 2007.
- Duncan, Dorothy. *Canadians at Table: A Culinary History of Canada*. Toronto: Dundurn Press, 2006.
- Dunlap, Thomas R. *In the Field, Among the Feathered: A History of Birders & Their Guides*. New York: Oxford University Press, 2011.

- — —. *Nature and the English Diaspora: Environment and History in the United States, Canada, Australia, and New Zealand*. Cambridge: Cambridge University Press, 1999.
- Edible Histories, Cultural Politics: Towards a Canadian Food History*. Eds. Iacovetta, Franca and Valerie J. Korinek and Marlene Epp. Toronto: University of Toronto Press, 2012.
- Fagan, Brian. *Fish on Friday: Feasting Fasting and the Discovery of the New World*. New York: Basic Books, 2006.
- Ferry, Darren. *Uniting in Measures of Common Good: The Construction of Liberal Identities in Central Canada, 1830-1900*. Montreal and Kingston: McGill-Queen's University Press, 2008.
- Findlen, Paula. *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy*. Berkeley: University of California Press, 1996.
- Fishing Places, Fishing People: Traditions and Issues in Canadian Small-Scale Fisheries*. Eds. Newell, Dianne and Rosemary Ommer. Toronto: University of Toronto Press, 1999.
- — —. "The Architecture of Display: Museums, Universities and Objects in Nineteenth-Century Britain." *History of science* 32 (1994): 139-162.
- Edible Histories, Cultural Politics: Towards a Canadian Food History*. Eds. Franca Iacovetta, Valerie J. Korinek & Marlene Epp. Toronto: University of Toronto Press, 2012.
- Gates, Barbara T. *Kindred Nature: Victorian and Edwardian Women Embrace the Living World*. Chicago: University of Chicago Press, 1998.
- — —. "Ordering Nature: Revisioning Victorian Science Culture." In *Victorian Science in Context*. Ed. Bernard Lightman. Chicago: University of Chicago Press, 1997.
- Gendered Pasts: Historical Essays in Femininity and Masculinity in Canada*. Eds. Kathryn M. McPherson, Nancy M. Forestell, and Cecilia Louise Morgan. Toronto: University of Toronto Press, 2003.
- Geographies of Nineteenth-Century Science*. Eds. David N. Livingstone and Charles W. J. Withers, editors. Chicago: University of Chicago Press, 2011.
- Gillespie, Greg. *Hunting for Empire: Narratives of Sport in Rupert's Land 1840-70*. Vancouver: UBC Press, 2007.

- Glendinning, Miles, Ranald MacInnes, and Aonghus MacKechnie. *A History of Scottish Architecture: From the Renaissance to the Present Day*. Edinburgh: Edinburgh University Press, 1996.
- Golder, Hilary. *Politics, Patronage and Public Works: The Administration of New South Wales, Volume 1, 1842-1900*. Sydney: University of New South Wales Press, 2005.
- Gosden, Chris, and Chantal Knowles. *Collecting Colonialism: Material Culture and Colonial Change*. Oxford: Berg, 2001.
- Gosselin, Michel. *La Musée Canadian De La Nature : 150 Ans D'histoire Muséale*. Montréal: Université du Quebec à Montréal, 1997.
- Gough, Joseph. *Managing Canada's Fisheries: From Early Days to the Year 2000*. Sillery: Septentrion, 2005.
- Grant, Ruth Fulton. *The Canadian Atlantic Fishery*. Toronto: The Ryerson Press, 1934.
- Greenhalgh, Paul. "Education, Entertainment and Politics: Lessons From the Great International Exhibitions." In *The New Museology*. Ed. Peter Vergo. London: Reaktion books, 1989.
- — —. *Ephemeral Vistas: The Expositions Universelles, Great Exhibitions and World's Fairs, 1851-1939*. Manchester: Manchester University press, 1988.
- Greer, Allen. *Patriots and the People: the Rebellion of 1837 in Rural Lower Canada* (Toronto: University of Toronto Press, 1993) 93-96
- — —. "The Birth of the Police in Canada." In *Colonial Leviathan: State Formation in Mid-Nineteenth Century Canada*. Eds. Allan Greer and Ian Radforth. Toronto: University of Toronto Press, 1992.
- Greig, Christopher J., and Wayne J. Martino. "Masculinities in Post-Industrial and Neoliberal Times." In *Canadian Men and Masculinities: Historical and Contemporary Perspectives*. Eds. Christopher J. Greig and Wayne J. Martino. Toronto: Canadian Scholars' Press, 2012.
- Hamilton, W. D. "Indian Lands in New Brunswick: The Case of the Little South West Reserve." *Acadiensis* 13, no. 2 (1984): 3.
- Hannah, Malcolm G. *Governmentality and the Mastery of Territory in Nineteenth-Century America*. Cambridge: Cambridge University Press, 2000.
- Haraway, Donna. *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. New York: Routledge, 1989.

- Harbison, Robert. "Contracted World: Museums and Catalogues." In *Eccentric Spaces*. Ed. Robert Harbison. New York: Alfred Knopf, 1977.
- Harris, Douglas C. *Fish, Law, and Colonialism: The Legal Capture of Salmon in British Columbia*. Toronto: University of Toronto Press, 2001.
- Hays, Samuel P. *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920*. Cambridge, MA: Harvard University Press, 1959.
- Heaman, E. A. *The Inglorious Arts of Peace: Exhibitions in Canadian Society During the 19th Century*. Toronto: University of Toronto Press, 1999.
- Hearn, Jeff. *Men in the Public Eye: The Construction and Deconstruction of Public Men and Public Patriarchies*. London: Routledge, 1992.
- Henderson, Jarrat. "'No Money, but Muscle and Pluck': Cultivating Trans-Imperial Manliness for the Fields of Empire, 1870–1901." In *Making It Like a Man: Canadian Masculinities in Practice*. Ed. Christine Ramsay. Waterloo: Wilfrid Laurier University Press, 2011.
- Henning, Michelle. "Neurath's Whale." In *The Afterlives of Animals*. Ed. Samuel J. M. M. Alberti. Charlottesville and London: University of Virginia Press, 2011.
- Hill, Kate. "'He Knows Me...But Not at the Museum'." In *Narrating Objects Collecting Stories*. S. Dudley, A. J. Barnes, J. Binnie, J. Petrov and J. Walklate, editors. New York: Routledge, 2012.
- — —. *Culture and Class in English Public Museums, 1850-1914*. Aldershot, UK: Ashgate, 2005.
- Historical Statistics of Canada*. M.C. Urquhart and K. A. H. Buckley, editors. Cambridge and Toronto: Macmillan Company of Canada, 1965.
- Hodgetts, J. E. *Pioneer Public Service: An Administrative History of the United Canadas, 1841-1867*. Toronto: University of Toronto Press, 1955.
- Hodgetts, J. E., William McCloskey, Reginald Whitaker, and V. Seymour Wilson. *The Biography of An Institution: The Civil Service Commission, 1908-1967*. Montreal & London: McGill-Queen's University Press, 1972.
- Horowitz, Roger. *Putting Meat on the American Table: Taste, Technology, Transformation*. Baltimore: The John Hopkins University Press, 2006.
- Hubbard, Jennifer. *A Science on the Scale: The Rise of Canadian Atlantic Fisheries Biology, 1898-1939*. Toronto: University of Toronto Press, 2006.

- Huggett, Richard John. *Fundamentals of Biogeography*. 2nd ed. Abingdon UK: Routledge, 2004.
- Ingram, Darcy. *Wildlife, Conservation, and Conflict in Quebec 1840-1914*. Vancouver: UBC Press, 2013.
- Inness, Sherrie A. *Secret Ingredients: Race Gender and Class at the Dinner Table*. New York: Palgrave Macmillan, 2006.
- Innis, Harold A. *The Cod Fisheries: The History of An International Economy*. revised paperback ed. Toronto: University of Toronto Press, 1978.
- Inness, Sherrie A. *Secret Ingredients: Race Gender and Class at the Dinner Table*. New York: Palgrave Macmillan, 2006.
- Iron Men, Wooden Women: Gender and Seafaring in the Atlantic World, 1700-1920*. Eds. Creighton, Margaret S. and Lisa Norling. Baltimore: John Hopkins University Press, 1996.
- Jarrell, Richard A. "Differential National Development and Science in the 19th Century: The Problems of Quebec and Ireland." In *Scientific Colonialism: A Cross-Cultural Comparison*. Eds. Nathan Reingold and Marc Rothenberg. Washington: Smithsonian Institution Press, 1987.
- Judd, Richard W. *Common Lands, Common Peoples: The Origins of Conservation in Northern New England*. Cambridge, MA: Harvard University Press, 1997.
- Juillet, Luc and Ken Rasmussen. *Defending a Contested Ideal: Merit and the PSC of Canada, 1908-2008*. Ottawa: University of Ottawa Press, 2008.
- Kasson, John F. *Houdini, Tarzan, and the Perfect Man: The White Male Body and the Challenge of Modernity in America*. New York: Hill and Wang, 2001.
- Key, Archie F. *Beyond Four Walls: The Origins and Development of Canadian Museums*. Toronto: McClelland and Stewart, 1973.
- Killan, Gerald. *Protected Places: A History of Ontario's Provincial Parks System*. Toronto: Dundurn Press, 1993.
- — —. *David Boyle: From Artisan to Archaeologist*. Toronto: University of Toronto Press, 1983.
- Kohler, Robert E. *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950*. Princeton: Princeton University Press, 2006.

- — —. *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology*. Chicago: University of Chicago Press, 2002.
- Kohlstedt, Sally G. “Place and Museum Space: The Smithsonian Institution, National Identity, and the American West, 1846-1896.” In *Geographies of Nineteenth Century Science*. Eds. David N. Livingstone and Charles W.J. Withers. Chicago: University of Chicago Press, 2011.
- — —. *Teaching Children Science: Hands-On Nature Study in North America 1890-1930*. Chicago: University of Chicago Press, 2010.
- — —. “Nature by Design: Masculinity and Animal Display in Nineteenth-Century America.” In *Figuring It Out: Science, Gender, and Visual Culture*. Eds. Ann B. Shteir and Bernard Lightman. Hanover, NH: Dartmouth College, 2006.
- — —. “Museums on Campus: A Tradition of Inquiry and Teaching.” In *The American Development of Biology*. Eds. Ronald Rainger, Keith R Benson and Jane Maienschein. Philadelphia: University of Pennsylvania Press, 1988.
- — —. “International Exchange and National Style: A View of Natural History Museums in the United States, 1850-1900.” In *Scientific Colonialism: A Cross-Cultural Comparison*. Eds. Nathan Reingold and Marc Rothenberg. Washington: Smithsonian Institution Press, 1987.
- Kohlstedt, Sally G, and Paul Brinkman. “Framing Nature: The Formative Years of Natural History Museum Development in the United States.” In *Museums and Other Institutions of Natural History, Past, Present, and Future*. Eds. Alan E. Leviton and Michele L. Aldrich. Proceedings of the California Academy of the Sciences 55. San Francisco: California Academy of Sciences, 2004.
- Korsemeier, Carolyn. “Amateurs and Professionals.” In *Gender and Aesthetics: An Introduction*. New York & London: Routledge, 2004.
- Lambert, Richard S. and Paul Pross. *Renewing Nature's Wealth*. Toronto: Ontario Department of Lands & Forests, 1967.
- Latour, Bruno. *Science in Action: How to Follow Scientists and Engineers Through Society*. Milton Keynes, UK: Open University Press, 1987.
- Leach, William. *Land of Desire: Merchants, Power, and the Rise of a New American Culture*. New York: Vintage Books, 1994.
- Levere, Trevor H. *Science and the Canadian Arctic*. Cambridge: Cambridge University Press, 1993.
- Lightman, Bernard. “‘The Voices of Nature:’ Popularizing Victorian Science.” In

- Victorian Science in Context*. Ed. Bernard Lightman. Chicago: University of Chicago Press, 1997.
- Lindsay, Debra. *Science in the Subarctic: Trappers, Traders, and the Smithsonian Institution*. Washington: Smithsonian Institution Press, 1993.
- Livingstone, David N. *Putting Science in Its Place: Geographies of Scientific Knowledge*. Chicago: University of Chicago Press, 2003.
- Loo, Tina. *States of Nature: Conserving Canada's Wildlife in the Twentieth Century*. Vancouver: UBC Press, 2006.
- Lowe, Graham S. "Class Job and Gender in the Canadian Office." In *Canadian Working Class History: Selected Readings*. Third ed. Eds. Laurel Sefton MacDowell and Ian Radforth. Toronto: Canadian Scholars' Press, 2006.
- Luedee, Joshua. "“Bare Rocks Instead of Fish:” Local Fishers Respond to Resource Depletion in the Bay Bulls Inshore Fishery, 1855-1863." In *Land & Sea: Environmental History in Atlantic Canada*. Eds. Claire Campbell and Robert Summerby-Murray. Fredericton, NB: Acadiensis Press, 2013.
- Lutts, Ralph A. *The Nature Fakers: Wildlife, Science and Sentiment*. Golden: Fulcrum Publishing, 1990.
- Macdonald, Sharon. "Collecting Practices." In *Companion to Museum Studies*. Edited by Sharon Macdonald. Chichester UK: Wiley, 2008.
- — —. "Exhibitions of power and powers of exhibition." *The Politics of Display: museums, science, culture*. Sharon Macdonald, ed. London: Routledge, 1998.
- MacGregor, Arthur. *Curiosity and Enlightenment: Collectors and Collections From the Sixteenth to the Nineteenth Century*. New Haven: Yale University Press, 2007.
- Mackenzie, John M. *Museums and Empire: Natural History, Human Cultures and Colonial Identities*. Manchester: Manchester University Press, 2009.
- — —. *The Empire of Nature: Hunting, Conservation and British Imperialism*. Manchester: Manchester University Press, 1988.
- — —. *Propaganda and Empire: The Manipulation of British Public Opinion 1880-1960*. Manchester: Manchester University Press, 1984.
- McConnell, R. W. *Masculinities*. Cambridge: Polity Press, 1995.
- McCullough, A. B. "Samuel Wilmot." *Dictionary of Canadian Biography*. Toronto: University of Toronto Press, 1990. 1106-1107.

- McEvoy, Arthur F. *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980*. Cambridge: Cambridge University Press, 1986.
- McNaught, Siobhan J. "The Rise of Proto-Nationalism: Sir Wilfrid Laurier and the Founding of the Naval Service of Canada, 1902–1910." In *A Nation's Navy: In Quest of Canadian Naval Identity*. Eds. Michael L. Hadley, Rob Huebert and Fred W. Crickard. Montreal: McGill-Queen's University Press, 1996.
- McTavish, Leanne. *Defining the Modern Museum: A Case Study of the Challenges of Exchange*. Toronto: University of Toronto Press, 2013.
- Meggs, Geoff. *Salmon: The Decline of the British Columbia Salmon Fishery*. Vancouver: Douglas & McIntyre, 1991.
- Mills, Eric L. *Biological Oceanography: An Early History, 1870-1960*. Ithaca: Cornell University Press, 1989.
- Models: The Third Dimension of Science*. Eds. Soraya de Chadarevian and Nick Hopwood. Stanford: Stanford University Press, 2004.
- Monod, David. *Store Wars: Shopkeepers and the Culture of Mass Marketing, 1890-1939*. Toronto: University of Toronto Press, 1996.
- Morton, Suzanne. "'The End Man Is a Woman': Women, Fisheries, and the Canadian State in the 20th Century." In *Making Up the State: Women in 20th-Century Atlantic Canada*. Eds. Janet Guildford and Suzanne Morton. Fredericton: Acadiensis Press, 2010.
- Neis, Barbara. "From 'Shipped Girls' to 'Brides of the State': The Transition From Familial to Social Patriarchy in the Newfoundland Fishing Industry." *Canadian Journal of Regional Science* 16, no. 2 (1993): 185-211.
- Nelles, H. V. *The Politics of Development: Forests, Mines and Hydro-Electric Power in Ontario, 1849-1941*. 2nd ed. Kingston and Montreal: McGill-Queen's University Press, 2005.
- Neuhaus, Jessamyn. *Manly Meals and Mom's Home Cooking: Cookbooks and Gender in Modern America*. Baltimore: John Hopkins University Press, 2003.
- Newell, Dianne. *The Development of the Pacific Salmon-Canning Industry: A Grown Man's Game*. Montreal and Kingston: McGill-Queen's University Press, 1989.
- Nicholas, Jane. "Representing the Modern Man: Beauty, Culture and Masculinity in Early-Twentieth-Century Canada." In *Canadian Men and Masculinities: Historical and Contemporary Perspectives*. Eds. Christopher J. Grieg and Wayne J. Martino.

- Toronto: Canadian Scholars' Press, 2012.
- Nyhart, Lynn. *Modern Nature: The Rise of the Biological Perspective in Germany*. Chicago: University of Chicago Press, 2009.
- — —. "Science, Art, and Authenticity in Natural History Displays." In *Models: The Third Dimension of Science*. Eds. Soraya de Chadarevian and Nick Hopwood. Stanford: Stanford University Press, 2004.
- — —. "Natural History and the 'New' Biology." In *Cultures of Natural History*. Eds. N. Jardine, J. A. Secord and E. C. Spary. Cambridge: Cambridge University Press, 1996.
- Ontario and the First World War 1914-1918*. Ed. Wilson, Barbara M. Toronto: The Champlain Society for the Government of Ontario, 1977.
- Orosz, Joel. *Curators and Culture: The Museum Movement in America, 1773-1870*. Tuscaloosa: University of Alabama Press, 1990.
- Ostry, Aleck Samuel. *Nutrition Policy in Canada, 1870-1939*. Vancouver: UBC Press, 2006.
- Outram, Dorinda. "New Spaces in Natural History." In *Cultures of Natural History*. Eds. N. Jardine, J.A. Secord and E.C. Spary. Cambridge: Cambridge University Press, 1996.
- Owram, Doug. *Promise of Eden: The Canadian Expansionist Movement and the Idea of the West*. Toronto: University of Toronto Press, 1980.
- Parr, Joy. *Domestic Goods: The Material, the Moral, and the Economic in the Postwar Years*. Toronto: University of Toronto Press, 1999.
- Pauly, Philip J. *Biologists and the Promise of American Life*. Princeton: Princeton University Press, 2000.
- Payne, Brian J. *Fishing a Borderless Sea: Environmental Territorialism in the North Atlantic 1818-1910*. East Lansing: Michigan State University Press, 2010.
- Pearce, Susan M. *On Collecting: An Investigation Into Collecting in the European Tradition*. London: Routledge, 1995.
- Perley, Karen. *Gabe*. New Brunswick Manuscripts in Archaeology 41. Fredericton: New Brunswick Culture and Sport Secretariat, 2005.
- Pillsbury, Richard. *No Foreign Food: The American Diet in Time and Place*. Boulder CO: Westview Press, 1998.

- Porter, Theodore M. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press, 1995.
- Poulter, Gillian. *Becoming Native in a Foreign Land: Sport, Visual Culture, and Identity in Montreal, 1840-85*. Vancouver: UBC Press, 2009.
- Raibmon, Paige Raibmon. *Authentic Indians: Episodes of Encounter from the Late 19th Century Northwest Coast*. Durham: Duke University Press, 2005.
- Rainger, Ronald. *An Agenda for Antiquity: Henry Fairfield Osborn and Vertebrate Paleontology at the American Museum of Natural History, 1890-1935*. Tuscaloosa: University of Alabama Press, 1991.
- Reiger, John F. *American Sportsmen and the Origins of Conservation*. Third edition. Corvallis, OR: Oregon State University Press, 2001.
- Richman Kenneally, Rhona. “‘The Greatest Dining Extravaganza in Canada's History’: Food, Nationalism, and Authenticity at Expo 67.” In *Expo 67: Not Just a Souvenir*. Eds. Rhona Richman Kenneally and Johanne Sloan. Toronto: University of Toronto Press, 2010.
- Roberts, Callum. *The Unnatural History of the Sea*. Washington: Island Press/Shearwater Books, 2007.
- Robbins, William H. and Hugh R. MacCrimmon. *The Blackbass in America and Overseas*. Sault Ste. Marie: Biomangement and Research Enterprises, 1974.
- Roper, Michael. *Masculinity and the British Organization Man Since 1945*. Oxford: Oxford University Press, 1994.
- Rosenberg, Charles E. *No Other Gods: On Science and American Social Thought*. Baltimore: John Hopkins University Press, 1976.
- Ross, Ellen. *Love and Toil: Motherhood in Outcast London, 1870-1918*. Oxford: Oxford University Press, 1993.
- Rothfels, Nigel. “Trophies and Taxidermy.” In *Gorgeous Beasts: Animal Bodies in Historical Perspective*. Eds. Joan B. Landes, Paula Young Lee and Paul Youngquist. University Park: Pennsylvania State Press, 2012.
- — —. *Savages and Beasts: The Birth of the Modern Zoo*. Baltimore and London: The John Hopkins University Press, 2002.
- Ryan, Jerry. *The Forgotten Aquariums of Boston*. Finley Aquatic Books, 2002.

- Rydell, Robert W. *All the World's a Fair: Visions of Empire at American International Expositions, 1876-1916*. Chicago: University of Chicago Press, 1984.
- Sandlos, John. *Hunters at the Margin: Native Peoples and Wildlife Conservation in the Northwest Territories*. Vancouver: UBC Press, 2007.
- Schaffer, Simon. "Fish and Ships: Models in the Age of Reason." In *Models: The Third Dimension of Science*. Eds. Soraya de Chadarevian and Nick Hopwood. Stanford: Stanford University Press, 2004.
- Scott, James C. *Seeing Like A State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1998.
- Sheets-Pyenson, Susan. *Cathedrals of Science*. Kingston and Montreal: McGill-Queen's University Press, 1988.
- — —. "Civilizing by Nature's Example: The Development of Colonial Museums of Natural History, 1850-1900." In *Scientific Colonialism: A Cross-Cultural Comparison*. Eds. Nathan Reingold and Marc Rothenberg. Washington: Smithsonian Institution Press, 1987.
- Sisler, Rebecca. *Passionate Spirits: A History of the Royal Canadian Academy of Arts 1880-1980*. Toronto: Clarke Irwin & Co., 1980.
- Smith, Allan. *Canada — An American Nation? Essays on Continentalism, Identity, and the Canadian Frame of Mind*. Montreal: McGill-Queen's University Press, 1994.
- Smith, Tim D. *Scaling Fisheries: The Science of Measuring the Effects of Fishing, 1855-1955*. Cambridge: Cambridge University Press, 1994.
- Stearn, William T. *The Natural History Museum at South Kensington*. London: The Natural History Museum, 1981.
- Steinberg, Philip E. *The Social Construction of the Ocean*. Cambridge: Cambridge University Press, 2001.
- Stevens, Peter F. *The Development of Biological Systematics: Antoine-Laurent De Jussieu and the Natural System*. New York: Columbia University Press, 1994.
- Stewart, Susan. *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection*. Paperback ed. Durham: Duke University Press, 1993.
- Stewart, W. Brian. *A Life on the Line: Commander Pierre-Étienne Fortin and His Times*. Ottawa: Carleton University Press, 1997.
- Taylor III, Joseph E. *Making Salmon: An Environmental History of the Northwest Fisheries Crisis*. Seattle: University of Washington Press, 1999.

- Teather, J. Lynne. *The Royal Ontario Museum: A Prehistory, 1830-1914*. Toronto: Canada University Press, 2005.
- — —. “Professionalization and the Museum.” In *The Museum: A Reference Guide*. Eds. Michael S. Shapiro and Louis V. Kemp. Greenwood NJ: Greenwood Press, 1990.
- Thomas, Peter. *Lost Land of Moses: The Age of Discovery on New Brunswick's Salmon Rivers*. Fredericton: Goose Lane Editions, 2001.
- Toennessen, J. N., and Arne Odd Johnsen. *The History of Modern Whaling*. Berkely: University of California Press, 1982.
- Tosh, John. *Manliness and Masculinities in Nineteenth-Century Britain: Essays on Gender, Family and Empire*. Harlow UK: Pearson Longman, 2005.
- — —. *A Man's Place: Masculinity and the Middle-Class Home in Victorian England*. New Haven: Yale University Press, 1999.
- Vale, Lawrence J. *Architecture, Power, and National Identity*. New Haven: Yale University Press, 1992.
- Vileisis, Ann. *Kitchen Literacy: How We Lost Knowledge of Where Food Comes From and Why We Need to Get It Back*. Washington: Island Press, 2008.
- Volti, Rudi. “Professions and Professionalization,” in *An Introduction to the Sociology of Work and Occupations*. Thousand Oaks, CA: Pine Forge Press, 2008.
- Wadewitz, Lissa K. *The Nature of Borders: Salmon, Boundaries, and Bandits on the Salish Sea*. Vancouver: UBC Press, 2012.
- Waiser, W.A. *The Field Naturalist: John Macoun, the Geological Survey, and Natural Science*. Toronto: University of Toronto Press, 1989.
- Walden, Keith. *Becoming Modern in Toronto: The Industrial Exhibition and the Shaping of a Late Victorian Culture*. Toronto: University of Toronto Press, 1997.
- Walton, John K. *Fish and Chips & the British Working Class 1870-1940*. Leicester University Press: Leicester, 1992.
- Washabaugh, William and Catherine Washabaugh. *Deep Trout: Angling in Popular Culture*. Oxford: Berg, 2000.
- Whitcomb, Andrea. *Re-Imagining the Museum: Beyond the Mausoleum*. London and New York: Routledge, 2003.

- Winsor, Mary P. *Reading the Shape of Nature: Comparative Zoology at the Agassiz Museum*. Chicago: University of Chicago Press, 1991.
- Wonders, Karen. *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History*. Uppsala: Acta Universitatis Upsaliensis, 1993.
- Wright, Donald. *The Professionalization of History in English Canada*. Toronto: University of Toronto Press, 2005.
- Wright, Janet. *Crown Assets: The Architecture of the Department of Public Works, 1867-196*. Toronto: University of Toronto Press, 1997
- Wright, Miriam. *A Fishery for Modern Times: The State and the Industrialization of the Newfoundland Fishery, 1934-1968*. Toronto: University of Toronto Press, 2001.
- Yanni, Carla. *Nature's Museums: Victorian Science and the Architecture of Display*. New York: Princeton Architectural Press, 2005.
- Young, Brian. *The Making and Unmaking of a University Museum: The McCord, 1921-1996*. Montreal & Kingston: McGill-Queen's University Press, 2000.
- Zaslow, Morris. *Reading the Rocks: The Story of the Geological Survey of Canada, 1842-1972*. Toronto: Macmillan Company of Canada, 1975.
- Zeller, Suzanne. *Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation*. 2nd edition. Kingston and Montreal: McGill-Queen's University Press, 2009.

ii) Articles

- Alberti, Samuel J. M. M. "Constructing Nature Behind Glass." *Museum and Society* 6, no. 2 (2008): 73-97.
- — —. "Objects and the Museum." *Isis* 96, no. 4 (2005): 559-571.
- — —. "Amateurs and Professionals in One County: Biology and Natural History in Late Victorian Yorkshire." *Journal of the History of Biology* 34 (2001): 115-147.
- Allard, Dean C. "The Fish Commission Laboratory and Its Influence on the Founding of the Marine Biological Laboratory." *Journal of the History of Biology* 23, no. 2 (1990): 251-270.
- — —. "Spencer Fullerton Baird and the Foundations of American Marine Science." *Marine Fisheries Review* 50, no. 4 (1988): 124-29.
- Alonso, Ana Maria. "The Politics of Space, Time and Substance: State Formation, Nationalism, and Ethnicity." *Annual Review of Anthropology* 23 (1994): 379-405.
- Barrow, Mark V. "The Specimen Dealer: Entrepreneurial Natural History in America's Gilded Age." *Journal of the History of Biology* 33 (2000): 493-534.
- Belisle, Donica. "Toward a Canadian Consumer History." *Labour/Le Travail* 52 (2003): 181-206.
- Beneki, Eleni, James P. Delgado, and Anastasia Filippopoliti. "Memory in the Maritime Museum: Objects, Narratives, Identities." *International Journal of Heritage Studies* 18, no. 4 (2012): 347-351.
- Benson, Keith R. "The Naples Stazione Zoologica and Its Impact on the Emergence of American Marine Biology." *Journal of the history of biology* 21, no. 2 (1988): 331-341.
- Bilas, Irene. "Fortin, Pierre Etienne." *Dictionary of Canadian Biography Online*. John English and Réal Belanger, editors. [Http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652](http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652). Accessed 15 January 2013.
- Bix, Amy Sue. "Equipped for Life: Gendered Technical Training and Consumerism in Home Economics, 1920-1980." *Technology and Culture* 43, no. 4 (2002): 728-754.
- Bluestone, Daniel M. "'The Pushcart Evil': Peddlers, Merchants, and New York City's Streets, 1890-1940." *The Journal of Urban History* November 1991: 68-92.
- Bocking, Stephen. "Stocking the Great Lakes: Fish Culture in the 19th Century." *Inland*

- Seas* 57, no. 1 (2001): 64-74.
- Bolster, W. Jeffrey. "Opportunities in Marine Environmental History." *Environmental History* 11, no. 3 (2006): 567-597.
- — —. "'Every Inch a Man': Gender in the Lives of African American Seamen, 1800-1880." In *Iron Men, Wooden Women*. Eds. Margaret Creighton and Lisa Norling. Johns Hopkins University Press, 1996.
- Boothman, Barry E. C. "'A More Definite System': The Emergence of Retail Food Chains in Canada, 1919-1945." *Journal of Macromarketing* 29, no. 1 (2009): 21-36.
- Bouchier, Nancy B., and Ken Cruikshank. "'Sportsmen and Pothunters': Environment, Conservation, and Class in the Fishery of Hamilton Harbour, 1858-1914." *Sport History Review* 28 (1997): 1-18.
- Braun, Bruce. "Producing Vertical Territory: Geology and Governmentality in Late Victorian Canada." *Cultural geographies* 7, no. 1 (2000): 7-46.
- Brower, Matthew. "Trophy Shots: Early North American Photographs of Nonhuman Animals and the Display of Masculine Prowess." *Society and Animals* 13, no. 1 (2005): 13-31.
- Brunton, Daniel F. "Origins and History of the Ottawa Field-Naturalists' Club." *The Canadian Field-Naturalist* 118, no. 1 (2004): 1-38.
- Cain, Victoria. "The Art of Authority: Exhibits, Exhibit-Makers, and the Contest for Scientific Status in the American Museum of Natural History, 1920-1940." *Science in Context* 24, no. 02 (2011): 215-238.
- — —. "The Direct Medium of the Vision: Visual Education, Virtual Witnessing and the Prehistoric Past at the American Museum of Natural History, 1890-1923." *Journal of Visual Culture* 9, no. 3 (2010): 284.
- — —. "Exhibitionary Complexity: Reconsidering Museums' Cultural Authority." *American Quarterly* 60, no. 4 (2008).
- Chiarappa, Michael J. "Dockside Landings and Threshold Spaces: Reckoning Architecture's Place in Marine Environmental History." *Environmental History* 18 (2013): 12-28.
- — —. "Great Lakes Commercial Fishing Architecture: The Endurance and Transformation of a Region's Landscape/Waterscape." *Perspectives in Vernacular Architecture* 10 (2005): 217-232.
- — —. "Overseeing the Family of Whitefishes: The Priorities and Debates of

- Coregonid Management on America's Great Lakes 1870-2000." *Environment and History* 11 (2005): 163-94.
- Clendinning, Anne. "Exhibiting a Nation: Canada at the British Empire Exhibition, 1924-1925." *Social History* 39 (2006): 79-107.
- Coleman, D. C. "Gentlemen and Players." *Economic History Review* 26, no. 1 (1973): 92-116.
- Coombes, Annie E. "Museums and the Formation of National and Cultural Identities." *Oxford Art Journal* 11, no. 2 (1988): 57-68.
- Cooke, Nathalie. "Cookbooklets and Canadian Kitchens." *Material Culture Review* 70 (2009): 22-33.
- Curtis, Bruce. "Textual Economies and the Presentation of Statistical Material: Charts, Tables and Texts in 19th Century Public Education." *Scientia Canadensis* 29, no. 1 (2006): 3-28.
- — —. "Representation and State Formation in the Canadas, 1790-1850." *Studies in Political Economy* 28 (1989): 59-87.
- Daston, Lorraine. "Type Specimens and Scientific Memory." *Critical Inquiry* 31, no. 1 (2004).
- Desjardins, Marc. "Joncas, Louis-Zéphirin." *Dictionary of Canadian Biography Online*. John English and Réal Belanger, editors. http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652. Accessed 15 January 2013.
- Ditz, Toby. "The New Men's History and the Peculiar Absence of Gendered Power: Some Remedies From Early American Gender History." *Gender & History* 16, no. 1 (2004): 1-35.
- Douglas, Louise. "Representing Colonial Australia at British, American and European International Exhibitions." *reCollections* 3, no. 1 (2008).
- Driver, Elizabeth. "Cookbooks As Primary Sources for Writing History." *Food, Culture & Society* 12, no. 3 (2009): 257-274.
- Driver, Felix, and David Gilbert. "Heart of Empire? Landscape, Space and Performance in Imperial London." *Environment and Planning D: Society and Space* 16 (1998): 11-28.
- Duchesne, Raymond, and Paul Carle. "L'ordre Des Choses : Cabinets Et Musées D'histoire Naturelle Au Québec (1824-1900)." *Revue d'histoire de l'Amérique française* 44, no. 1 (1990): 3-30.

- Duffy, Dennis. "Triangulating the ROM." *Journal of Canadian Studies* 40, no. 1 (2006): 157-181.
- Dymond, J. R. "A History of Ichthyology in Canada." *Copeia* 1964, no. 1 (1964): 2-33.
- Farber, Paul L. "The Transformation of Natural History in the Nineteenth Century." *Journal of the History of Biology* 15, no. 1 (1982): 145-152.
- — —. "The Development of Taxidermy and the History of Ornithology." *Isis* 68, no. 4 (1977): 550-566.
- Forgan, Sophie. "Building the Museum: Knowledge, Conflict, and the Power of Place." *Isis* 96, no. 4 (2005).
- Gagnon, Herve. "The Natural History Society of Montreal's Museum and the Socio-Economic Significance of Museums in 19th-Century Canada." *Scientia Canadensis* 18, no. 2 (1994): 103-135.
- Gordon, David L.A. "A City Beautiful Plan for Canada's Capital: Edward Bennett and the 1915 Plan for Ottawa and Hull." *Planning Perspectives* 13, no. 3 (1998): 275-300.
- Gordon, David L.A., and Brian S. Osborne. "Constructing National Identity in Canada's Capital, 1900–2000: Confederation Square and the National War Memorial." *Journal of Historical Geography* 30 (2004): 618-642.
- Graddy, Kathryn. "Markets: The Fulton Fish Market." *The Journal of Economic Perspectives* 20, no. 2 (2006): 207-220.
- Grasseni, Cristina. "Taxidermy as Rhetoric of Self-Making: Charles Waterton (1782–1865), Wandering Naturalist." *Studies in History and Philosophy of Biological and Biomedical Sciences* 29, no. 2 (1998): 269–294.
- Grasso, Glenn M. "What Appeared Limitless Plenty: The Rise and Fall of the Nineteenth-Century Atlantic Halibut Fishery." *Environmental History* 13 (2008): 66-91.
- Griesemer, James R. "Modeling in the Museum: On the Role of Remnant Models in the Work of Joseph Grinnell." *Biology and Philosophy* 5 (1990): 3-36.
- Gudger, E. W. "The Five Great Naturalists of the Sixteenth Century: Belon, Rondelet, Salviani, Gesner, Andaldrovandi: A Chapter in the History of Ichthyology." *Isis* 22, no. 1 (1934): 21-40.
- Güttler, Nils Robert. "Scaling the Period Eye: Oscar Drude and the Cartographical

- Practice of Plant Geography, 1870s–1910s.” *Science in Context* 24 (2011): 1–41.
- Hansen, Lise. C. “Treaty Fishing Rights and the Development of Fisheries Legislation in Ontario: A Primer.” *Native Studies Review* 7:1 (1991): 1-21.
- Harris, Julie and Jennifer Mueller. “Making Science Beautiful: The Central Experimental Farm, 1886-1939.” *Ontario History* 84 no. 2 (1997): 103-123.
- Hearn, Jeff. “From Hegemonic Masculinity to the Hegemony of Men.” *Feminist Theory* 5, no. 1 (2004): 49-72.
- Hewitt, Martin. “Science As Spectacle: Popular Scientific Culture in Saint John, New Brunswick, 1830–1850.” *Acadiensis* 18 (1988): 91-119.
- Hiillen, W. “Reality, the Museum, and the Catalogue: A Semiotic Interpretation of Early German Texts of Museology.” *Semiotica* 80, no. 314 (1990): 265-75.
- Hubbs, Carl L. “History of Ichthyology in the United States After 1850.” *Copeia* 1964, no. 1 (1964): 42-60.
- Jessup, Lynda. “Landscapes of Sport, Landscapes of Exclusion: The “Sportsman's Paradise” in Late-Nineteenth-Century Canadian Painting.” *Journal of Canadian Studies* 40, no. 1 (2006): 71-123.
- Kinsey, Darin. ““Seeding the Water As the Earth:’ the Epicenter and Peripheries of a Western Aquacultural Revolution.” *Environmental History* 11 (2006): 527-566.
- — —. “The Fish Car Era in Nebraska.” *Railroad History* 177 (1997): 43-67.
- Knauss, J. M. “The Growth of British Fisheries During the Industrial Revolution.” *Ocean Development & International Law* 36, no. 1 (2005): 1-11.
- Knight, William. “Samuel Wilmot, Fish Culture, and Recreational Fisheries in Late 19th Century Ontario.” *Scientia Canadensis* 30, no. 1 (2007): 75-90.
- Kohlstedt, Sally G. “Thoughts in Things Modernity, History, and North American Museums.” *Isis* 96, no. 4 (2005): 586-601.
- — —. “Essay Review: Museums: Revisiting Sites in the History of the Natural Sciences.” *Journal of the History of Biology* 28, no. 1 (1995): 151-166.
- — —. “History in a Natural History Museum: George Brown Goode and the Smithsonian Institution.” *The Public Historian* 10, no. 2 (1988): 7-26.
- Leffler, Phyllis. “Peopling the Portholes: National Identity and Maritime Museums in the U.S. And U.K.” *The Public Historian* 26, no. 4 (2004): 23-48.

- Liddle, A. Mark. "State Masculinities and Law." *British Journal of Criminology* 36, no. 3 (1996): 362-380.
- Loo, Tina. "Of Moose and Men: Hunting for Masculinities in British Columbia, 1880-1939." *Western Historical Quarterly* 32 (2001): 296-319.
- Loydlangston, Amber. "Women in Botany and the Canadian Federal Department of Agriculture, 1887-1919." *Scientia Canadensis* 29, No. 2 (2006): 99-130.
- MacLeod, Roy M. "Government and Resource Conservation: The Salmon Acts Administration, 1860-1886." *Journal of British Studies* 7, no. 2 (1968): 114-150.
- Matless, David. "Visual Culture and Geographical Citizenship: England in the 1940s." *Journal of Historical Geography* 22, no. 4 (1996).
- McCalla, Douglas. "A World Without Chocolate: Grocery Purchases at Some Upper Canadian Country Stores." *Agricultural History* 79, no. 2 (2005): 147-172.
- McClellan, Andrew. "P. T. Barnum, Jumbo the Elephant, and the Barnum Museum of Natural History at Tufts University." *Journal of the History of Collections* 24, no. 1 (2012): 45-62.
- McKay, Ian. "The Liberal Order Framework: A Prospectus for a Reconnaissance of Canadian History." *Canadian Historical Review* 81 (2000): 617-45.
- McTavish, Leanne. "Strategic Donations: Women and Museums in New Brunswick 1862-1930." *Journal of Canadian Studies* 42, no. 2 (2008): 93-116.
- — —. "Learning to See in New Brunswick, 1862–1929." *The Canadian Historical Review* 87, no. 3 (2006): 553-581.
- McTavish, Lianne and Joshua Dickison. "William Macintosh, Natural History and the Professionalization of the New Brunswick Museum, 1898-1940." *Acadiensis* 36, no. 2 (2007): 72-90.
- Mitchell, Timothy. "The World As Exhibition." *Comparative Studies in Society and History* 31, no. 02 (1989): 217-236.
- Mortimer-Sandilands, Catriona. "The Cultural Politics of Ecological Integrity: Nature and Nation in Canada's National Parks, 1885-2000." *International Journal of Canadian Studies* 39-40 (2009): 161-189.
- Myers, George S. "A Brief Sketch of the History of Ichthyology in America to the Year 1850." *Copeia* 1 no. 1 (1964): 33-41.

- Nicholas, Andrea Bear. "Acquin, Gabriel." *Dictionary of Canadian Biography Online*. John English and Réal Belanger, editors. [Http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652](http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652). Accessed 15 January 2013.
- Nurse, Andrew. "The Ambiguities of Disciplinary Professionalization: The State and Cultural Dynamics of Canadian Inter-War Anthropology." *Scientia Canadensis* 30, no. 2 (2007): 37-53.
- Osborne, Brian S., and Geraint B. Osborne. "The Cast(E)Ing of Heroic Landscapes of Power: Constructing Canada's Pantheon on Parliament Hill." *Material History Review* 60 (2004): 35-47.
- Osborne, Michael A. "Acclimatizing the World: A History of the Paradigmatic Colonial Science." *Osiris* 15 (2000): 135-151.
- Parenteau, Bill. "A 'Very Determined Opposition to the Law': Conservation, Angling Leases, and Social Conflict in the Canadian Atlantic Salmon Fishery, 1867-1914." *Environmental History* 9, no. 3 (2004): 436-463.
- — —. "'Care, Control and Supervision': Native People in the Canadian Atlantic Salmon Fishery, 1867-1900." *Canadian Historical Review* 79, no. 1 (1998): 1-35.
- Parr, Joy. "Modern Kitchen, Good Home, Strong Nation." *Technology and Culture* 43, no. 4 (2002).
- Peiss, Kathy L. "American Women and the Making of Modern Consumer Culture." *The Journal for MultiMedia History* 1, no. 1 (1998). <http://www.albany.edu/jmmh/vol1no1/peiss-text.html#biblio%20notes> (accessed October 24, 2013).
- Poliquin, Rachel. "The Matter and Meaning of Museum Taxidermy." *Museum and Society* 6.2 (July 2008): 123-134.
- Pottage, Alain. "Patent Law Machines: Scale Models, Forensic Materiality, and the Making of Modern." *Social Studies of Science* 20, no. 10 (2011): 1-23.
- Rader, Karen A., and Victoria E. M. Cain. "From Natural History to Science: Display and the Transformation of American Museums of Science and Nature." *Museum and Society* 6, no. 2 (2008): 152-171.
- Regier, H. A., T.H. Whillans, W.J. Christie, and S.A. Bocking. "Over-Fishing in the Great Lakes: The Context and History of the Controversy." *Aquatic Ecosystem Health and Management* 2 (1999): 239-248
- Ross, W G. "Canadian Sovereignty in the Arctic: The Neptune Expedition of 1903-04." *Arctic* 29, no. 2 (1976): 87-104.

- Rossi, Michael. "Fabricating Authenticity: Modeling a Whale at the American Museum of Natural History, 1906-1974." *Isis* 101, no. 2 (2010): 338-61.
- — —. "Modeling the Unknown: How to Make a Perfect Whale." *Endeavour* 32, no. 2 (2008): 58-63.
- Smith, Bonnie G. "Gender and the Practices of Scientific History: The Seminar and Archival Research in the Nineteenth Century." *The American Historical Review* 100, no. 4 (1995): 1150-1176.
- Shapin, Steven. "The Invisible Technician." *American scientist* 77 no. 6 (1989): 554-563.
- Shteir, Ann B. "Elegant Recreations? Science Writing for Women." In *Victorian Science in Context*. Ed. Bernard Lightman. Chicago: University of Chicago Press, 1997.
- Spray, W.A. "Perley, Moses Henry." *Dictionary of Canadian Biography Online*. John English and Réal Belanger, editors. [Http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652](http://www.biographi.ca/009004-119.01-e.php?id_nbr=4652). Accessed 15 January 2013.
- Star, S. L., and J. R. Griesemer. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19, no. 3 (1989): 387-420.

- Stott, Rebecca. "Through a Glass Darkly Aquarium Colonies and Nineteenth-Century Narratives of Marine Monstrosity." *Gothic Studies* 2, no. 3 (2000): 305-327.
- Sutherland, David A. "Voluntary Societies and the Process of Middle-Class Formation in Early-Victorian Halifax, Nova Scotia." *Journal of the Canadian Historical Association* 5, no. 1 (1994): 237-263.
- Taylor, William M. "Bound by Sea and Pressed for Time: Geographical and Transient Dimensions of Seafaring Heritage in Two Australian Maritime Museums." *International Journal of Heritage Studies* 18, no. 4 (2012): 400-417.
- Thackray, Arnold. "Natural Knowledge in Cultural Context: The Manchester Mode." *The American Historical Review* 79, no. 3 (1974): 672-709.
- Thistle, John. "'As Free of Fish As a Billiard Ball Is of Hair: Dealing with Depletion in the Pacific Halibut Fishery, 1899-1924.'" *BC Studies* 142/143 (2004): 105-28.
- Towle, Jerry C. "Authored Ecosystems. Livingston Stone and the Transformation of California Fisheries." *Environmental History* 5: 1 (2000) 54-74.
- Upton, L.F.S. "Indian Affairs in Colonial New Brunswick." *Acadiensis* 3, no. 2 (1974): 3-26.
- Varutti, Marzia. "Miniatures of the Nation: Ethnic Minority Figurines, Mannequins and Dioramas in Chinese Museums." *Museum and Society* 9, no. 1 (2011): 1-16.
- Vecchi, Vittorio G. M. "Science and Scientists in Government, 1878-1896 -- Part II." *Scientia Canadensis* 9, no. 2 (1985): 97-113.
- — —. "Science and Scientists in Government, 1878-1896 — Part I." *Scientia Canadensis* 8, no. 2 (1984): 112-142.
- Vetter, Jeremy. "Science Along the Railroad: Expanding Field Work in the US Central West." *Annals of science* 61, no. 2 (2004): 187-211.
- Wadewitz, Lissa K. "Are Fish Wildlife?" *Environmental History* 16 no. 3 (2011): 423-427.
- Walliss, Jillian. "Nature, Nation and the Museum: The Mid-Twentieth Century New Zealand Experience." *Museum and Society* 9, no. 3 (2011): 214-226.
- Walters, Mark D. "Aboriginal Rights, Magna Carta and Exclusive Rights to Fisheries in the Waters of Upper Canada." *Queen's Law Journal* 23 (1998): 301-368.
- Wamsley, Kevin. "Good Clean Sport and a Deer Apiece: Game Legislation and State

Formation in 19th Century Canada,” *Canadian Journal of History of Sport* 25, no. 2 (1994): 1.

Warfe, Chris. “The Search for Pure Water in Ottawa: 1910-1915.” *Urban History Review* 1 (1979): 90-111.

White, Richard. “The Nationalization of Nature.” *The Journal of American History* 86, no. 3 (1999): 976-986.

Wilensky, Harold L. “The Professionalization of Everyone?” *American Journal of Sociology* 70, no. 2 (1964): 137-158.

Wonders, Karen. “Habitat Dioramas and the Issue of Nativeness.” *Landscape Research* 28, no. 1 (2003): 89-100.

Zytaruk, Maria. “Cabinets of Curiosities and the Organization of Knowledge.” *University of Toronto Quarterly* 80, no. 1 (2011): 1-23.

iii) Theses and Unpublished Research Papers

Ainley, Marianne G. “From Natural History to Avian Biology: Canadian Ornithology, 1860-1950.” PhD, McGill University, 1985.

Banoub, David. “The Patronage Effect: Civil Service Reforms, Job-Seeking, and State Formation in Victorian Canada.” PhD, Carleton University, 2013.

Belisle, Donica. “Buyers of the Nation: Women and the Rise of Consumer Citizenship in the Global North.” Future of Consumerism and Well-Being in a World of Ecological Restraints Conference, June 12, 2013.

Cain, Victoria E. M. “Nature Under Glass: Popular Science, Professional Illusion and the Transformation of American Natural History Museums, 1870-1940.” PhD, Columbia University, 2007.

Ilerbaig, Juan Francisco. “Pride in Place: Fieldwork, Geography, and American Field Zoology, 1850-1920.” PhD, University of Minnesota, 2002.

Kinsey, Darin. “Fashioning a Freshwater Eden: Elite Anglers, Fish Culture, and State Development of Quebec’s ‘Sport’ Fishery.” Ph.D., Université du Québec à Trois-Rivières, 2008.

Knight, William. “‘Our Sentimental Fisheries:’ Angling and State Fisheries Administration in 19th century Ontario.” MA thesis, Trent University, 2006.

- Mak, Eileen Diana. "Patterns of Change, Sources of Influence: An Historical Study of the Canadian Museum and the Middle Class, 1850-1950." PhD, University of British Columbia Press, 1996.
- Quinn, Michael Shannon. "The Natural History of a Collector." PhD, York University, 1995.
- Sandiford, Glenn. "Transforming an Exotic Species: Nineteenth-Century Narratives about Introduction of Carp in America." PhD, University of Illinois at Urbana-Champaign, 2009.
- Smith, K. Stephanie A. "From Ottawa Fields to Canadian Flora: How the Central Experimental Farm's Botanic Garden and Arboretum Contributed to the Development of the Ottawa Field-Naturalists' Club's National Focus." Undergraduate Thesis, Carleton University, 2011.
- Thoms, J. Michael. "Ojibwa Fishing Grounds: A history of Ontario fisheries law, science, and the sportsmen's challenge to Aboriginal treaty rights, 1650-1900." PhD thesis, University of British Columbia, 2004.