**The effect of domestic cat (*Felis catus*) density on urban
bird abundance and richness.**

by

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Abstract

Cat (*Felis catus*) predation is considered the greatest causes of bird mortality worldwide. While there is no doubt cats prey on birds, their effects on bird populations is uncertain. I predict the effect of cats should be greatest on birds that are less than 150 grams on average, nest or feed on or low to the ground, feed at bird feeders, or are migrants. I tested these predictions using Ottawa Bird Count (OBC) bird surveys and cat density estimates at 58 sites within residential Ottawa. I compared bird abundance and species richness with cat density for all birds and those hypothesized to have a strong or weak effect of cats for each trait, while controlling for amount of bird habitat (vegetation). Surprisingly I found cat density had very little effect on bird abundance or species richness, irrespective of species trait. Migrants were the only group that showed a significant effect of cats. In contrast to inferences from previous mortality estimates, my results suggest cats have little impact on urban bird abundance and richness, at least in urban regions where cat density is relatively low and cats spend a large part of the year indoors.

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1. Introduction

Cat (*Felis catus*) predation is considered one of the greatest causes of bird mortality worldwide, with domestic cats making a significant contribution (Blancher 2013; Loss et al. 2013; Medina et al. 2013). Cats are estimated to cause 1.4-3.7 billion bird deaths annually (31% by owned cats) on the mainland USA and 25-29 million over 5 months in the UK (domestic cats only) (Woods et al. 2003; Loss et al. 2013). In Canada, cats are estimated to be the single greatest human-related cause of bird mortality accounting for 2-7% of all deaths in southern Canada (Blancher 2013; Calvert et al. 2013). Such detrimental impacts are often attributed to feral or free ranging cats. However, recent studies in the UK and USA suggest domestic cats may have an equally negative impact within urban areas (Kays & DeWan 2004; Baker et al. 2008; Loss et al. 2013). Domestic cats are often provided with food, vaccinated against disease, and protected from predation by the removal or exclusion of predators such as wolves or coyotes (Bateman & Fleming 2012). Consequently, domestic cats are not limited by prey abundance and can sustain densities over 100 times greater than those predicted by natural prey predator cycles (Coleman & Temple 1993; Crooks & Soule 1999). In Canada alone there is an estimated 8.5 million cats (Blancher 2013) with greatest densities concentrated in urban areas of southern Canada.

While predation studies show unequivocal evidence that cats prey on birds, the link between bird mortality estimates and the effect of cats at a population level may not be so clear. This is due partly to how mortality estimates are calculated, and also to the role of other ecological mechanisms affecting bird populations. Cat predation on birds has been documented in “household” scale studies, in which cat owners record the type

and frequency of prey returned by their domestic cats (Kays & DeWan 2004; Baker et al. 2008; Thomas et al. 2012). Birds are some of the most common prey returned by cats, with the rate of bird predation varying significantly among cats (Liberg 1984; Kays & DeWan 2004). For example, a single cat can kill between 4 and 54 birds per year (Churcher & Lawton 1987; Crooks & Soule 1999; Gillies & Clout 2003; Lepczyk et al. 2004; Baker et al. 2008), after accounting for the proportion of prey that are killed but not returned (Kays & DeWan 2004). While these studies demonstrate cat predation on birds, the extrapolation of the mortality rates to wider geographic scales (e.g. country level) is problematic given the limited scope of the initial studies and inherent between and within-cat variability in predation rates (Churcher & Lawton 1987; Barratt 1997; Baker et al. 2008; van Heezik et al. 2010; Thomas et al. 2012). We need to understand how mortality caused by cats affects birds at a population level.

The impact of cat predation on bird abundance depends on whether the mortality caused by cats is compensatory or additive. If cats prey on individuals most likely to die from other causes, mortality is compensatory and therefore has little effect on bird populations (Beckerman et al. 2007). Alternatively, if cat predation is sufficiently high, and does not replace other sources of mortality, it will have an additive impact on the bird population (Beckerman et al. 2007; Baker et al. 2008).

In addition to the effects of direct mortality, cats may also reduce bird abundance at a site by causing local site avoidance (Moller 1991; Woods et al. 2003; Bonnington et al. 2013). The presence of bird predators can reduce the time birds spend in areas of perceived high risk, in some cases leading to complete exclusion or avoidance of the area (Sodhi et al. 1990). Forstmeier and Weiss (2004) found Dusky Warblers selected nesting

sites where chipmunk predation rates were low at the expense of proximity to food or favorable microclimates (Forstmeier & Weiss 2004). Avoidance of high-risk sites could reduce access to high quality feeding or nesting grounds and may reduce fitness or lower reproductive output (Baker et al. 2008; Cresswell 2008). Consequently, avoidance of areas with high predator densities may be as important as direct mortality in determining bird distribution and abundance (Beckerman et al. 2007).

The impact of cats, either by direct mortality or indirect effects, is likely to vary among bird species depending on size and life history traits. For example Dunn and Tessaglia (1994) found cats preferentially preyed on birds with lower body weight. 75% of all bird prey weighed between 14 and 42 grams, from a possible range between 6 and 450 grams (Dunn & Tessaglia 1994).

Cats largely hunt at ground level, which should increase the susceptibility to predation for bird species that feed or nest on, or close to the ground (Cooper et al. 2012). Cats ambush their prey at ground level using sit and wait or stalking methods, and are known as opportunistic and generalist hunters (Coman & Brunner 1972). This pattern is demonstrated in many prey return studies, which show a disproportionately high representation of bird species that nest or forage on the ground or at low heights among the birds killed (Churcher & Lawton 1987; Coleman & Temple 1993; Dunn & Tessaglia 1994; Lepczyk et al. 2004, 2008).

Birds who feed at bird feeders should also have greater exposure to cat predation as they predictably and frequently return to the same location. By providing access to a reliable food source, feeders improve bird body condition and reproductive output, and in some cases allow range expansion, where natural winter resource shortages would

otherwise limit their distribution (e.g. Northern Cardinal) (Jokimaki et al. 1996; Robb et al. 2008). These benefits increased visitation by some birds to gardens with feeders; for example, Fuller et al. (2008) found a positive correlation between bird feeder density and bird abundance across Sheffield (UK), after controlling for the amount of vegetation. The same pattern was not evident in species that do not frequent feeders (Fuller et al. 2008). Cats are known to capitalize on the frequent and regular aggregation of prey species at bird feeders (Dunn & Tessaglia 1994). In a study of bird feeder predation in winter across the USA, cats accounted for 29% of bird deaths, second to Sharp-shinned and Cooper's Hawks, whose combined contribution accounted for 51% of bird deaths (Dunn & Tessaglia 1994).

A bird's migration status may affect its ability to avoid high risk areas, with migrants better able to avoid areas with many cats than residents. This is because resident species generally select nest sites earlier in the breeding season than migratory species (Morrissey 2004). As urban cats are mainly indoors during the winter (Horn et al. 2011; Krauze-Gryz et al. 2012), resident birds may select sites when the perceived predation risk is lower, before cats have increased their outdoor activity. In contrast, migrant birds, that arrive later in the season (Sullivan et al. 2009) when cats are outdoors, are likely to form a more accurate estimate of local cat density, enabling them to avoid areas with high cat density.

I studied the relationship between cat density and urban bird richness and abundance across the city of Ottawa. I tested the following predictions: 1) there will be a negative cross-site relationship between cat density and bird abundance and richness; 2) urban bird species that nest on, or close to the ground will have lower abundance and

species richness in areas where cat densities are high, relative to species that do not nest on, or close to the ground; 3) urban bird species that forage on, or close to the ground will have lower abundance and species richness in areas where cat densities are high, relative to species that do not forage on or close to the ground; 4) bird species that frequent bird feeders (“feeder birds”) will have lower abundance and species richness in areas where cat densities are high, relative to species that do not feed at feeders; and 5) migrant urban bird species will have lower abundance and richness in areas where cat densities are high relative to resident species.

2. Methods

2.1 Overview

I estimated the effect of cat density on bird abundance and species richness, accounting for potentially confounding covariates. Bird data were from an ongoing, citizen-science program, the Ottawa Bird Count (OBC, www.ottawabirds.ca). I used four types of bird response variables: 1) the summed abundance of all birds at a site; 2) the species richness of all birds at a site; 3) the species-level abundance of birds within trait groups based on species’ hypothesized vulnerability to cats (high or low); and 4) the species richness of birds within the same hypothesized high and low vulnerability groups. I included only urban bird species that are less than 150 grams in weight, on average. Urban birds were defined as those that use residential land cover types as habitat; I excluded birds that exclusively select contiguous non-urban land cover for habitat, such as grassland specialists (e.g. Bobolinks, Eastern Meadowlarks), which can be observed during the OBC field surveys when singing from habitat areas adjacent to residential

areas. Species that nest or feed on or near the ground, feeder birds, and migratory species were hypothesized as highly vulnerable to cats (either by cat predation or avoidance).

I selected 58 (250 m x 250m) sample sites within residential Ottawa, to maximize the range of predicted cat densities, while controlling for variation in the amount of bird habitat. I did this by selecting sites with all combinations of high and low human population density (an *a priori* indicator of cat density), and amount of vegetation (an indicator of bird habitat). This minimized the predicted correlations between cat density and bird habitat availability and allowed me to better estimate the effect of cats on bird abundance and species richness independent of the effect of bird habitat availability. At each site I then estimated cat density by interviewing a subsample of residents.

I tested the relationships between cat density and the four bird response variables using generalized linear models (GLM) and generalized linear mixed models (GLMM), while controlling for the amount of vegetation. I also ran models with two potentially confounding factors; 1) an estimate of the density of squirrels, a common bird predator, and 2) an estimate of the number of bird feeders at each site.

2.2 Study Region

I conducted this study within the city of Ottawa, (~2,800 square kilometers) located in south eastern Ontario, Canada (Figure 1). Ottawa has over 900,000 residents distributed over a central high population density core and surrounding medium to low density suburban regions. The city is bounded largely by agricultural land (National Capital Commission 2015) and the Ottawa River. Ottawa has a humid continental climate

with average temperatures of 21.2 °C in July and -10.2 °C in January (Environment Canada, 2014).

2.3 Bird data

I obtained bird data from the OBC, a volunteer bird monitoring program (www.ottawabirds.ca) which surveys birds at randomly selected publically accessible locations (e.g. sidewalks, roadsides, walking paths), across the city. In 2014, volunteers conducted point counts between June 3rd and July 7th. Each point count surveyed a radius of 75 meters for ten minutes during which abundance of each bird species was recorded. Only birds actively using the sites were included; this excluded birds that were flying high overhead. Sites were surveyed once during the peak of daily bird activity (between 30 minutes before dawn and 8:30 am), and not during heavy rain (Appendix A).

I used current literature, expert opinion and data obtained from the Feeder Watch project (www.feederwatch.org) to categorize each bird species as being at either low or high hypothesized vulnerability to cats for each of four traits: nesting location, feeding location, bird feeder use and migration status (Rodewald 2015) (Appendix B). Migrants were classified as species that did not spend the entire year within the study site. Species with an average body weight over 150 grams were not included in the analysis, as defined by a critical upper weight limit of bird species to cat predation (Dunn & Tessaglia 1994). All species < 150 grams, that nest low to the ground (< 2m), forage on or low to the ground, are feeder birds, or are migrants, were hypothesized to be highly vulnerable to cats. For brevity, I refer to these groups as 'high risk' birds, where risk includes risk of cat

predation and 'risk' of indirect effects of cats such as avoidance of high-cat-density areas (e.g. hypothesis for migrants).

I did not adjust bird data for detectability for two reasons; 1) I had a small sample set; therefore applying a detection model to my sparse dataset could introduce bias larger than those of ignoring non-detection altogether (Welsh et al. 2015); and 2) factors that might influence detectability (e.g. observer, time of day, day of year, vehicle activity) were not strongly correlated with my variables of interest (cat density, total vegetation; Appendix C) and varied little among sites.

2.4 Site Selection

I selected a subset of 58 point count locations, from the one hundred and sixty-seven 2014 OBC field surveys, that minimized the correlation between bird habitat and predicted cat density. I chose total amount of vegetation to represent a broad measure of bird habitat, and human population density as a surrogate predictor of cat density, because the two variables are often correlated in other urban studies (Sims et al. 2007). I calculated the total vegetation and human population densities at all OBC point count locations using ArcGIS version 10.1. (ESRI 2013). At each site, I estimated both values over an area of 6.25ha (250m x 250m) that surrounded each bird count location. I selected this site size as it included the residences of any cat whose home range may overlap or partially overlap any part of the 75 m bird count radius. I estimated this based on an average cat home range of 0.24ha (27.5 m radius), as reported in a similar urban area of North America (Kays & DeWan 2004), assuming a circular shape for simplicity. I then calculated the minimum circular area surrounding the bird count location that would

include all overlapping home ranges of neighboring cats (105 m radius), and rounded up to 125 m radius, to provide some allowance for variability in cat home range size. I then converted this to a square (250m x 250m) to maximize the number of houses interviewed within the same street, as sites were largely located in areas with linear streets.

I estimated total vegetation cover per site using the most recent, high resolution (25cm) classified land cover dataset, acquired from the City of Ottawa (2013). For each site I measured the proportion of total site area in the following land cover types; forest, tree crown, water, and impervious surfaces (which included all buildings, roads, sidewalks, bridges, parking lots and driveways). Areas not classified under these four categories were “lawn”, which included all mown grass areas, whether residential, commercial or municipal. All areas overlapped by trees were classified as tree crown. I then calculated total vegetation per site by summing the areas classified as forest, tree crown, and lawn.

I used Statistics Canada 2011 Census data (Statistics Canada 2011) to estimate the human population density per site. I used the finest geographic scale census measure available, which subdivides Ottawa into 1366 dissemination areas (DA). These are relatively stable and small geographic areas for which an average population density is available (Statistics Canada 2011). I assigned a population density value for each site based on the DA in which it was located. If a site was located in more than one DA, I calculated an area weighted average.

To minimize correlations between total vegetation cover and human population density, I selected a subset of 58 sites with all combinations of high and low values of each variable. I did this by calculating the quartiles of total vegetation cover and

population density for all OBC sites. For each site I classified the total vegetation cover and human population density by the quartiles of their distributions. I then randomly selected sites within each combination of low and high (first and fourth quartiles) total vegetation cover and human population density until at least 8 sites were selected in each of the high-low categories (Figure 2). I continued to select sites based on the following criteria; 1) there was at least one residence; 2) sites were located > 2.5 km from the city boundary; to limit the influence of rural cats (Metsers et al. 2010); 3) sites were at least 1 km apart, to reduce spatial autocorrelation (Appendix D).

2.5 Cat density

I conducted door to door interviews to estimate cat density in each of the 58 sites between April and August 2014. To avoid confounding effects of sampling date, sites were surveyed in random order. Door to door interviews have higher response rates than other survey methods such as telephone or mail (Sims et al. 2007). All interview questions and methods were approved by the Carleton University Research Ethics Board prior to starting (Project no. 100857). I went to all houses within each site between 3 pm-8 pm on weeknights. Of those residents willing to participate, I asked if they own cats and if they have bird feeders. I also asked cat owners if their cats spent time outdoors. All sites had a minimum 25% response rate. A list of all interview questions and responses is provided in Appendices E & F.

I calculated the density of cats per site using methods adapted from Baker (2008), including only cats that spend time outside. The estimated total number of cats per site was:

$$\text{Cat density } (c) = c_r + [r \times m_c],$$

where c_r = total number of outdoor cats present at interviewed residences, r = number of residences not interviewed, and m_c = mean number of outdoor cats owned per interviewed resident (per site). Thus $r \times m_c$ estimates the number of cats at residences not interviewed based on the sample of interviewed residences.

2.6 Site Covariates

To account for factors other than cat density that may influence bird populations, I estimated six covariates per site; including four measures of vegetation; bird feeder density, and squirrel density.

Four vegetation measures (tree crown, lawn, forest, and total vegetation) were calculated per site, as described above. I included these variables to describe different aspects of vegetation, including; 1) tree crowns, to account for vertical structure within each site, which has been suggested as an important factor for urban birds (Blair 1996); 2) lawn, to account for low growing vegetation (lawns, sports fields), which provide important resources for some urban adapted ground feeding bird species (Paker et al. 2014); 3) forest, to account for intact patches of trees or shrub cover, which are positively associated with species richness in urban development's (Donnelly & Marzluff 2006); and 4) total vegetation cover, a measure of all vegetation combined. Due to the small area classified as tree crown and forest cover these cover types were combined into a single variable. I conducted on-ground checks to ensure there were no major changes in land cover (e.g. new construction or developments) at sites between 2013 and 2014. Using

interview responses, I calculated the density of bird feeders per site using the same method as cat density.

I conducted strip transects at each site to determine the relative density of squirrels. Squirrels have been identified as bird predators on both eggs and young birds (Hewson & Fuller 2003; Newson et al. 2010) and have experienced rapid population expansion in urban areas, particularly the Grey squirrel (*Sciurus carolinensis*). Visual estimates are an effective measure of surveying squirrels in urban areas, where alternatives such as trapping are impractical (Gurnell et al. 2004). I surveyed at a walking pace, covering all available public land within each site, including streets, sidewalks, parks, and other walking paths. I conducted three repeat surveys of the entire site in succession, recording all squirrels observed on each repeat survey. To account for variation in the amount of publically accessible land per site, I recorded the extent of the visible area (i.e. distance seen without the view obscured by houses, fences, buildings, etc.). I then standardized the mean number of squirrels (over the three surveys) by visible area (squirrels/ha) (Appendix G). All walking transects were conducted between 3pm and 8pm from May to September, only on days without rain.

2.7 Analysis

Do cats affect total urban bird abundance and/or species richness?

I used GLMs to explore the relationship between bird abundance or richness and cat density, while controlling for the amount of vegetation. I included vegetation *a priori* in all models, as a surrogate for bird habitat. I determined which vegetation variable(s) (tree crown /forest, lawn or total vegetation) was most informative by modelling bird

abundance or species richness on my predictor variable (cat density) and on all combinations of the vegetation variables. To select the most informative vegetation variable(s) I compared Akaike Information Criteria, adjusted for small sample size (AICc) (Anderson & Burnham 1994), selecting the models with the lowest AICc for abundance and richness combined. If there were less than 2 AICc units between two or more models, I selected the model with fewer variables. I then ran models with cat density, the selected vegetation variable(s), and two additional variables (squirrel density and bird feeder density). I used information theoretic approach, as outlined above, to determine if the addition of either or both variables (squirrel density and bird feeder density) improved the model. I scaled all predictor variables by their mean and standard deviation to improve model convergence (Bolker 2015). I used a negative binomial with log link function for bird abundance, due to overdispersion, and a Poisson distribution with log link function for species richness.

For selected models, I visually inspected quantile plots and residual vs fitted plots to check for normality of predicted values and any remaining lack of fit. I plotted correlograms of the raw bird data and modelled residuals to check for spatial autocorrelation, as recommended by Zuur et al. (2009) (Appendices H).

Are some kinds of urban birds more negatively related to cats than others?

To compare the effect of cats on bird abundance of groups hypothesized to be high or low risk to cats, I modelled each life history trait separately (ground nesting, ground feeding, bird feeder use, migratory), using generalized linear mixed effect

models (GLMM) with a negative binomial distribution and log link function. Hierarchical models are a midpoint between “complete pooling”, or treating all species as equal (i.e. assuming all species in each group have an identical response to cat density), and “no pooling” which treats each species independently (i.e. analysing the effect of cats on each species independently (Gelman & Hill 2007)). Therefore the hierarchical, or “partial pooling”, approach enabled me to estimate the overall effect of cats on bird abundance for each hypothesized risk group while accounting for the variation among species, within each hypothesized risk group (Gelman & Hill 2007; Bolker et al. 2009; Bolker 2015).

For each life history trait, I included cat density (c), trait (t), the interaction term ($c \times t$), and total vegetation (v). Total vegetation was used in all models because it was the most informative vegetation measure from total abundance and richness models.

An example of the basic model structure is as follows:

$$\begin{aligned}
 b_{j,sp} &\sim NB(\lambda_{j,sp,t}, \omega) \\
 \log(\lambda_{j,sp,t}) &= \alpha_{sp} + \kappa_{sp,t} * c_j + \delta_{sp} * v_j + T * t_{sp} + I * c_j * t_{sp} \\
 \delta_{sp} &= N(\Delta, \sigma_{\delta}) \\
 \alpha_{sp} &= N(A, \sigma_{\alpha}) \\
 \kappa_{sp,t} &= N(K_t, \sigma_{\kappa})
 \end{aligned}$$

In this example model, the observed abundance (b) of species (sp), in the trait group (t) at site (j) is modelled as a negative binomial distribution with mean ($\lambda_{j,sp}$) and overdispersion (ω). The mean abundance ($\lambda_{j,sp}$) is modelled by random effects, which

vary among species, for an intercept (α_{sp}), the effect of cat density (κ_{sp}), and the effect of total vegetation (δ_{sp}). As well as fixed effects for the effect of the species' trait (T), and the interaction effect (I) between cat density and trait. Two of the random effects (cat density and vegetation) that varied among species, were also included as fixed effects to estimate the mean effects, across species, of cat density (K_t) and vegetation (Δ), after accounting for the variation in these effects among species (σ_κ and σ_δ). The t subscript on K_t indicates the mean effects of cats across species is specific to each trait group, due to the interaction between the effects of cat density and trait. This structure enabled me to estimate the mean effects of cat density on the abundance of all species combined, and on each group of species (hypothesized high or low risk) while accounting for species specific abundance and vegetation effects, and the variation among species in their response to cats.

To estimate the effect of cat density on bird species richness, I ran four separate generalized linear models with a Poisson distribution and log link function as appropriate for count data (Quinn & Keough 2002). Hierarchical models were not used for this response, as species were combined to calculate species richness for each trait category. As described above, I ran a model for each life history trait, including cat density (c), trait (t), the interaction term ($c \times t$), and total vegetation (v).

To model richness, I included cat density (c), trait (t), their interaction term ($c \times t$), and total vegetation (v):

$$r_{j,t} \sim \text{Poisson}(\lambda_{j,t})$$

$$\log(\lambda_{j,t}) = \alpha + \kappa * c_j + \delta * v_j + T * t + I * c_j * t_j$$

In this model, the observed richness (r) of birds in trait group (t), at site (j) was modelled as a Poisson distribution with mean (λ_j). The mean richness (λ) is modelled by an intercept (α), the effect of cat density (κ), and the effect of vegetation (δ) species' trait (T), and the interaction effect (I) between cat density and trait.

For both bird abundance and richness responses, I also ran models including additional variables of squirrel density or bird feeder. For abundance models these were included as fixed effects.

All analyses were conducted in R version 3.1.3 (R Core Team 2015) using the following packages ; ncf (Bjornstad 2013), MASS (Venables & Ripley 2002), glmmADMB (Skaug et al. 2014), AICcmodavg (Mazerolle 2015), arm (Gelman & Su 2014), car (Fox et al. 2009), glmulti (Calcagno 2013), visreg (Breheny & Burchett 2015) and nlme (Pinheiro et al. 2013).

3. Results

Forty-three urban bird species were recorded in at least one of the 58 sites. At each site between 3 and 41 individual birds (all species) were recorded, and there were between 2 and 15 different species per site (Table 1). For each hypothesized high risk trait (ground nesting, ground feeding, feeder birds and migrants), the number of urban bird species classified as high risk was relatively similar to those of low risk. These included 19 species that nest low or near the ground, 19 species that feed low or near the ground, 20 feeder bird species and 27 migrant species. Four species were classified as high risk for all traits: American Goldfinch (*Spinus tristis*), Brown-head Cowbird (*Molothrus ater*), Red-wing Blackbird (*Agelaius phoeniceus*) and White-throat Sparrow (*Zonotrichia albicollis*), while no species were classified as low risk for all four traits (Appendix B).

I interviewed 663 residents across the 58 sites with an average of 12 residents interviewed per site. Approximately 21% of residents owned at least one cat, with most having a single cat, but as many as five cats per resident. Sixteen percent of all residents interviewed had cats that spend time outdoors (Table 1).

The sites encompassed a wide range of values across all site covariates: total vegetation, squirrels and bird feeder density (Table 1). Bird feeders or squirrels were recorded at 49 and 42 sites respectively. Cat density was correlated to bird feeder density (Figure 3) but not strongly correlated with either total vegetation or squirrel density.

3.1 Does cat density affect total urban bird abundance or species richness?

The selected model for the relationship between cat density and total bird abundance or bird species richness included cat density and total vegetation (%). Total vegetation explained the most variance among the vegetation measures (Table 2), while the inclusion of either bird feeder or squirrel density as covariates did not significantly improve the model for either total bird abundance or richness (Table 3).

I found no significant effect of cat density on total abundance or species richness of birds (Table 4), but in both cases the coefficient was negative (Figure 4).

3.2 Do some kinds of urban birds have stronger negative relationships with cat density than others?

To model the relationship between cat density and bird abundance or richness for different hypothesized cat risk groups I included the trait (ground nesting, ground feeding, bird feeder use or migrants), the trait interaction with cat density and total vegetation. I found the addition of other covariates (squirrel density and bird feeder density) did not significantly improve model fit, as defined by AICc (Appendices J & I).

Ground nesting:

For bird abundance, there was some evidence that the negative effect of increasing cat density was greater for ground nesting species than other species; however the difference was small and not statistically significant (Table 4 & Figure 5). For species richness, there was no significant difference between the effects of increasing cat density on the number of ground nesting species or non-ground nesting species (Table 4 & Figure 6).

Ground feeding:

For bird abundance, there was no significant difference in the effect of cat density on ground feeding species as compared to non-ground feeding species (Table 4 & Figure 5). Similarly, for species richness, cat density had no greater effect on the number of ground feeding species than on the number of non-ground feeding species (Table 4 & Figure 6).

Feeder birds:

For bird abundance, increasing cat density had no greater effect on bird feeder species than on non-bird feeder species (Table 4 & Figure 5). Similarly, for species richness, there was no significant difference in the effect of increasing cat density on the bird feeder species and non-bird feeder species (Table 4 & Figure 6).

Migrants:

For bird abundance, there was no significant difference in the effect of cats on the abundance of migrants and residents (Table 4 & Figure 5).

For species richness, the effect of increasing cat density was significantly different ($p < 0.05$) between migrants and residents (Table 4). Where cat densities were high, there were significantly fewer species of migrants than residents (Figure 6 & Figure 7) after accounting for the effect of total vegetation.

4. Discussion

We found no significant effect of cat density on bird abundance or species richness, with the exception of migrants, which had fewer species as compared to residents with increasing cat density. The weak and variable effects of cat density are consistent with most city-wide urban studies worldwide, which found weak correlations between cat density and bird abundance or richness across a range of species groups (Parsons et al. 2006; Grayson et al. 2007; Sims et al. 2007; Paker et al. 2014). For example the presence of cats did not significantly affect species richness of small passerine birds across residential Perth (Grayson et al. 2007), nor did cat density affect the abundance of small garden birds in Sydney (Parsons et al. 2006), urban bird abundance in Tel Aviv (Paker et al. 2014) or bird density when grouped into small or large bodied species, or those that were identified as potential prey species across the UK (Sims et al. 2007). In contrast, some studies have reported a negative correlation between cat density and native bird species richness (Belaire et al. 2014) or the abundance of individual bird species (Sims et al. 2007). Results from the latter study however, are confounded by a strong correlation between cat density and housing density. This means the effect of cats on birds cannot be separated from the effect of urbanization on birds. Factors associated with increasing urbanization include an increase in light, traffic and noise, that has been found to influence bird activity, vocalization and reproduction (Partecke et al. 2004; Fuller et al. 2007).

4.1 Reasons why cat density may not affect birds in this study

The weak influence of cats on birds in this study could result from low average cat density in Ottawa. While the percent of households that owned cats (21%) in Ottawa was comparable with other studies (19% - 35%: Lepczyk et al. 2004; Kays & DeWan 2004; Baker et al. 2005, 2008), the proportion of cats that spend time outdoors in my study (approximately 50% of cats) was low relative to studies in Switzerland (72% : Tschanz et al. 2010), New Zealand (66% : van Heezik et al. 2010), and the UK (assume 100% : Sims et al. 2007). Average housing density was also low in Ottawa (65 households / km²) relative to other studies (> 200 households/ km² ; Sims et al. 2007, 1445 households/ km² ; Baker et al. 2008) in which housing density was reported or could be calculated. Therefore the average density of outside cats estimated for this study, 80 cats km², was less than those reported in studies finding a negative correlation between cats and birds (e.g. 417.3 cats km² ; Sims et al. 2007).

If bird mortality caused by cats is compensatory the effect of cats on bird abundance and richness will be minimal. Cats can specifically prey on birds with lower body mass (Dunn & Tessaglia 1994) or those in poor physical condition (Baker et al. 2008). For example Baker et al (2008) found birds killed by cats had significantly lower fat and muscle scores as compared to individuals of the same species killed in building collisions (Baker et al 2008). Individuals with lower body weight are often weaker or less fit with reduced rates of long term survival, although not in all cases (Thomas & Cuthill 2002). While the selection of weaker individuals does not provide unequivocal evidence that cat predation is compensatory, it suggests it is possible (Baker et al. 2008).

Additional food resources in urban areas may offset negative effects of cat density for birds at risk of cat predation. Urban birds can access a variety of food sources within a concentrated area, including a range of native and non-native vegetation types and food supplied directly by humans (e.g. bird feeders) (Robb et al. 2008; Chamberlain et al. 2009). This includes lawns that provide optimum habitat for ground feeding insectivorous species, such as the American Robin (Whittaker & Marzluff 2009). Access to high quality food resources can offset negative impacts of cat predation by increasing body condition and improving reproductive output, for example laying eggs earlier in the season (Newton 1998; Robb et al. 2008). Schnack (1991) attributed higher nesting density of urban blackbirds as compared to adjoining woodlands to an increase in available food resources in Vienna. Indeed the persistence of common ground feeding species (e.g. pigeons, house and chipping sparrows, starlings) in areas of high cat density indicates these resource benefits may outweigh cat predation risks where resources are readily available (Barratt 1997; Thomas et al. 2014). This trade-off between increased cat predation and reproductive fitness may contribute to the lack of effect of cat density in feeder birds, as bird feeder density was positively correlated with cat density.

Annual and inter-annual redistribution of birds across the city could mask the effect of cat density on bird populations. If mortality occurs in juveniles and adults redistribute between breeding seasons, the effect of juvenile mortality by cats will be masked when measuring the following years' adult population (Shipley et al. 2013). Many authors have speculated that cat predation may create sinks, in which local populations are only maintained by immigration of birds from areas with better resources or lower levels of predation (Vierling 2000; Baker et al. 2005; van Heezik et al. 2010;

Balogh et al. 2011). If cat predation is responsible for local bird mortality, we would assume birds are either unable to detect areas with high cat densities and therefore high risk of predation, or cat density is not important in site selection. These assumptions are unlikely to be true, as we found some birds (i.e. migrants) may be able to avoid areas of high cat density. Secondly bird dispersal and nesting selection is closely linked to breeding success, whereby unsuccessful individuals are more likely to move nesting sites in subsequent breeding events (Dow & Fredga 1983), or move further distances within the same breeding season (Grégoire & Cherry 2007). Therefore it is unlikely that the weak effects of cats on birds found in this study are masked by bird movements into high cat predation sinks.

Other predators, such as squirrels, are also unlikely to explain the minimal effect of cat density seen in this study. Competition between cats and other avian or mammalian predators has been shown to reduce cat predation (Woods et al. 2003; Robb et al. 2008). I found squirrel density did not have a significant effect on bird abundance or richness when included as a model covariate, nor did squirrel density significantly improve model fit. It is also unlikely that squirrels masked the effect of cat density as these cat and squirrel densities were not strongly correlated. There was also little change in the effect of cats on birds, when comparing among models with and without squirrel density. For example the cat density coefficient for total abundance changed from -0.06 to -0.07 when squirrels were controlled for within the model. This minimal change in magnitude and no change in the covariate direction (+/-) suggest squirrels are unlikely to have masked the effect of cats on birds in this study.

4.2 Reasons why the influence of cats on birds could not be detected

Variability in point count bird data may reduce the ability to detect an effect of cats on birds, particularly when the size of the effect is small. The detection of birds during a point count is influenced by many factors (i.e. sample size, sampling effort, duration, weather, daily fluctuations in bird activity ; Robbins 1981a, 1981b). This variability can be controlled for either at the time of sampling, for example all OBC point counts are conducted over a standardized site area, or within the statistical model framework. I built a model to overcome some of this variation by using a hierarchical structure (for abundance) to incorporate information about many species. I also used broad response variables by examining birds grouped by life history traits, whereby I could share information among species with the same trait. Despite my efforts to minimize the influence of bird data variability when testing the relationship between cat density and bird abundance and richness, the effect of cats on birds within groups was highly variable, as indicated by wide confidence intervals. While this shows a weak effect of cats, it may also be indicative of the “noisiness” of the bird data. As the probability of detecting an impact of predators on prey abundance declines with decreasing data quality and quantity (Nicoll & Norris 2010), further analysis with a larger sampling size could be conducted to determine if the inherent variability in the bird data strongly influenced the results of this study.

Migrants

Of all the hypothesized risk traits, migration was the only trait where cat density affected groups of high and low risk species significantly differently. This result supports the hypothesis that migrants may avoid sites with high cat density, as the effect of increasing cat density on species richness was more strongly negative for migrants than for resident species. I found no other studies that specifically investigated the impact of cat density on species richness of migrants and residents, so it is difficult to draw comparisons. Several studies have however, recorded fewer migrant species than residents in urban areas (Friesen et al. 1995; Rodewald & Bakermans 2006). Proposed explanations for this pattern include a higher susceptibility of migrants to the impacts of urbanization, land changes and competition by resident bird species. While this study did not specifically test these possible causes, the low correlation between migrant species richness and human density, suggests the cause is unlikely to be related to urbanization-effects alone, and not related to cats.

The effect of cats on migrants and residents was not consistent for both abundance and richness response variables. This could be due to a difference in the effect of cats among abundant and less abundant (rare) species. For abundant species, a large change in abundance (by cat avoidance) is not necessarily accompanied by a change in richness. Alternatively, for rare species, even a small change in abundance can result in a change in richness. In this case, the effect of cats was only significant for species richness, suggesting rare species may be more strongly affected by cats than abundant species. After comparing the species level effect of cats (derived for each random effect within the abundance model) with abundance data for each species, I found no correlation

between the abundance of a species and the strength of the effect of cats. Therefore it is unlikely that the effect of cats is stronger on rare species than abundant species.

4.1 Conclusions

In this study I did not find evidence for a strong effect of cat density on urban bird abundance and richness in Ottawa. My failure to find an effect should not be interpreted as no effect of cats on birds, as evident from the response of migrants and the weak and uncertain effects for other groups of birds. In Ottawa, the low density of cats and high proportion of cat owners who keep their cats inside is most likely to explain the weak effect of cats on birds seen in this study. Consequently limiting outside cat activity could provide a way to reduce the potential impacts of cats, particularly where cat density is high.

Figures

Figure 1: Location of the study region in Ottawa, Canada (A), showing the distribution of 58 study sites across residential Ottawa (B). Sites are categorized as high or low human population density (pop.) or vegetation (veg.). (C) Example of a site, showing the Ottawa Bird Count (OBC) point count location, the 75m radius circle within which birds were recorded, and the outer boundary of the site within which cat density, vegetation, squirrel and bird feeder density were estimated. Residences that responded to interview questions regarding cat ownership and bird feeders are marked with X's.

Figure 2: Example of four sites showing high and low combinations of vegetation and human population density. Each site shows the major land cover types, Ottawa Bird Count (OBC) point count location, the 75m radius circle in which birds were recorded, and the outer boundary of the site within which cat density, vegetation, squirrel and bird feeder density were estimated.

Figure 3: Bivariate plots and Spearman correlation values for all pairs of site covariates for 58 sites. Variables included cat density (estimated by interviewing residents), vegetation (combining tree crown, forest and lawn measures per site), squirrel density (estimated from direct observational surveys as squirrels/ha) and bird feeders (estimated as the density of bird feeders by interviewing residents).

Figure 4: Cat density vs. total urban bird abundance (left) or total urban species richness (right) (species = 43) at 58 sites (black dots) in residential areas of Ottawa. Cat density measures are scaled by mean cat density. Grey lines represent the best fit GLM models with a Poisson distribution (abundance data) or negative binomial (species richness data).

Figure 5: Regression coefficients (+/- 95% confidence intervals) for the average effect of cat density on the abundance of urban bird species. Coefficients are the group mean effects (i.e., fixed effects) from a mixed model where slope varied by species (i.e., random effect). “All species” represents the mean effect of cats across all species. Remaining pairs of coefficients represents the mean effects of cats for groups of species with hypothesized high (red) or low risk (black) from cats, based on life-history traits. High risk traits include species that nest on or low to the ground (Ground Nesting), species that feed on or low to the ground (Ground Feeding) are feeder birds (Bird Feeder) or migrate (Migrants). All regression coefficients were derived from generalised linear mixed models with a negative binomial distribution.

Figure 6: Regression coefficients (+/- 95% confidence intervals) for the average effect of cat density on species richness of urban birds. “All species” represents the effect of cats on the richness of all species of urban birds. Remaining pairs of coefficients represent the effect of cats on groups of species with hypothesized high (red) or low risk (black) from cats, based on life-history traits. High risk traits include species that nest on or low to the ground (Ground Nesting), species that feed on or low to the ground (Ground Feeding) are feeder birds (Bird Feeder) or migrate (Migrants). All regression coefficients were derived from generalised linear models with Poisson distribution.

Figure 7: Cat density vs. urban bird species richness, for migrant (hypothesized to avoid cats, which is referred to as high risk) and resident (hypothesized low risk) bird species. Cat density measures are scaled by mean cat density. Each dot indicates a site (n = 58). Lines indicate predicted bird species richness with cat density using a GLM model with Poisson distribution. Model covariates include cat density, total vegetation, trait (migration status), and the interaction between trait and cat density.

Tables

Table 1: Summary statistics for two response variables (total bird abundance and species richness), resident interview responses and predictor variables (cat density, total vegetation, bird feeder density and squirrel density) used in the GLM and GLMMs to test the relationship between cat density and bird abundance and richness.

Variable	Average	Minimum	Maximum	Standard Deviation
Total bird abundance (per site)	14.1	3	41	8.88
Total bird species richness (per site)	7.1	2	15	2.7
Number of residences interviewed (per site)	12	1	50	10
Residences who owned outside cats per site (%)	16	0	100	20
Time cats spent outside (hours/day/summer)	5.77	0.25	24	8.5
Outside cat density per site (cats/site)	4.98	0	42	9.9
Total vegetation per site (%)	66	5	100	22
Bird feeder density (bird feeders/site)	12	0	53	12
Squirrel density (squirrels/ha)	0.8	0	4.11	1

Table 2: Model fit parameters for vegetation variables for GLM models for total abundance and species richness. In addition to cat density (outdoor cats), all combinations of vegetation variables; total vegetation (%) (veg.), forest / tree crown cover (forest), and lawns (lawn) were modelled. Information theoretic criteria to assess best fit model included: Akaike Information Criteria, adjusted for small sample sizes (AICc), and Δ AICc values. The model selected had the lowest combined Δ AICc for both bird responses.

Bird Response (model distribution)	Models tested	df	AICc	Δ AICc	Model selected
Total abundance (negative binomial)					
	cats + veg	4	406.30	0.80	*
	cats + forest	4	406.07	0.57	
	cats + lawn	4	405.50	0.00	
	cats + veg + forest	5	407.90	2.40	
	cats + veg + forest + lawn	5	407.90	2.40	
	cats + veg + lawn	5	407.90	2.40	
	cats + lawn + forest	5	407.90	2.40	
Species Richness (Poisson)					
	cats + veg	3	282.09	0.00	*
	cats + forest	3	282.52	0.43	
	cats + lawn	3	283.81	1.72	
	cats + veg + forest	4	284.14	2.05	
	cats + veg + forest + lawn	4	284.14	2.05	
	cats + veg + lawn	4	284.14	2.05	
	cats + lawn + forest	4	284.14	2.05	

Table 3: Model fit parameters and coefficients for GLM models for total bird abundance and species richness. Combination of variables tested included outside cat density (cats), total vegetation (%) (vegetation), bird feeder density (bird feeder) and squirrel density per ha (squirrel).

Information theoretic criteria to assess best fit model included: Akaike Information Criteria, adjusted for small sample sizes (AICc) and Δ AICc values. If there were less than 2 AICc units between two or more models, I selected the model with fewer variables.

Bird Response (model distribution)	Models Coefficient					df	AICc	Δ AICc	Model selected
	intercept	cats	vegetation	bird feeder	squirrel				
Total abundance (negative binominal)	2.645	-0.062	0.029			3	406.30	0.00	*
	2.645	-0.048	0.029	-0.020		4	408.67	2.37	
	2.639	-0.057	0.049	-0.021	0.116	5	408.98	2.68	
	2.639	-0.071	0.049		0.116	4	406.53	0.23	
Species Richness (Poisson)	1.058	-0.009	0.071			3	282.09	0.09	*
	1.955	-0.073	0.084	0.101		4	282.00	0.00	
	1.953	-0.080	0.095	0.105	0.066	5	282.65	0.65	
	1.956	-0.014	0.080		0.063	4	282.76	0.76	

Table 4: Generalized linear models (GLM) and mixed models (GLMMS) of bird abundance and richness with cat density, accounting for total vegetation cover. Bird abundance and richness is modelled for all species combined (total abundance & total species richness) and as grouped by hypothesized high or low cat risk traits (ground nesting, ground feeding, feeder birds and migrants). Model covariates included total vegetation (vegetation), risk trait (ground nesting, ground feeding, feeder birds, or migrants) and the interaction between cat density and each trait. For GLMMs abundance is modelled by random effects, which vary among species, for the effect of cat density and the effect of total vegetation. Regression coefficients, standard errors and p-values are presented for each model. Significant effects are denoted by (*).

Response type (Model used)	Bird Grouping (n = species)	Model Parameters	Coefficients	Standard Error	P-value
Total Abundance (GLM)	all species	Intercept	2.645	0.078	0.000
		Cat density	-0.062	0.085	0.469
		Vegetation	0.030	0.085	0.727
Total Species Richness (GLM)	all species (n = 43)	Intercept	1.958	0.049	0.000
		Cat density	-0.009	0.055	0.867
		Vegetation	0.071	0.055	0.193
Abundance (GLMM)	Ground Nesting High (n = 19) Low (n = 24)	Intercept	-2.988	0.341	0.000
		Cat density	0.112	0.108	0.298
		Vegetation	0.319	0.128	0.013*
		Ground Nesting	1.188	0.488	0.015*
		Cat density: Ground Nesting	-0.223	0.136	0.099
	Ground Feeder High (n = 19) Low (n = 24)	Intercept	-3.274	0.311	0.000
		Cat density	-0.007	0.132	0.956
		Vegetation	0.302	0.125	0.016*
		Ground Feeding	1.856	0.434	0.000*
		Cat density: Ground Feeding	-0.033	0.153	0.828
	Feeder birds High (n = 20) Low (n = 23)	Intercept	-3.034	0.343	0.000
		Cat density	0.023	0.125	0.854
		Vegetation	0.317	0.129	0.014*
		Feeder birds	1.244	0.480	0.010*
		Cat density: Feeder birds	-0.077	0.149	0.607
	Migrants High (n = 27) Low (n = 16)	Intercept	-1.804	0.396	0.000
		Cat density	0.036	0.094	0.707
		Vegetation	0.294	0.124	0.018
		Migration	-1.034	0.506	0.041*

Response type (Model used)	Bird Grouping (n = species)	Model Parameters	Coefficients	Standard Error	P-value
		Cat density : Migration	-0.153	0.145	0.291
Species Richness (GLM)	Ground Nesting	Intercept	1.212	0.052	0.000
	High (n = 19)	Cat density	-0.006	0.057	0.916
	Low (n = 24)	Vegetation	0.071	0.055	0.193
		Ground Nesting	0.326	0.052	0.000*
		Cat density: Ground Nesting	-0.010	0.053	0.849
Species Richness	Ground Feeding	Intercept	1.090	0.059	0.000
	High (n = 19)	Cat density	-0.042	0.067	0.527
	Low (n = 24)	Vegetation	0.071	0.055	0.193
		Ground Feeding	0.606	0.059	0.000*
		Cat density: Ground Feeding	0.058	0.063	0.358
	Feeder birds	Intercept	1.197	0.053	0.000
	High (n = 20)	Cat density	-0.032	0.060	0.596
	Low (n = 23)	Vegetation	0.071	0.055	0.194
		Feeders birds	0.368	0.053	0.000*
		Cat density: Feeders birds	0.058	0.056	0.297
	Migrants	Intercept	1.255	0.050	0.000
	High (n = 27)	Cat density	-0.027	0.056	0.630
	Low (n = 16)	Vegetation	0.071	0.055	0.197
		Migration	-0.079	0.050	0.115
		Cat density : Migration	-0.113	0.052	0.029*

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Appendices:

Appendix A: Bird species and abundance (abund.) recorded during the Ottawa Bird Count 2014. Point count data was included only for sites where cat density was estimated (n = 58). OBC Route and OBC Point correspond with site identification of the OBS dataset, while site no. corresponds with site identification used in this study. Species were designated as urban or non-urban based on predominate habitat use. Observers are identified by number only.

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
1	464461	5040124	2	1	10/06/2014	6:50	1	Black-white Warbler	<i>Mniotilta varia</i>	1	non-urban
1	464461	5040124	2	1	10/06/2014	6:50	1	Eastern Phoebe	<i>Sayornis phoebe</i>	1	Urban
1	464461	5040124	2	1	10/06/2014	6:50	1	House Wren	<i>Troglodytes aedon</i>	1	Urban
1	464461	5040124	2	1	10/06/2014	6:50	1	Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1	Urban
1	464461	5040124	2	1	10/06/2014	6:50	1	American Robin	<i>Turdus migratorius</i>	1	Urban
1	464461	5040124	2	1	10/06/2014	6:50	1	American Redstart	<i>Setophaga ruticilla</i>	2	Urban
4	464916	5037972	2	4	28/06/2014	4:49	6	Savannah Sparrow	<i>Passerculus sandwichensis</i>	1	non-urban
4	464916	5037972	2	4	28/06/2014	4:49	6	American Robin	<i>Turdus migratorius</i>	1	Urban
4	464916	5037972	2	4	28/06/2014	4:49	6	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
4	464916	5037972	2	4	28/06/2014	4:49	6	American Crow	<i>Corvus brachyrhynchos</i>	2	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Yellow Warbler	<i>Setophaga petechia</i>	1	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Vesper Sparrow	<i>Poocetes gramineus</i>	1	non-urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Eastern Phoebe	<i>Sayornis phoebe</i>	1	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
18	463638	5038307	4	1	10/06/2014	4:50	1	American Robin	<i>Turdus migratorius</i>	2	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
20	463833	5036358	4	3	10/06/2014	5:05	1	Mourning Dove	<i>Zenaida macroura</i>	1	Urban
20	463833	5036358	4	3	10/06/2014	5:05	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
20	463833	5036358	4	3	10/06/2014	5:05	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
20	463833	5036358	4	3	10/06/2014	5:05	1	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
20	463833	5036358	4	3	10/06/2014	5:05	1	American Robin	<i>Turdus migratorius</i>	3	Urban
29	461425	5035922	5	3	10/06/2014	5:45	1	American Robin	<i>Turdus migratorius</i>	1	Urban
29	461425	5035922	5	3	10/06/2014	5:45	1	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
29	461425	5035922	5	3	10/06/2014	5:45	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
29	461425	5035922	5	3	10/06/2014	5:45	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
29	461425	5035922	5	3	10/06/2014	5:45	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
29	461425	5035922	5	3	10/06/2014	5:45	1	European Starling	<i>Sturnus vulgaris</i>	3	Urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
								Black-throated Green			
36	457200	5033543	5	10	17/06/2014	5:08	1	Warbler	<i>Carpodacus mexicanus</i>	1	non-urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Blue Jay	<i>Cyanocitta cristata</i>	1	Urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Eastern Wood-Pewee	<i>Contopus virens</i>	1	Urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Winter Wren	<i>Troglodytes hiemalis</i>	1	non-urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
36	457200	5033543	5	10	17/06/2014	5:08	1	American Robin	<i>Turdus migratorius</i>	2	Urban
36	457200	5033543	5	10	17/06/2014	5:08	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	2	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	House Finch	<i>Haemorhous mexicanus</i>	1	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	House Sparrow	<i>Passer domesticus</i>	2	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	American Goldfinch	<i>Spinus tristis</i>	2	Urban
44	460581	5034147	6	8	17/06/2014	6:05	1	European Starling	<i>Sturnus vulgaris</i>	3	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
49	462370	5033015	7	3	10/06/2014	5:25	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
49	462370	5033015	7	3	10/06/2014	5:25	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
49	462370	5033015	7	3	10/06/2014	5:25	1	European Starling	<i>Sturnus vulgaris</i>	2	Urban
49	462370	5033015	7	3	10/06/2014	5:25	1	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	2	Urban
49	462370	5033015	7	3	10/06/2014	5:25	1	American Robin	<i>Turdus migratorius</i>	3	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	Rock Pigeon	<i>Columba livia</i>	1	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	2	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	Common Grackle	<i>Quiscalus quiscula</i>	3	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	American Robin	<i>Turdus migratorius</i>	3	Urban
58	459110	5033150	8	2	17/06/2014	5:25	1	European Starling	<i>Sturnus vulgaris</i>	4	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	Brown-head Cowbird	<i>Molothrus ater</i>	1	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	Barn Swallow	<i>Hirundo rustica</i>	1	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	European Starling	<i>Sturnus vulgaris</i>	2	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	American Robin	<i>Turdus migratorius</i>	2	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	American Goldfinch	<i>Spinus tristis</i>	2	Urban
61	459383	5031227	8	5	17/06/2014	5:45	1	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
97	451620	5034379	12	5	28/06/2014	5:36	6	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
97	451620	5034379	12	5	28/06/2014	5:36	6	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
97	451620	5034379	12	5	28/06/2014	5:36	6	American Robin	<i>Turdus migratorius</i>	2	Urban
97	451620	5034379	12	5	28/06/2014	5:36	6	Black-capped Chickadee	<i>Poecile atricapillus</i>	3	Urban
117	451062	5029559	15	3	22/06/2014	5:28	9	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
117	451062	5029559	15	3	22/06/2014	5:28	9	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
117	451062	5029559	15	3	22/06/2014	5:28	9	Northern Flicker	<i>Colaptes auratus</i>	2	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
130	454393	5025320	16	5	28/06/2014	6:24	6	American Robin	<i>Turdus migratorius</i>	1	Urban
130	454393	5025320	16	5	28/06/2014	6:24	6	Yellow Warbler	<i>Setophaga petechia</i>	1	Urban
130	454393	5025320	16	5	28/06/2014	6:24	6	Least Flycatcher	<i>Empidonax minimus</i>	1	non-urban
130	454393	5025320	16	5	28/06/2014	6:24	6	Warbling Vireo	<i>Vireo gilvus</i>	1	Urban
130	454393	5025320	16	5	28/06/2014	6:24	6	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
130	454393	5025320	16	5	28/06/2014	6:24	6	Common Yellowthroat	<i>Geothlypis trichas</i>	2	Urban
130	454393	5025320	16	5	28/06/2014	6:24	6	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	4	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Ring-billed Gull	<i>Larus delawarensis</i>	1	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	American Goldfinch	<i>Spinus tristis</i>	1	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	European Starling	<i>Sturnus vulgaris</i>	2	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Chipping Sparrow	<i>Spizella passerina</i>	3	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Mallard	<i>Anas platyrhynchos</i>	3	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	American Robin	<i>Turdus migratorius</i>	4	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Black-capped Chickadee	<i>Poecile atricapillus</i>	4	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	6	Urban
139	449032	5027102	17	3	22/06/2014	5:20	3	Common Grackle	<i>Quiscalus quiscula</i>	11	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	American Robin	<i>Turdus migratorius</i>	1	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Nashville Warbler	<i>Oreothlypis ruficapilla</i>	1	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	2	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	Cedar Waxwing	<i>Bombycilla cedrorum</i>	3	Urban
141	448260	5028018	17	5	22/06/2014	6:00	3	American Goldfinch	<i>Spinus tristis</i>	8	Urban
145	449385	5030658	17	9	22/06/2014	7:30	3	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
145	449385	5030658	17	9	22/06/2014	7:30	3	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
145	449385	5030658	17	9	22/06/2014	7:30	3	Ring-billed Gull	<i>Larus delawarensis</i>	1	Urban
145	449385	5030658	17	9	22/06/2014	7:30	3	American Robin	<i>Turdus migratorius</i>	1	Urban
145	449385	5030658	17	9	22/06/2014	7:30	3	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
145	449385	5030658	17	9	22/06/2014	7:30	3	Northern Cardinal	<i>Cardinalis cardinalis</i>	3	Urban
145	449385	5030658	17	9	22/06/2014	7:30	3	European Starling	<i>Sturnus vulgaris</i>	13	Urban
146	448184	5031151	17	10	22/06/2014	7:50	3	Chimney Swift	<i>Chaetura pelagica</i>	1	Urban
146	448184	5031151	17	10	22/06/2014	7:50	3	American Goldfinch	<i>Spinus tristis</i>	1	Urban
146	448184	5031151	17	10	22/06/2014	7:50	3	American Robin	<i>Turdus migratorius</i>	1	Urban
146	448184	5031151	17	10	22/06/2014	7:50	3	Rock Pigeon	<i>Columba livia</i>	2	Urban
146	448184	5031151	17	10	22/06/2014	7:50	3	European Starling	<i>Sturnus vulgaris</i>	9	Urban
146	448184	5031151	17	10	22/06/2014	7:50	3	House Sparrow	<i>Passer domesticus</i>	10	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Blue Jay	<i>Cyanocitta cristata</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	American Robin	<i>Turdus migratorius</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Northern Flicker	<i>Colaptes auratus</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	2	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
158	447077	5027472	19	3	18/06/2014	5:20	1	Common Grackle	<i>Quiscalus quiscula</i>	3	Urban
181	444432	5024561	23	2	18/06/2014	6:50	1	House Sparrow	<i>Passer domesticus</i>	1	Urban
181	444432	5024561	23	2	18/06/2014	6:50	1	American Robin	<i>Turdus migratorius</i>	1	Urban
181	444432	5024561	23	2	18/06/2014	6:50	1	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
181	444432	5024561	23	2	18/06/2014	6:50	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
181	444432	5024561	23	2	18/06/2014	6:50	1	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
181	444432	5024561	23	2	18/06/2014	6:50	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	3	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
201	464291	5023998	27	6	28/06/2014	7:08	6	American Robin	<i>Turdus migratorius</i>	1	Urban
201	464291	5023998	27	6	28/06/2014	7:08	6	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
201	464291	5023998	27	6	28/06/2014	7:08	6	Tree Swallow	<i>Tachycineta bicolor</i>	2	urban
201	464291	5023998	27	6	28/06/2014	7:08	6	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	4	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Baltimore Oriole	<i>Icterus galbula</i>	1	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Common Yellowthroat	<i>Geothlypis trichas</i>	1	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	2	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	2	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	American Robin	<i>Turdus migratorius</i>	3	Urban
204	463865	5025182	27	9	17/06/2014	7:20	1	Rock Pigeon	<i>Columba livia</i>	4	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	Cedar Waxwing	<i>Bombycilla cedrorum</i>	2	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	Chipping Sparrow	<i>Spizella passerina</i>	3	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	Black-capped Chickadee	<i>Poecile atricapillus</i>	3	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	American Robin	<i>Turdus migratorius</i>	3	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	Ring-billed Gull	<i>Larus delawarensis</i>	4	Urban
260	451100	5024096	35	2	30/06/2014	5:07	8	Song Sparrow	<i>Melospiza melodia</i>	4	Urban
263	452062	5025064	35	5	30/06/2014	4:46	8	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
263	452062	5025064	35	5	30/06/2014	4:46	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	2	Urban
263	452062	5025064	35	5	30/06/2014	4:46	8	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
263	452062	5025064	35	5	30/06/2014	4:46	8	Song Sparrow	<i>Melospiza melodia</i>	4	Urban
263	452062	5025064	35	5	30/06/2014	4:46	8	American Robin	<i>Turdus migratorius</i>	4	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Bay-breasted Warbler	<i>Setophaga castanea</i>	1	non-urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
270	452959	5022218	36	3	30/06/2014	5:24	8	Pine Warbler	<i>Setophaga pinus</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Eastern Wood-Pewee	<i>Contopus virens</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Wood Thrush	<i>Hylocichla mustelina</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	1	non-urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	White-throat Sparrow	<i>Zonotrichia albicollis</i>	1	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Common Yellowthroat	<i>Geothlypis trichas</i>	2	Urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Veery	<i>Catharus fuscescens</i>	3	non-urban
270	452959	5022218	36	3	30/06/2014	5:24	8	Ovenbird	<i>Seiurus aurocapilla</i>	4	non-urban
285	447356	5023644	39	8	18/06/2014	6:30	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	2	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	American Goldfinch	<i>Spinus tristis</i>	2	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	American Robin	<i>Turdus migratorius</i>	2	Urban
285	447356	5023644	39	8	18/06/2014	6:30	1	European Starling	<i>Sturnus vulgaris</i>	2	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	European Starling	<i>Sturnus vulgaris</i>	2	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	House Sparrow	<i>Passer domesticus</i>	2	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	Chimney Swift	<i>Chaetura pelagica</i>	2	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	American Robin	<i>Turdus migratorius</i>	2	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
287	448237	5024233	40	2	5/06/2014	7:45	1	Common Grackle	<i>Quiscalus quiscula</i>	3	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
290	449309	5022651	40	5	8/06/2014	6:23	7	American Goldfinch	<i>Spinus tristis</i>	1	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Ring-billed Gull	<i>Larus delawarensis</i>	1	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Black-capped Chickadee	<i>Poecile atricapillus</i>	2	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	Northern Cardinal	<i>Cardinalis cardinalis</i>	2	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	American Robin	<i>Turdus migratorius</i>	2	Urban
290	449309	5022651	40	5	8/06/2014	6:23	7	European Starling	<i>Sturnus vulgaris</i>	4	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Gray Catbird	<i>Dumetella carolinensis</i>	1	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	American Robin	<i>Turdus migratorius</i>	1	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Common Yellowthroat	<i>Geothlypis trichas</i>	1	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Brown-head Cowbird	<i>Molothrus ater</i>	1	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Yellow-rumped Warbler	<i>Setophaga coronata</i>	2	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	Common Grackle	<i>Quiscalus quiscula</i>	3	Urban
321	453678	5011905	44	3	5/06/2014	5:20	1	European Starling	<i>Sturnus vulgaris</i>	5	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	American Redstart	<i>Setophaga ruticilla</i>	1	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Eastern Phoebe	<i>Sayornis phoebe</i>	1	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	non-urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
322	452685	5010750	44	4	5/06/2014	4:58	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	3	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
322	452685	5010750	44	4	5/06/2014	4:58	1	American Robin	<i>Turdus migratorius</i>	6	Urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Wilson's Snipe	<i>Gallinago delicata</i>	1	non-urban
329	451533	5012315	45	2	5/06/2014	5:40	1	American Robin	<i>Turdus migratorius</i>	1	Urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Eastern Meadowlark	<i>Sturnella magna</i>	1	non-urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Brown-head Cowbird	<i>Molothrus ater</i>	1	Urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Savannah Sparrow	<i>Passerculus sandwichensis</i>	1	non-urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Barn Swallow	<i>Hirundo rustica</i>	1	Urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Bobolink	<i>Dolichonyx oryzivorus</i>	3	non-urban
329	451533	5012315	45	2	5/06/2014	5:40	1	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	3	Urban
329	451533	5012315	45	2	5/06/2014	5:40	1	American Goldfinch	<i>Spinus tristis</i>	3	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	Field Sparrow	<i>Spizella pusilla</i>	1	non-urban
344	454081	5017143	46	7	30/06/2014	5:51	8	American Goldfinch	<i>Spinus tristis</i>	1	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	Savannah Sparrow	<i>Passerculus sandwichensis</i>	1	non-urban
344	454081	5017143	46	7	30/06/2014	5:51	8	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	American Robin	<i>Turdus migratorius</i>	2	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	Chipping Sparrow	<i>Spizella passerina</i>	3	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	3	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	Song Sparrow	<i>Melospiza melodia</i>	5	Urban
344	454081	5017143	46	7	30/06/2014	5:51	8	European Starling	<i>Sturnus vulgaris</i>	6	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Gr Crested Flycatcher	<i>Myiarchus crinitus</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Blue Jay	<i>Cyanocitta cristata</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Northern Flicker	<i>Colaptes auratus</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	House Wren	<i>Troglodytes aedon</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	1	non-urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
368	450797	5014364	48	10	5/06/2014	5:50	1	Mourning Dove	<i>Zenaida macroura</i>	2	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	3	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	American Robin	<i>Turdus migratorius</i>	3	Urban
368	450797	5014364	48	10	5/06/2014	5:50	1	Common Grackle	<i>Quiscalus quiscula</i>	5	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Barn Swallow	<i>Hirundo rustica</i>	1	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Hairy Woodpecker	<i>Picoides villosus</i>	1	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Long-eared Owl	<i>Asio otus</i>	1	non-urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Eastern Meadowlark	<i>Sturnella magna</i>	1	non-urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Common Yellowthroat	<i>Geothlypis trichas</i>	1	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Black-capped Chickadee	<i>Poecile atricapillus</i>	2	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Bobolink	<i>Dolichonyx oryzivorus</i>	2	non-urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Eastern Phoebe	<i>Sayornis phoebe</i>	2	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	American Goldfinch	<i>Spinus tristis</i>	3	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	American Crow	<i>Corvus brachyrhynchos</i>	3	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	American Robin	<i>Turdus migratorius</i>	3	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Common Grackle	<i>Quiscalus quiscula</i>	3	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	4	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	European Starling	<i>Sturnus vulgaris</i>	12	Urban
378	448677	5011577	49	10	30/06/2014	6:48	8	Ring-billed Gull	<i>Larus delawarensis</i>	32	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	1	non-urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Canada Goose	<i>Branta canadensis</i>	2	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Barn Swallow	<i>Hirundo rustica</i>	2	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	American Robin	<i>Turdus migratorius</i>	3	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Ring-billed Gull	<i>Larus delawarensis</i>	3	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	American Goldfinch	<i>Spinus tristis</i>	3	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
389	445523	5014227	51	1	30/06/2014	8:13	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	4	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	European Starling	<i>Sturnus vulgaris</i>	4	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Song Sparrow	<i>Melospiza melodia</i>	5	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Common Grackle	<i>Quiscalus quiscula</i>	6	Urban
389	445523	5014227	51	1	30/06/2014	8:13	8	Mourning Dove	<i>Zenaida macroura</i>	6	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Green Heron	<i>Butorides virescens</i>	1	non-urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1	non-urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Brown-head Cowbird	<i>Molothrus ater</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	White-breast Nuthatch	<i>Sitta carolinensis</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Warbling Vireo	<i>Vireo gilvus</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Rock Pigeon	<i>Columba livia</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Least Flycatcher	<i>Empidonax minimus</i>	1	non-urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	European Starling	<i>Sturnus vulgaris</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Ring-billed Gull	<i>Larus delawarensis</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Gray Catbird	<i>Dumetella carolinensis</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Gr Crested Flycatcher	<i>Myiarchus crinitus</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	American Crow	<i>Corvus brachyrhynchos</i>	2	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	Cedar Waxwing	<i>Bombycilla cedrorum</i>	2	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	American Goldfinch	<i>Spinus tristis</i>	4	Urban
392	445456	5017842	51	4	30/06/2014	8:30	8	American Robin	<i>Turdus migratorius</i>	4	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	American Goldfinch	<i>Spinus tristis</i>	1	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
398	446754	5013923	52	2	30/06/2014	7:53	8	American Redstart	<i>Setophaga ruticilla</i>	1	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	Swamp Sparrow	<i>Melospiza georgiana</i>	2	non-urban
398	446754	5013923	52	2	30/06/2014	7:53	8	European Starling	<i>Sturnus vulgaris</i>	2	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	American Robin	<i>Turdus migratorius</i>	4	Urban
398	446754	5013923	52	2	30/06/2014	7:53	8	Cedar Waxwing	<i>Bombycilla cedrorum</i>	4	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Great Blue Heron	<i>Ardea herodias</i>	1	non-urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	American Robin	<i>Turdus migratorius</i>	1	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Cedar Waxwing	<i>Bombycilla cedrorum</i>	2	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	American Goldfinch	<i>Spinus tristis</i>	3	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	3	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	Common Grackle	<i>Quiscalus quiscula</i>	4	Urban
410	445483	5010871	53	4	30/06/2014	7:18	8	European Starling	<i>Sturnus vulgaris</i>	10	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	American Robin	<i>Turdus migratorius</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Ring-billed Gull	<i>Larus delawarensis</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Eastern Kingbird	<i>Tyrannus tyrannus</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Savannah Sparrow	<i>Passerculus sandwichensis</i>	1	non-urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
411	446699	5009270	53	5	30/06/2014	7:04	8	Blue Jay	<i>Cyanocitta cristata</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Mourning Dove	<i>Zenaida macroura</i>	1	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Rock Pigeon	<i>Columba livia</i>	2	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	American Goldfinch	<i>Spinus tristis</i>	3	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	European Starling	<i>Sturnus vulgaris</i>	3	Urban
411	446699	5009270	53	5	30/06/2014	7:04	8	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	8	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	Mourning Dove	<i>Zenaida macroura</i>	1	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	Cedar Waxwing	<i>Bombycilla cedrorum</i>	1	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	House Sparrow	<i>Passer domesticus</i>	1	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
444	443841	5014900	58	2	19/06/2014	5:20	1	American Robin	<i>Turdus migratorius</i>	3	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	American Crow	<i>Corvus brachyrhynchos</i>	1	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	American Robin	<i>Turdus migratorius</i>	2	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	European Starling	<i>Sturnus vulgaris</i>	2	Urban
463	440982	5013197	60	6	14/06/2014	7:00	1	Common Grackle	<i>Quiscalus quiscula</i>	3	Urban
473	442435	5015520	61	5	14/06/2014	7:35	1	House Finch	<i>Haemorhous mexicanus</i>	1	Urban
473	442435	5015520	61	5	14/06/2014	7:35	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
473	442435	5015520	61	5	14/06/2014	7:35	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
473	442435	5015520	61	5	14/06/2014	7:35	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
473	442435	5015520	61	5	14/06/2014	7:35	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban

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Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
473	442435	5015520	61	5	14/06/2014	7:35	1	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
473	442435	5015520	61	5	14/06/2014	7:35	1	European Starling	<i>Sturnus vulgaris</i>	3	Urban
491	439434	5014557	66	1	14/06/2014	6:45	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
491	439434	5014557	66	1	14/06/2014	6:45	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
491	439434	5014557	66	1	14/06/2014	6:45	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
491	439434	5014557	66	1	14/06/2014	6:45	1	House Wren	<i>Troglodytes aedon</i>	1	Urban
491	439434	5014557	66	1	14/06/2014	6:45	1	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
491	439434	5014557	66	1	14/06/2014	6:45	1	American Robin	<i>Turdus migratorius</i>	3	Urban
493	440760	5015323	66	3	18/06/2014	5:03	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
493	440760	5015323	66	3	18/06/2014	5:03	1	Mourning Dove	<i>Zenaida macroura</i>	2	Urban
493	440760	5015323	66	3	18/06/2014	5:03	1	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
493	440760	5015323	66	3	18/06/2014	5:03	1	Savannah Sparrow	<i>Passerculus sandwichensis</i>	4	non-urban
498	433056	5015631	67	2	14/06/2014	5:55	1	Eastern Wood-Pewee	<i>Contopus virens</i>	1	Urban
498	433056	5015631	67	2	14/06/2014	5:55	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
498	433056	5015631	67	2	14/06/2014	5:55	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
498	433056	5015631	67	2	14/06/2014	5:55	1	House Finch	<i>Haemorhous mexicanus</i>	1	Urban
498	433056	5015631	67	2	14/06/2014	5:55	1	Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	1	non-urban
508	432982	5016998	68	2	14/06/2014	6:15	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
508	432982	5016998	68	2	14/06/2014	6:15	1	House Sparrow	<i>Passer domesticus</i>	1	Urban
508	432982	5016998	68	2	14/06/2014	6:15	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
508	432982	5016998	68	2	14/06/2014	6:15	1	American Goldfinch	<i>Spinus tristis</i>	1	Urban
508	432982	5016998	68	2	14/06/2014	6:15	1	American Crow	<i>Corvus brachyrhynchos</i>	2	Urban
508	432982	5016998	68	2	14/06/2014	6:15	1	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
508	432982	5016998	68	2	14/06/2014	6:15	1	Chipping Sparrow	<i>Spizella passerina</i>	2	Urban
519	442826	5025339	69	6	27/06/2014	6:25	4	American Goldfinch	<i>Spinus tristis</i>	1	Urban
519	442826	5025339	69	6	27/06/2014	6:25	4	Rock Pigeon	<i>Columba livia</i>	1	Urban
519	442826	5025339	69	6	27/06/2014	6:25	4	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
519	442826	5025339	69	6	27/06/2014	6:25	4	European Starling	<i>Sturnus vulgaris</i>	1	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
519	442826	5025339	69	6	27/06/2014	6:25	4	House Sparrow	<i>Passer domesticus</i>	1	Urban
519	442826	5025339	69	6	27/06/2014	6:25	4	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
527	441476	5023814	70	4	16/06/2014	5:42	5	American Goldfinch	<i>Spinus tristis</i>	1	Urban
527	441476	5023814	70	4	16/06/2014	5:42	5	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
527	441476	5023814	70	4	16/06/2014	5:42	5	American Robin	<i>Turdus migratorius</i>	1	Urban
527	441476	5023814	70	4	16/06/2014	5:42	5	Black-capped Chickadee	<i>Poecile atricapillus</i>	2	Urban
532	441886	5021279	70	9	16/06/2014	7:24	5	American Robin	<i>Turdus migratorius</i>	1	Urban
532	441886	5021279	70	9	16/06/2014	7:24	5	American Goldfinch	<i>Spinus tristis</i>	1	Urban
532	441886	5021279	70	9	16/06/2014	7:24	5	Northern Cardinal	<i>Cardinalis cardinalis</i>	2	Urban
532	441886	5021279	70	9	16/06/2014	7:24	5	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
532	441886	5021279	70	9	16/06/2014	7:24	5	Common Grackle	<i>Quiscalus quiscula</i>	2	Urban
532	441886	5021279	70	9	16/06/2014	7:24	5	European Starling	<i>Sturnus vulgaris</i>	8	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	House Sparrow	<i>Passer domesticus</i>	1	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	Blue Jay	<i>Cyanocitta cristata</i>	2	Urban
539	440186	5023966	71	7	19/06/2014	7:30	1	American Robin	<i>Turdus migratorius</i>	3	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	House Finch	<i>Haemorhous mexicanus</i>	1	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	American Goldfinch	<i>Spinus tristis</i>	1	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Northern Cardinal	<i>Cardinalis cardinalis</i>	2	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Black-capp Chickadee	<i>Poecile atricapillus</i>	3	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
573	435463	5021566	76	2	28/06/2014	5:01	2	American Robin	<i>Turdus migratorius</i>	4	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	European Starling	<i>Sturnus vulgaris</i>	5	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Common Grackle	<i>Quiscalus quiscula</i>	8	Urban
573	435463	5021566	76	2	28/06/2014	5:01	2	Ring-billed Gull	<i>Larus delawarensis</i>	11	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Yellow Warbler	<i>Setophaga petechia</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	American Robin	<i>Turdus migratorius</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Belted Kingfisher	<i>Ceryle alcyon</i>	1	non-urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Mourning Dove	<i>Zenaida macroura</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Purple Martin	<i>Progne subis</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	American Goldfinch	<i>Spinus tristis</i>	1	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Black-capped Chickadee	<i>Poecile atricapillus</i>	2	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Northern Cardinal	<i>Cardinalis cardinalis</i>	3	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	American Crow	<i>Corvus brachyrhynchos</i>	4	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	4	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	European Starling	<i>Sturnus vulgaris</i>	12	Urban
576	433695	5022650	76	5	28/06/2014	5:46	2	Common Grackle	<i>Quiscalus quiscula</i>	13	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	White-breast Nuthatch	<i>Sitta carolinensis</i>	1	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	Common Grackle	<i>Quiscalus quiscula</i>	1	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	House Finch	<i>Haemorhous mexicanus</i>	1	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	American Goldfinch	<i>Spinus tristis</i>	2	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	American Robin	<i>Turdus migratorius</i>	3	Urban
588	431314	5016009	77	7	14/06/2014	5:35	1	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Eastern Phoebe	<i>Sayornis phoebe</i>	1	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Mourning Dove	<i>Zenaida macroura</i>	1	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
599	432225	5023618	79	1	27/06/2014	4:46	2	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	American Bittern	<i>Botaurus lentiginosus</i>	1	non-urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Gray Catbird	<i>Dumetella carolinensis</i>	1	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Song Sparrow	<i>Melospiza melodia</i>	2	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	Cedar Waxwing	<i>Bombycilla cedrorum</i>	3	Urban
599	432225	5023618	79	1	27/06/2014	4:46	2	American Robin	<i>Turdus migratorius</i>	5	Urban
705	426472	5011678	91	9	14/06/2014	4:50	1	Common Yellowthroat	<i>Geothlypis trichas</i>	1	Urban
705	426472	5011678	91	9	14/06/2014	4:50	1	Brown Thrasher	<i>Toxostoma rufum</i>	1	non-urban
705	426472	5011678	91	9	14/06/2014	4:50	1	Purple Finch	<i>Carpodacus purpureus</i>	1	Urban
705	426472	5011678	91	9	14/06/2014	4:50	1	Northern Cardinal	<i>Cardinalis cardinalis</i>	1	Urban
705	426472	5011678	91	9	14/06/2014	4:50	1	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
705	426472	5011678	91	9	14/06/2014	4:50	1	Song Sparrow	<i>Melospiza melodia</i>	3	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Red-wing Blackbird	<i>Agelaius phoeniceus</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	House Wren	<i>Troglodytes aedon</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Eastern Phoebe	<i>Sayornis phoebe</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Song Sparrow	<i>Melospiza melodia</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Downy Woodpecker	<i>Picoides pubescens</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Rose-breast Grosbeak	<i>Pheucticus ludovicianus</i>	1	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	1	non-urban
717	461013	5037617	92	10	10/06/2014	6:05	1	American Goldfinch	<i>Spinus tristis</i>	2	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	American Redstart	<i>Setophaga ruticilla</i>	2	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	American Robin	<i>Turdus migratorius</i>	2	Urban
717	461013	5037617	92	10	10/06/2014	6:05	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	2	Urban
722	457040	5034473	93	4	17/06/2014	4:50	1	Common Raven	<i>Corvus corax</i>	1	Urban
722	457040	5034473	93	4	17/06/2014	4:50	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
722	457040	5034473	93	4	17/06/2014	4:50	1	House Sparrow	<i>Passer domesticus</i>	1	Urban

Appendix A continued

Site no.	Easting	Northing	OBC Route	OBC Point	Date	Start Time	Observer	Common name	Scientific Name	Abund.	Habitat
722	457040	5034473	93	4	17/06/2014	4:50	1	House Finch	<i>Haemorhous mexicanus</i>	1	Urban
722	457040	5034473	93	4	17/06/2014	4:50	1	American Crow	<i>Corvus brachyrhynchos</i>	6	Urban
751	451119	5032250	103	4	28/06/2014	5:55	6	Gray Catbird	<i>Dumetella carolinensis</i>	1	Urban
751	451119	5032250	103	4	28/06/2014	5:55	6	American Redstart	<i>Setophaga ruticilla</i>	1	Urban
751	451119	5032250	103	4	28/06/2014	5:55	6	Downy Woodpecker	<i>Picoides pubescens</i>	1	Urban
751	451119	5032250	103	4	28/06/2014	5:55	6	White-breast Nuthatch	<i>Sitta carolinensis</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	Brown Creeper	<i>Certhia americana</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	American Robin	<i>Turdus migratorius</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	Black-capped Chickadee	<i>Poecile atricapillus</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	European Starling	<i>Sturnus vulgaris</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	Chipping Sparrow	<i>Spizella passerina</i>	1	Urban
786	447299	5026372	133	1	18/06/2014	5:40	1	American Redstart	<i>Setophaga ruticilla</i>	2	Urban

Appendix B: Bird species classified as hypothesized risk to cat predation (or avoidance) based on body mass and four life history traits.

Hypothesized high risk species are less than 150 grams (average body mass), and nest on or low to the ground, feed on or low to the ground, are feeder birds or are migrants. Hypothesized high risk species are designated by Y. All species were recorded during the Ottawa Bird Count (OBC) and were classified as using urban habitat. Body mass measures were obtained from (Dunning 2007), and other life history information was obtained from (Rodewald 2015) or as specified.

Common Name	Scientific Name	Ave mass (g)	Max. Mass (g)	Weight risk	Ground nesting risk	Ground Feeding risk	Bird Feeder risk	Resident or migrant	References
Canada Goose	<i>Branta canadensis</i>	3000	9000		Y	Y		all year	(Leblanc 1987)
Mallard	<i>Anas platyrhynchos</i>	82	95	Y	Y			Summer	(Blair 1996)
Common Loon	<i>Gavia immer</i>	2500	6100		Y			Summer	
American Bittern	<i>Botaurus lentiginosus</i>	500			Y			Summer	(Mueller 1999)
Great Blue Heron	<i>Ardea herodias</i>	2100	2500					Summer	(Vennesland & Butler 2011)
Green Heron	<i>Butorides virescens</i>	240						Summer	(Davis & Kushlan 1994)
Northern Harrier	<i>Circus cyaneus</i>	300	750		Y			Summer	
Red-tailed Hawk	<i>Buteo jamaicensis</i>	900	1460					Summer	
Killdeer	<i>Charadrius vociferus</i>	75	128	Y	Y	Y		Summer	(Montgomerie & Weatherhead 1988)
Wilson's Snipe	<i>Gallinago delicata</i>	79	146	Y				Summer	
American Woodcock	<i>Scolopax minor</i>	116	279	Y	Y	Y		Summer	
Ring-billed Gull	<i>Larus delawarensis</i>	300	700		Y	Y		Summer	(NABCI 2009)
Rock Pigeon	<i>Columba livia</i>	265	380		Y	Y	Y	all year	(Blair 1996)
Mourning Dove	<i>Zenaida macroura</i>	96	170	Y	Y	Y	Y	all year	(Blair 1996)
Long-eared Owl	<i>Asio otus</i>	220	435					all year	
Chimney Swift	<i>Chaetura pelagica</i>	17	30	Y	Y			Summer	(Fitzgerald et al. 2014)
Belted Kingfisher	<i>Ceryle alcyon</i>	140	170	Y	Y			Summer	

Appendix B continued

Common Name	Scientific Name	Ave mass (g)	Max. Mass (g)	Weight risk	Ground nesting risk	Ground Feeding risk	Bird Feeder risk	Resident or migrant	References
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	43	55	Y				Summer	
Downy Woodpecker	<i>Picoides pubescens</i>	21	28	Y			Y	all year	(Blewett & Marzluff 2005)
Hairy Woodpecker	<i>Picoides villosus</i>	40	95	Y			Y	all year	(Blewett & Marzluff 2005)
Northern Flicker	<i>Colaptes auratus</i>	110	160	Y		Y	Y	all year	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	250	350					all year	
Merlin	<i>Falco columbarius</i>	160	240					Summer	
Eastern Wood-Pewee	<i>Contopus virens</i>	10	19	Y				Summer	
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	9	16	Y	Y			Summer	
Alder Flycatcher	<i>Empidonax alnorum</i>	11		Y	Y			Summer	
Least Flycatcher	<i>Empidonax minimus</i>	8	31	Y				Summer	
Eastern Phoebe	<i>Sayornis phoebe</i>	16	21	Y				Summer	
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	27	40	Y				Summer	
Eastern Kingbird	<i>Tyrannus tyrannus</i>	33	55	Y				Summer	(Marzluff 1997)
Warbling Vireo	<i>Vireo gilvus</i>	10	16	Y				Summer	
Red-eyed Vireo	<i>Vireo olivaceus</i>	12	26	Y				Summer	
Blue Jay	<i>Cyanocitta cristata</i>	70	100	Y		Y	Y	all year	(Marzluff 1997)
American Crow	<i>Corvus brachyrhynchos</i>	360	620			Y		all year	(Chamberlain et al. 2009; NABCI 2009)
Common Raven	<i>Corvus corax</i>	689	1625			Y		all year	(Marzluff 1997)
Purple Martin	<i>Progne subis</i>	45	60	Y				Summer	(Marzluff 1997)
Tree Swallow	<i>Tachycineta bicolor</i>	16	25	Y				Summer	
Barn Swallow	<i>Hirundo rustica</i>	17	20	Y	Y			Summer	
Black-capped Chickadee	<i>Poecile atricapillus</i>	9	14	Y			Y	all year	(NABCI 2009)
Red-breasted Nuthatch	<i>Sitta canadensis</i>	8	13	Y			Y	all year	
White-breasted Nuthatch	<i>Sitta carolinensis</i>	18	30	Y			Y	all year	

Appendix B continued

Common Name	Scientific Name	Ave mass (g)	Max. Mass (g)	Weight risk	Ground nesting risk	Ground Feeding risk	Bird Feeder risk	Resident or migrant	References
Brown Creeper	<i>Certhia americana</i>	5	10	Y			Y	all year	(Blewett & Marzluff 2005)
House Wren	<i>Troglodytes aedon</i>	10	12	Y	Y			Summer	(Chamberlain et al. 2009)
Winter Wren	<i>Troglodytes hiemalis</i>	8	12	Y		Y		Summer	(Glennon & Kretser 2013)
Eastern Bluebird	<i>Sialia sialis</i>	28	32	Y		Y		Summer	
Veery	<i>Catharus fuscescens</i>	28	54	Y	Y	Y		Summer	
Wood Thrush	<i>Hylocichla mustelina</i>	40	50	Y		Y		Summer	
American Robin	<i>Turdus migratorius</i>	77	85	Y	Y	Y	Y	all year	(NABCI 2009)
Gray Catbird	<i>Dumetella carolinensis</i>	23	56	Y	Y	Y		Summer	(Balogh et al. 2011)
Brown Thrasher	<i>Toxostoma rufum</i>	67	89	Y	Y	Y		Summer	
European Starling	<i>Sturnus vulgaris</i>	60	96	Y		Y	Y	all year	(Blair 1996; Chamberlain et al. 2009)
Cedar Waxwing	<i>Bombycilla cedrorum</i>	32		Y	Y		Y	all year	
Ovenbird	<i>Seiurus aurocapilla</i>	16	28	Y	Y	Y		Summer	(Glennon & Kretser 2013)
Black-and-white Warbler	<i>Mniotilta varia</i>	8	15	Y	Y		Y	Summer	
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	7	12	Y	Y			Summer	
Common Yellowthroat	<i>Geothlypis trichas</i>	9	10	Y	Y	Y		Summer	
American Redstart	<i>Setophaga ruticilla</i>	6	9	Y		Y		Summer	
Bay-breasted Warbler	<i>Setophaga castanea</i>	10	17	Y				Summer	
Yellow Warbler	<i>Setophaga petechia</i>	9	11	Y				Summer	
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	10		Y	Y			Summer	
Pine Warbler	<i>Setophaga pinus</i>	9	15	Y				Summer	
Yellow-rumped Warbler	<i>Setophaga coronata</i>	12	13	Y				Summer	
Black-throated Green Warbler	<i>Carpodacus mexicanus</i>	7	11	Y		Y	Y	Summer	(Glennon & Kretser 2013)
Chipping Sparrow	<i>Spizella passerina</i>	11	16	Y	Y	Y		Summer	(Marzluff 1997)
Field Sparrow	<i>Spizella pusilla</i>	11	15	Y	Y	Y		Summer	
Vesper Sparrow	<i>Poocetes gramineus</i>	20	28	Y	Y	Y		Summer	

Appendix B continued

Common Name	Scientific Name	Ave mass (g)	Max. Mass (g)	Weight risk	Ground nesting risk	Ground Feeding risk	Bird Feeder risk	Resident or migrant	References
Savannah Sparrow	<i>Passerculus sandwichensis</i>	15	28	Y	Y	Y		Summer	
Song Sparrow	<i>Melospiza melodia</i>	12	53	Y	Y	Y	Y	all year	
Swamp Sparrow	<i>Melospiza georgiana</i>	11	24	Y	Y	Y		Summer	
White-throated Sparrow	<i>Zonotrichia albicollis</i>	22	32	Y	Y	Y	Y	Summer	(Glennon & Kretser 2013)
Scarlet Tanager	<i>Piranga olivacea</i>	23	38	Y	Y			Summer	
Northern Cardinal	<i>Cardinalis cardinalis</i>	42	48	Y	Y	Y	Y	all year	(Chamberlain et al. 2009)
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	39	49	Y				Summer	
Bobolink	<i>Dolichonyx oryzivorus</i>	29	56	Y	Y	Y		Summer	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	32	77	Y	Y	Y	Y	Summer	(Blair 1996)
Eastern Meadowlark	<i>Sturnella magna</i>	90	150	Y	Y	Y		Summer	
Common Grackle	<i>Quiscalus quiscula</i>	74	142	Y		Y		Summer	
Brown-headed Cowbird	<i>Molothrus ater</i>	38	45	Y	Y	Y	Y	Summer	(Blair 1996; Marzluff 1997)
Baltimore Oriole	<i>Icterus galbula</i>	30	40	Y				Summer	(Loss et al. 2013)
	<i>Haemorhous mexicanus</i>	16	27	Y	Y	Y	Y	all year	(Blair 1996; NABCI 2009)
Purple Finch	<i>Carpodacus purpureus</i>	18	32	Y			Y	all year	
American Goldfinch	<i>Spinus tristis</i>	11	20	Y	Y	Y	Y	Summer	(Peak 2003)
House Sparrow	<i>Passer domesticus</i>	27	29	Y	Y	Y	1	all year	(Blair 1996; Shaw et al. 2008; NABCI 2009)

Appendix C: Correlation analysis between variables affecting bird detectability and covariates (cat density and total vegetation) used to test the relationship between cat density and bird abundance and richness. Factors that may influence bird detectability included observer, vehicle activity, day or year (Julian Date), total vegetation, and time of day.

I used spearman bivariate plots, box plots and spearman correlation (figure 1; appendix C) to assess the correlation between each variable that may influence bird detectability and my variables of interest (cat density and total vegetation). I categorized values for vehicle activity (range 1 – 5; based on increasing traffic activity) and time (start times were grouped by 45 minute blocks and categorized with start times ranging from 4:30 am – 8:00 am).

I found no strong correlation between factors that influence detectability (observer, vehicle activity, day of the year (Julian date), amount of vegetation and time of day) at the count location, and my variables of interest (cat density, amount of vegetation). Likewise the boxplots (figure 2; appendix C) showed no strong relationship between detectability measures and outside cat density.

Appendix C continued

Figure 1: Bivariate boxplots and spearman correlation values between cat density, vegetation and variables which may influence bird detectability (observer, vehicle activity, day of the year (Julian date), amount of vegetation and time of day). Vehicle activity and time were categorized into broad groups.

Appendix C continued

Figure 2: Boxplots of cat density and three variables (Observer, Vehicle activity, Time of day and Day of the year) that may influence bird detectability.

Appendix D: Summary of site locations and variables used in site selection and as covariates in analysis for all sites (n = 100) where resident interviews were conducted. Site descriptions include geographic location, number of residences, human population density, and percent cover of the following land cover types: water, impervious surface (imperv.), forest cover (forest), tree crown (tree crown), grass or lawns (lawn), total vegetation (total veg.). Outside cat density, bird feeder density and observed squirrels (per hour) are also listed per site.

Note: Of the 100 sites sampled only 58 sites were included in the final analysis, as marked with an *. Criteria for sites to be included were: 1) corresponding bird data for 2014 was available, 2) at least one residence was interviewed; 3) the site was predominantly classified as Urban.

Site No.	Easting	Northing	No. Houses	Site classification	Human Population	Forest (%)	Tree Crown (%)	Water (%)	Imperv. (%)	Lawn (%)	Total Veg. (%)	Outside Cat Density	Squirrels	Bird Feeder density
1*	464461	5040124	7	Forest	4.27	54	1	0	11	34	89	7.00	1.8	7.00
4*	464916	5037972	2	Fields	3.83	17	0	0	6	77	94	0.00	0	2.00
18*	463638	5038307	2	Fields	4.02	5	0	0	4	90	95	0.00	0	2.00
20*	463833	5036358	120	Urban	216.22	0	0	0	51	49	49	11.80	0	7.34
29*	461425	5035922	200	Urban	370.58	0	7	0	48	44	51	20.00	6.6	16.00
36*	457200	5033543	15	Urban	67.01	69	1	0	10	20	90	14.00	3.6	15.00
44*	460581	5034147	115	Urban	351.50	6	5	0	48	41	52	5.75	0	42.52
49*	462370	5033015	41	Fields	212.12	2	2	0	22	73	77	0.00	0	0.00
58*	459110	5033150	75	Urban	248.43	2	6	0	47	45	53	19.01	15.6	19.52
61*	459383	5031227	16	Urban	74.01	16	3	0	24	56	91	4.52	3.6	9.13
64	458805	5030368	23	Fields	41.09	0	1	1	20	78	79	0.00	0	5.08
68	456401	5029935	3	Forest	0.56	40	1	0	12	46	87	0.00	6	2.00
73	452334	5029986	97	Urban	284.04	1	8	0	58	33	42	9.50	0	20.55
78	456154	5031065	135	Urban	235.94	6	6	0	70	18	30	16.21	1.8	20.30

Appendix D continued

Site No.	Easting	Northing	No. Houses	Site classification	Human Population	Forest (%)	Tree Crown (%)	Water (%)	Imperv. (%)	Lawn (%)	Total Veg. (%)	Outside Cat Density	Squirrels	Bird Feeder density
93	454342	5033829	0	Urban	7.12	1	3	0	100	0	3	0.00	0	0.00
97*	451620	5034379	17	Urban	45.08	35	4	0	17	45	84	0.00	3.6	8.50
117*	451062	5029559	22	Urban	15.44	5	3	0	51	40	48	10.92	0	7.28
121	452873	5027325	0	Urban	4.84	3	4	0	62	30	40	0.00	0	0.00
130*	454393	5025320	1	Fields	0.94	19	1	3	8	68	88	0.00	5.4	1.00
139*	449032	5027102	35	Urban	73.99	32	6	0	26	37	74	17.08	4.2	19.97
141*	448260	5028018	11	Urban	176.41	20	6	0	28	46	72	3.36	13.8	3.65
145*	449385	5030658	60	Urban	258.41	1	8	0	67	24	33	13.35	13.8	12.87
146*	448184	5031151	38	Urban	303.32	2	3	0	100	0	5	14.80	3	0.00
147	447248	5033516	16	Urban	45.73	47	0	0	18	34	82	0.00	11.4	6.40
158*	447077	5027472	85	Urban	307.05	6	17	0	56	21	44	32.99	2.4	25.60
174	443717	5023735	65	Urban	157.95	12	8	0	58	22	43	3.88	1.8	7.88
176	443935	5026804	5	Urban	13.72	13	2	0	58	27	42	0.00	7.2	0.00
178	445643	5027883	84	Urban	320.04	21	7	0	59	14	41	21.18	1.2	10.16
181*	444432	5024561	57	Urban	24.20	10	8	0	49	34	52	42.71	5.4	28.50
201*	464291	5023998	8	Fields	0.86	6	1	0	26	66	74	0.00	0	2.65
204*	463865	5025182	8	Forest	0.72	70	1	0	9	20	91	3.50	4.8	8.00
228	465855	5031795	1	Fields	2.60	6	1	1	6	87	94	0.00	0	1.00
231	466981	5029868	7	Urban	8.06	12	3	1	37	47	63	14.00	0	3.50
255	456892	5022333	1	Fields	2.12	54	0	0	6	40	94	0.00	0	0.00
260*	451100	5024096	88	Urban	263.99	6	8	0	51	35	49	22.96	0	21.12
263*	452062	5025064	8	Urban	29.08	12	3	0	58	27	41	0.00	1.2	0.00
270*	452959	5022218	1	Forest	0.94	79	0	0	4	17	96	0.00	0	1.00
279	445626	5025689	0	Urban	9.38	17	3	27	20	33	53	0.00	4.2	0.00
285*	447356	5023644	51	Urban	156.31	6	9	0	55	29	45	0.00	10.8	11.74

Appendix D continued

Site No.	Easting	Northing	No. Houses	Site classification	Human Population	Forest (%)	Tree Crown (%)	Water (%)	Imperv. (%)	Lawn (%)	Total Veg. (%)	Outside Cat Density	Squirrels	Bird Feeder density
287*	448237	5024233	74	Urban	150.95	6	6	0	55	33	45	5.80	2.4	22.91
290*	449309	5022651	59	Urban	181.72	2	9	0	77	12	23	5.50	10.8	11.80
316	454474	5016226	0	Fields	8.72	11	0	0	41	48	59	0.00	0	0.00
321*	453678	5011905	15	Urban	33.15	84	0	0	0	16	100	4.24	2.4	8.56
322*	452685	5010750	15	Urban	15.28	85	0	0	7	8	93	0.00	11.4	0.00
329*	451533	5012315	3	Fields	1.43	6	1	0	11	82	89	1.00	0	3.00
338	451499	5018818	0	Urban	16.00	1	3	0	89	7	11	0.00	0	0.00
341	453121	5019581	0	Fields	16.16	3	3	0	50	44	49	0.00	0	0.00
344*	454081	5017143	21	Fields	10.21	10	0	1	42	47	57	0.00	0	0.00
357	451036	5017836	0	Urban	16.16	14	0	0	78	8	22	0.00	0	0.00
368*	450797	5014364	23	Forest	1.43	34	1	0	26	38	74	2.30	0	9.20
378*	448677	5011577	1	Fields	1.88	1	2	0	8	90	93	0.00	0	0.00
379	448265	5012775	2	Fields	1.88	6	1	0	8	85	92	0.00	0	2.00
382	447436	5019372	0	Urban	1.60	1	2	0	87	9	13	0.00	0	0.00
388	448411	5021535	56	Urban	24.46	15	3	0	32	50	68	5.40	0	13.40
389*	445523	5014227	5	Urban	119.98	4	1	18	17	60	65	1.20	0	0.00
392*	445456	5017842	6	Fields	9.62	10	1	36	6	47	58	0.00	1.8	1.50
396	446002	5021546	100	Urban	225.63	11	10	2	46	31	52	8.85	3	31.15
398*	446754	5013923	3	Forest	67.45	67	0	0	18	14	82	0.00	0	0.00
410*	445483	5010871	8	Fields	2.47	4	1	0	13	82	87	0.00	1.8	5.35
411*	446699	5009270	9	Fields	2.47	5	4	0	26	65	74	2.98	6.6	6.02
416	445297	5009103	2	Fields	15.89	17	0	18	38	27	44	0.00	0	2.00
420	445018	5015897	13	Urban	9.69	6	4	22	16	52	63	0.00	1.8	7.80
423	445013	5020797	18	Urban	15.15	23	2	0	46	28	53	0.00	3	4.50
444*	443841	5014900	105	Urban	274.44	0	3	0	47	51	54	3.19	0	35.82

Appendix D continued

Site No.	Easting	Northing	No. Houses	Site classification	Human Population	Forest (%)	Tree Crown (%)	Water (%)	Imperv. (%)	Lawn (%)	Total Veg. (%)	Outside Cat Density	Squirrels	Bird Feeder density
446	442914	5012770	76	Urban	56.30	2	1	0	37	60	63	0.00	1.2	20.47
463*	440982	5013197	110	Urban	301.27	1	0	0	50	49	50	19.88	0	27.50
473*	442435	5015520	99	Urban	268.42	0	4	0	61	34	38	14.40	0	19.80
490	437542	5015816	4	Forest	11.75	24	2	0	10	64	90	12.00	6.6	4.00
491*	439434	5014557	21	Fields	74.15	25	5	0	14	56	86	7.10	3.6	14.05
493*	440760	5015323	33	Fields	136.95	7	2	0	25	66	74	17.34	1.8	11.92
498*	433056	5015631	70	Urban	117.70	33	1	0	26	39	72	20.80	1.8	21.67
508*	432982	5016998	46	Forest	154.05	45	5	0	22	28	78	3.17	0	21.57
519*	442826	5025339	100	Urban	438.74	9	8	0	54	29	45	0.00	1.2	14.02
527*	441476	5023814	77	Urban	208.30	8	10	0	74	8	26	26.02	1.2	32.26
532*	441886	5021279	71	Urban	184.35	3	10	0	47	40	53	0.00	7.2	23.16
539*	440186	5023966	86	Urban	172.69	18	5	0	54	23	46	34.49	6.6	53.65
541	439316	5025678	28	Urban	179.73	19	3	3	20	54	77	0.00	0	3.09
547	436569	5022642	58	Urban	50.53	16	4	0	24	56	76	12.09	3.6	32.45
571	433345	5021820	0	Urban	0.81	37	2	0	40	22	60	0.00	3.6	0.00
573*	435463	5021566	47	Urban	44.12	19	7	0	24	50	76	12.88	4.2	29.64
576*	433695	5022650	25	Urban	3.45	7	4	0	27	63	74	8.28	2.4	11.04
588*	431314	5016009	39	Urban	155.50	1	5	0	22	72	78	8.25	1.8	14.00
592	428027	5018958	89	Urban	153.98	11	7	0	52	30	48	9.59	1.2	28.40
598	431083	5014357	4	Fields	34.61	5	0	0	19	76	81	0.00	0	0.00
599*	432225	5023618	16	Forest	2.48	19	5	8	18	50	74	0.00	4.8	10.71
608	427023	5021545	10	Forest	91.30	19	2	0	19	60	81	2.00	0	6.00
623	428776	5020911	0	Urban	13.96	2	3	0	27	67	72	0.00	0	0.00
652	427202	5023048	6	Fields	141.55	5	4	0	20	70	80	1.20	1.8	3.60
665	427376	5015044	28	Urban	43.62	24	2	0	9	64	90	3.09	0	3.09

Appendix D continued

Site No.	Easting	Northing	No. Houses	Site classification	Human Population	Forest (%)	Tree Crown (%)	Water (%)	Imperv. (%)	Lawn (%)	Total Veg. (%)	Outside Cat Density	Squirrels	Bird Feeder density
667	428246	5017453	0	Urban	10.98	14	3	0	29	54	71	0.00	0	0.00
678	427173	5016190	0	Urban	5.79	3	0	0	59	38	41	0.00	0	0.00
680	428289	5012293	28	Urban	40.54	29	4	0	23	45	77	0.00	0	10.56
682	429164	5011513	9	Forest	28.24	40	4	0	10	47	91	7.19	1.8	5.40
683	428212	5010707	24	Urban	97.41	31	4	0	20	46	80	1.88	0	0.00
705*	426472	5011678	20	Forest	65.90	27	1	0	13	59	87	2.21	0	2.21
711	458469	5036693	98	Urban	211.54	5	7	0	49	40	52	26.50	3.6	32.44
717*	461013	5037617	68	Urban	58.34	38	2	0	23	37	77	17.62	1.2	23.75
722*	457040	5034473	2	Urban	20.83	4	1	0	82	11	16	0.00	0	0.00
751*	451119	5032250	26	Urban	282.44	40	1	0	23	36	77	5.30	1.8	5.40
786*	447299	5026372	10	Urban	258.13	51	2	1	25	22	75	4.31	2.4	5.71

Appendix E: List of interview questions and where appropriate possible responses, asked during resident interviews at each of 100 sites. Questions marked by (*) were only asked if the respondent owned a cat. Questioned marked by (**) required a separate response for both summer and winter.

No.	Question	Possible Responses
	Section 1. Cat Ownership	
1	Do you own a cat?	No - go to section 2. Yes - how many cats?
2*	What age is your cat?	
3*	Do any of your cats wear devices to reduce hunting? For example Bells.	Yes/no
4*	In SUMMER, how many hours does your cat spend outside?	None (it remains inside) 2 , 4, 8, over 8 hours
5*	In WINTER, how many hours does your cat spend outside?	None (it remains inside) 2 , 4, 8, over 8 hours
6*	How frequently does your cat capture, kill and or bring home MICE AND RATS?	Never Once a year Once a month Once every 2 weeks Once a week More than once a week
7*	How frequently does your cat capture, kill and or bring home BIRDS?	Never Once a year Once a month Once every 2 weeks Once a week More than once a week
8*	How frequency does your cat capture, kill or bring home other animals (please specify)	Never Once a year Once a month Once every 2 weeks Once a week More than once a week
	Section 2. Other Predators	
9	Do you have a bird feeder?	Yes /No
10.**	In your neighbourhood how often do you see squirrels?	Never Once a season

Appendix E continued

		Once a month Once a week Many times a day
10.**	In your neighbourhood how often do you see racoons?	Never Once a season Once a month Once a week Daily Many times a day Other
11.**	In your neighbourhood how often do you see other cats (not your own)?	Never Once a season Once a month Once a week Daily Many times a day Other
12.**	How many different cats do you see?	
13	Other comments?	

Appendix F1: Residents responses to interviews at 100 sites across Ottawa. For each survey the time when surveyed occurred (time, date) and location (street or suburb) was recorded. Residence were asked if they own a cat, have a bird feeder and at what frequency they see squirrels, raccoons and cats in their neighborhood during both winter and summer. Residents were asked to estimate the number of cats they see in summer. Responses to frequency were classified as ; NA = Not answered, 0 = Never, 1 = Many times a day, 2 = Once a day, 3 = Three times a week , 4 = Twice a week, 5 = Once a week, 6 = Once a fortnight , 7 = Once a month, 8 = Twice a season , 9 = 1 x season. Surveys marked with an * were completed online.

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
1	1	21	5	17:24	Lilac St	Yes	Yes	2	2	5	9	3	5	3	5
2	1	21	5	17:15	Lilac St	No	Yes	1	2	9	0	2	5	0	0
3	4	27	6	15:46	Frank Kenny	No	Yes	1	1	6	0	0	0	0	0
4*	4	28	6	18:44	K4C 1N8	No	Yes	1	1	7	0	0	0	0	0
5	18	27	6	15:59	Old Montreal	No	Yes	1	2	0	0	1	5	0	0
6	20	15	7	15:50	Lobelia	No	No	2	5	0	0	6	5	3	6
7	20	15	7	16:05	Bergamot	No	No	1	NA	5	NA	5	2	2	5
8	20	15	7	17:23	Bergamot	No	No	7	0	9	0	3	2	3	6
9	20	15	7	17:10	Bergamot	No	No	2	6	0	0	3	5	3	7
10	20	15	7	15:35	Lobelia	No	No	1	5	8	9	3	3	0	0
11	20	15	7	15:56	Bergamot	Yes	No	3	3	0	0	3	3	0	0
12	20	15	7	16:15	Springridge	No	No	0	NA	8	NA	2	7	NA	NA
13	20	15	7	16:00	Bergamot	Yes	No	1	1	2	7	2	7	0	0
14	20	15	7	16:15	Bergamot	Yes	No	5	6	9	0	2	4	1	6

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
15	20	15	7	16:20	Azalea	No	No	5	9	0	0	2	7	0	0
16	20	15	7	16:25	Azalea	No	No	1	9	2	0	2	2	0	0
17	20	15	7	16:30	Azalea	No	No	0	0	0	0	2	6	2	7
18*	20	15	7	21:50	Bergamot	No	No	1	1	9	9	2	5	0	0
19*	20	16	7	10:51	K4A 4P9	No	No	1	9	9	0	2	5	2	5
20	20	15	7	16:11	Springridge	Yes	Yes	1	1	4	0	1	2	0	0
21	20	15	7	17:01	Bergamot	No	No	7	9	0	0	1	7	1	7
22	20	15	7	16:55	Springridge	No	No	2	0	0	0	1	2	NA	NA
23	20	15	7	17:10	Lolibo	No	No	7	0	0	0	1	5	0	0
24	20	15	7	16:41	Bergamot	No	No	1	5	8	0	1	5	1	5
25	20	15	7	15:30	Lobelia	No	Yes	5	7	0	0	1	7	0	0
26	20	15	7	16:26	Azalea	No	No	5	NA	0	0	1	9	0	0
27	20	15	7	17:20	Bergamot	No	No	7	0	9	0	0	0	0	0
28	20	15	7	17:03	Bergamot	No	No	5	6	0	0	0	0	0	0
29	20	15	7	16:39	Bergamot	No	No	9	NA	9	NA	0	0	0	0
30	20	15	7	16:26	Springridge	No	No	4	0	7	0	0	0	0	0
31	20	15	7	15:45	Lobelia	No	No	1	0	0	0	0	0	0	0
32	20	15	7	15:40	Lobelia	Yes	No	2	0	0	0	0	0	0	0
33	20	15	7	16:10	Bergamot	No	No	2	0	7	0	0	0	0	0
34	20	15	7	16:20	Bergamot	Yes	No	5	7	0	0	0	0	0	0
35	20	15	7	16:28	Bergamot	No	No	0	0	0	0	0	0	0	0
36	20	15	7	16:40	Bergamot	No	No	0	0	0	0	0	0	0	0
37	29	17	6	15:40	Canotia	Yes	No	1	0	0	0	10	2	4	5
38	29	17	6	16:05	Canotia	Yes	No	1	1	7	0	10	1	0	0
39	29	17	6	15:30	Cheevers	No	No	1	0	0	0	5	1	5	0
40	29	17	6	15:45	Canotia	No	No	1	7	9	0	5	2	0	0
41	29	17	6	15:00	Cheevers	No	No	1	5	0	0	4	5	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
42	29	17	6	15:35	Cheevers	Yes	No	1	2	0	0	4	5	1	9
43	29	17	6	15:42	Canotia	No	No	2	9	0	0	4	4	0	0
44	29	17	6	15:54	Canotia	No	No	1	2	8	0	4	2	1	5
45	29	17	6	16:00	Canotia	No	No	1	0	0	0	4	2	1	9
46	29	17	6	16:30	Canotia	Yes	No	1	2	4	0	4	5	0	0
47	29	17	6	15:05	Cheevers	Yes	Yes	1	5	0	0	3	4	1	9
48	29	17	6	15:55	Canotia	No	Yes	1	1	0	0	3	1	0	0
49	29	17	6	16:00	Canotia	No	No	1	7	0	0	3	2	0	0
50	29	17	6	15:37	Hoskins	No	No	2	9	0	0	3	7	0	0
51	29	17	6	15:51	Canotia	No	No	1	1	3	0	3	4	3	4
52	29	17	6	16:02	Canotia	Yes	No	1	9	0	0	3	5	0	0
53	29	17	6	16:14	Canotia	Yes	No	2	3	0	0	3	6	0	0
54	29	17	6	16:23	Canotia	Yes	No	1	9	0	0	3	2	3	5
55	29	17	6	16:40	Valade	Yes	No	1	2	0	0	3	4	2	5
56	29	17	6	16:22	Valade	Yes	No	1	2	0	0	3	2	0	0
57	29	17	6	15:59	Valade	Yes	No	1	7	0	0	3	5	0	0
58	29	17	6	15:10	Cheevers	Yes	No	1	NA	0	NA	2	7	NA	NA
59	29	17	6	15:50	Canotia	No	No	1	2	0	0	2	1	1	9
60	29	17	6	15:15	Hoskins	No	No	1	5	7	9	2	5	0	0
61	29	17	6	15:19	Hoskins	No	No	1	9	0	0	2	6	0	0
62	29	17	6	15:30	Canotia	No	No	1	5	0	0	2	6	2	7
63	29	17	6	16:08	Canotia	Yes	No	1	2	7	0	2	5	1	9
64	29	17	6	16:35	Canotia	Yes	No	1	2	0	0	2	7	0	0
65	29	17	6	16:30	Valade	No	No	2	6	0	0	2	5	NA	NA
66	29	17	6	16:23	Valade	Yes	No	1	5	0	0	2	2	0	0
67	29	17	6	16:19	Valade	No	No	1	5	9	0	2	2	1	5
68	29	17	6	16:15	Valade	No	No	1	2	0	0	2	2	NA	NA

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
69	29	17	6	16:02	Valade	No	No	1	5	0	0	2	2	2	6
70	29	17	6	16:10	Valade	Yes	No	1	0	0	0	2	5	1	7
71	29	17	6	15:10	Valade	Yes	No	1	1	7	7	2	5	2	5
72	29	17	6	15:47	Valade	No	No	1	1	0	0	2	4	0	0
73	29	17	6	15:03	Parasol	No	No	1	NA	0	0	2	4	0	0
74	29	17	6	15:06	Parasol	No	No	1	5	0	0	2	7	0	0
75*	29	17	6	15:42	Hoskins	Yes	No	5	5	0	0	2	7	0	0
76*	29	18	6	13:56	Parasol	Yes	No	1	5	9	0	2	5	0	0
77*	29	25	6	18:15	Sidney	Yes	No	1	1	9	9	2	2	2	5
78	29	17	6	15:20	Cheevers	No	Yes	1	5	0	0	1	7	0	0
79	29	17	6	15:36	Canotia	Yes	No	1	7	9	0	1	9	0	0
80	29	17	6	16:23	Canotia	No	No	1	5	0	0	1	7	1	9
81	29	17	6	15:20	Parasol	No	No	1	2	0	0	1	9	1	9
82	29	17	6	15:13	Parasol	Yes	Yes	1	1	7	0	1	7	1	9
83	29	17	6	16:33	Parasol	No	No	1	5	0	0	1	7	0	0
84*	29	18	6	17:02	Valade	Yes	No	1	0	9	0	1	9	0	0
85	29	17	6	15:15	Cheevers	No	No	1	NA	9	NA	0	0	NA	NA
86	29	17	6	16:38	Valade	No	No	1	5	6	0	0	0	0	0
87	36	10	5	13:59	Belcastle	Yes	Yes	1	1	7	0	0	0	0	0
88	44	21	5	16:00	Midsummer	No	No	1	0	0	0	7	2	2	5
89	44	21	5	15:45	Midsummer	No	No	1	0	9	0	4	2	1	5
90	44	21	5	15:40	Midsummer	No	No	1	2	0	0	3	2	0	0
91	44	21	5	15:35	Midsummer	No	Yes	1	9	0	0	3	2	0	0
92	44	21	5	15:55	Midsummer	Yes	No	2	0	0	0	2	5	1	7
93	44	21	5	15:50	Midsummer	No	No	1	7	0	0	2	3	2	5
94	44	21	5	15:30	Midsummer	No	Yes	1	9	0	0	2	7	0	0
95	44	21	5	15:25	Midsummer	No	No	1	5	0	0	2	2	1	4

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
96	44	21	5	15:20	Wildflower	No	Yes	1	2	7	0	2	5	0	0
97	44	21	5	15:33	Leclair	No	No	4	4	3	0	2	6	0	0
98	44	21	5	15:32	Leclair	Yes	No	1	7	2	0	2	4	1	7
99	44	21	5	15:20	Daniston	No	No	1	5	5	0	2	2	0	0
100*	44	21	5	22:17	Leclair	No	No	1	5	7	0	2	7	0	0
101	44	21	5	16:06	Wildflower	No	Yes	1	1	0	0	1	4	0	0
102	44	21	5	15:24	Wildflower	No	Yes	2	5	0	0	1	5	1	9
103	44	21	5	15:15	Daniston	No	Yes	1	1	8	9	1	8	0	0
104	44	21	5	15:15	Wildflower	No	No	1	1	0	0	0	0	0	0
105	44	21	5	16:15	Wildflower	No	No	5	NA	9	NA	0	0	NA	NA
106	44	21	5	15:50	Pimpialle	No	Yes	1	1	NA	NA	0	0	0	0
107	49	17	6	17:20	Monaco	No	No	NA	NA	9	0	NA	NA	NA	NA
108	49	17	6	17:30	Monaco	No	No	1	0	2	0	10	2	0	0
109	49	17	6	17:33	Monaco	No	No	9	0	0	0	3	7	0	0
110	49	17	6	17:35	Monaco	No	No	9	0	0	0	2	9	0	0
111	49	17	6	17:19	Monaco	Yes	No	7	0	0	0	2	4	0	0
112	49	17	6	17:15	Selene	No	No	2	7	0	0	1	6	1	9
113	49	17	6	17:45	Monaco	No	No	1	5	0	0	1	9	0	0
114	49	17	6	17:30	Branthaven	No	No	9	NA	0	0	0	0	0	0
115	49	17	6	17:25	Monaco	No	No	7	0	0	0	0	0	0	0
116	49	17	6	17:28	Monaco	No	No	0	0	0	0	0	0	0	0
117	49	17	6	17:32	Monaco	No	No	9	0	0	0	0	0	0	0
118	49	17	6	17:20	Monaco	No	No	0	0	0	0	0	0	0	0
119	58	20	6	15:35	Simard	No	Yes	1	1	9	0	6	2	6	2
120	58	20	6	15:15	Simard	No	No	1	9	9	0	5	5	2	8
121	58	20	6	15:26	Simard	No	No	1	1	8	0	5	2	3	5
122	58	20	6	15:56	Boyer	Yes	Yes	1	1	0	0	5	4	2	5

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
123	58	20	6	16:03	Mary Jane	No	No	1	1	0	0	5	1	0	0
124	58	20	6	15:00	Chaine	No	No	1	0	0	0	4	2	2	2
125	58	20	6	15:52	Boyer	Yes	No	1	1	0	0	4	2	1	5
126	58	20	6	15:10	Chaine	No	Yes	1	2	0	0	3	3	3	5
127	58	20	6	16:03	Mary Jane	No	No	1	1	0	0	3	2	0	0
128	58	20	6	15:25	Simard	No	No	1	5	0	0	2	7	0	0
129	58	20	6	15:50	Boyer	No	No	1	6	0	0	2	5	0	0
130	58	20	6	16:00	Mary Jane	No	No	1	NA	0	NA	2	5	NA	NA
131	58	20	6	15:17	Simard	No	No	1	1	0	0	2	3	0	0
132*	58	23	6	9:23	Simard	Yes	Yes	1	1	7	7	2	2	1	5
133	58	20	6	15:12	Chaine	Yes	Yes	1	1	0	0	1	2	0	0
134	58	20	6	15:45	Boyer	No	No	1	NA	0	0	1	9	NA	NA
135	58	20	6	15:20	Chaine	No	No	1	3	0	0	1	7	0	0
136	58	20	6	15:22	Chaine	No	No	1	1	9	0	1	5	NA	NA
137	58	20	6	15:30	Simard	No	No	1	1	0	0	1	7	1	0
138	58	20	6	15:39	Simard	Yes	No	1	4	0	0	1	3	1	5
139	58	20	6	15:32	Simard	No	No	1	NA	NA	NA	0	0	0	0
140	58	20	6	15:48	Boyer	No	No	2	5	0	0	0	0	0	0
141	58	20	6	16:11	Boyer	No	Yes	0	NA	0	NA	0	0	NA	NA
142	61	10	5	14:50	Page	No	No	1	9	0	0	5	1	NA	NA
143	61	10	5	15:05	Page	No	Yes	1	1	8	0	5	2	5	2
144	61	10	5	15:10	Page	No	Yes	1	1	8	0	5	2	5	2
145	61	10	5	15:11	Page	No	No	0	0	0	0	3	5	NA	NA
146	61	10	5	14:56	Page	No	No	5	0	7	0	2	7	2	7
147	61	10	5	14:45	Page	Yes	Yes	1	5	9	0	1	2	0	0
148	61	10	5	14:40	Page	Yes	Yes	1	5	8	0	0	0	0	0
149	64	10	5	12:30	Keith	Yes	Yes	9	0	0	0	3	3	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
150	64	10	5	12:43	Keith	No	No	0	0	0	0	1	9	0	0
151	64	10	5	12:05	Keith	No	No	7	7	7	0	1	7	0	0
152	64	10	5	12:30	Keith	No	Yes	2	2	9	0	1	9	0	0
153	64	10	5	11:56	Keith	No	No	5	0	9	0	0	0	0	0
154	64	10	5	12:01	Keith	No	No	5	0	0	0	0	0	0	0
155	64	10	5	12:10	Keith	No	No	8	0	0	0	0	0	0	0
156	64	10	5	12:39	Keith	No	No	0	0	9	0	0	0	0	0
157	64	10	5	12:41	Keith	No	No	0	0	0	0	0	0	0	0
158	68	10	5	13:10	Maurice	No	NA	NA	NA	NA	NA	0	0	0	0
159*	73	12	5	18:10	Bortolli	Yes	No	1	0	0	0	3	7	3	7
160	73	12	5	16:05	Bortolli	No	No	1	2	0	0	6	2	0	0
161	73	12	5	16:45	Bradshaw	No	Yes	1	2	8	0	6	2	4	3
162	73	12	5	17:08	Bradshaw	No	No	1	NA	0	0	6	5	0	0
163	73	12	5	15:30	Bortolli	No	No	1	1	1	5	5	1	4	2
164	73	12	5	15:40	Bortolli	Yes	No	1	2	2	0	5	1	5	1
165	73	12	5	16:10	Bortelli	No	No	1	0	2	0	5	1	2	5
166	73	12	5	16:20	Bortelli	No	No	1	2	9	0	5	2	5	2
167	73	12	5	16:40	Bradshaw	Yes	No	1	5	6	0	5	5	2	7
168	73	12	5	16:07	Ridgebrook	No	No	1	7	8	0	4	1	4	1
169	73	12	5	15:50	Bortolli	No	No	1	3	5	0	4	1	1	5
170*	73	12	5	18:12	Maxime	No	Yes	1	5	9	0	4	2	2	5
171	73	12	5	15:56	Maxime	No	No	1	0	7	0	3	2	3	6
172	73	12	5	16:48	Bortolli	No	No	1	9	8	0	3	2	3	4
173	73	12	5	17:20	Bortolli	No	Yes	1	5	9	0	3	5	1	7
174	73	12	5	16:25	Bortelli	No	Yes	1	5	0	0	3	3	1	5
175	73	12	5	16:29	Bradshaw	No	No	2	0	5	0	3	7	0	0
176	73	12	5	17:00	Bradshaw	Yes	No	1	7	0	0	3	7	0	0

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Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
177	73	12	5	15:50	Maxime	No	No	1	1	5	0	2	4	0	0
178	73	12	5	16:10	Ridgebrook	No	Yes	1	5	9	0	2	2	NA	NA
179	73	12	5	17:11	Bortolli	No	No	1	5	4	9	2	5	2	5
180	73	12	5	15:45	Bortolli	Yes	No	1	6	5	8	2	5	1	9
181	73	12	5	16:00	Bortolli	Yes	No	1	9	0	0	2	3	1	5
182	73	12	5	16:50	Bradshaw	No	No	1	1	8	0	2	6	2	6
183	73	12	5	16:49	Bradshaw	No	No	1	5	0	0	2	5	0	9
184	73	12	5	16:45	Bradshaw	No	No	2	0	5	0	2	7	2	0
185	73	12	5	16:57	Bradshaw	Yes	No	1	7	9	0	2	9	0	0
186	73	12	5	17:03	Bradshaw	No	Yes	1	7	0	0	2	9	0	0
187	73	12	5	17:13	Bradshaw	No	No	1	5	0	0	2	5	0	0
188*	73	12	5	17:14	Bradshaw	No	No	1	7	5	9	2	5	1	5
189*	73	13	5	12:36	Maxime	No	No	1	9	0	0	2	7	0	0
190	73	12	5	15:55	Bortolli	No	No	1	1	0	0	1	5	1	5
191	73	12	5	16:15	Bortelli	No	No	1	0	5	0	1	2	0	0
192	73	12	5	16:45	Bradshaw	No	No	1	2	5	0	1	7	0	0
193	73	12	5	15:26	Meadowbrook	No	Yes	1	0	5	0	1	7	0	0
194	73	12	5	15:46	Meadowbrook	No	Yes	1	5	2	0	1	1	0	0
195	73	12	5	15:45	Meadowbrook	No	No	1	7	7	0	1	7	0	0
196	73	12	5	16:38	Bradshaw	No	Yes	1	1	7	0	1	5	0	0
197	73	12	5	17:20	Bradshaw	No	No	1	7	0	0	1	7	0	0
198*	73	13	5	10:09	Bortolli	No	No	1	1	0	0	1	5	1	5
199	73	12	5	16:18	Ridgebrook	No	No	1	0	0	0	0	0	0	0
200	73	12	5	16:12	Meadowbrook	No	No	1	0	0	0	0	0	0	0
201	78	22	7	16:55	Harwood	No	No	1	1	0	0	20	1	20	1
202	78	15	7	18:30	Harwood	Yes	No	1	1	5	0	7	2	3	2
203	78	15	7	18:20	Harwood	No	No	1	4	7	0	6	2	6	4

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Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
204	78	15	7	18:15	Harwood	Yes	No	1	0	7	0	6	4	2	5
205	78	22	7	16:55	Harwood	No	Yes	2	2	0	0	6	2	0	0
206	78	22	7	16:35	Harwood	No	No	1	1	9	0	6	2	6	NA
207	78	22	7	16:25	Harwood	No	No	1	1	9	0	6	2	4	2
208	78	22	7	17:15	Harwood	No	No	1	2	0	0	5	1	2	2
209	78	22	7	16:25	Harwood	Yes	No	1	1	7	0	5	1	1	9
210	78	22	7	16:50	Harwood	Yes	No	1	5	6	6	5	2	2	2
211*	78	27	7	13:58	Orient Park	Yes	Yes	1	1	Na	NA	5	2	8	2
212	78	22	7	17:00	Harwood	No	No	1	1	9	0	4	2	4	2
213	78	22	7	16:05	Harwood	No	Yes	1	1	7	0	4	2	4	1
214	78	22	7	16:31	Harwood	Yes	No	5	9	9	0	4	5	2	5
215	78	15	7	18:34	Harwood	No	No	2	9	8	0	3	5	NA	NA
216	78	22	7	16:10	Harwood	No	Yes	1	1	9	0	3	1	3	2
217	78	22	7	16:40	Harwood	No	No	1	1	NA	0	3	1	2	5
218	78	22	7	17:00	Harwood	No	No	1	2	0	0	3	5	0	0
219	78	22	7	16:20	Harwood	No	No	1	2	9	0	3	5	0	0
220	78	15	7	18:25	Harwood	No	No	1	3	5	0	2	2	NA	NA
221	78	22	7	17:10	Harwood	No	No	1	2	0	0	2	5	1	5
222	78	22	7	16:00	Harwood	Yes	No	1	1	9	0	2	5	0	0
223	78	22	7	16:15	Harwood	No	No	1	NA	0	0	2	5	0	0
224	78	22	7	16:20	Harwood	No	Yes	2	1	7	0	2	6	1	9
225	78	22	7	16:45	Harwood	No	No	1	0	0	0	2	4	1	8
226	78	22	7	16:40	Harwood	No	No	0	0	0	0	2	7	0	0
227	78	22	7	16:45	Harwood	No	No	1	2	9	0	2	9	0	0
228	78	22	7	16:30	Harwood	No	No	1	1	7	0	2	3	1	5
229*	78	22	7	17:14	Orient Park	Yes	No	1	1	0	0	2	2	2	5
230	78	15	7	18:26	Harwood	No	No	2	2	9	0	1	2	1	2

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Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
231	78	15	7	18:30	Harwood	No	No	2	2	0	0	1	7	0	0
232	78	22	7	16:35	Harwood	No	No	1	2	0	0	1	7	0	0
233	78	15	7	18:36	Harwood	No	No	1	2	0	0	0	0	0	0
234	93	27	6	18:40		No	No	9	0	0	0	1	9	0	0
235	97	23	5	16:20	Massey Lane	Yes	No	1	3	9	0	3	3	0	0
236	97	23	5	16:25	Massey Lane	No	Yes	1	5	0	0	1	5	1	5
237	97	23	5	16:30	Massey Lane	No	Yes	1	1	5	0	1	7	0	0
238	97	23	5	16:30	Massey Lane	No	No	2	NA	7	NA	1	7	NA	NA
239	97	23	5	16:35	Massey Lane	No	Yes	1	1	0	0	1	8	0	0
240	97	23	5	16:20	Massey Lane	No	No	0	0	9	0	0	0	0	0
241	117	12	5	18:25	Marchand	No	Yes	1	7	0	0	4	1	4	3
242	117	12	5	18:39	Marchand	Yes	No	2	5	9	0	4	6	0	0
243	117	12	5	18:30	Marchand	No	No	1	5	5	0	3	2	3	2
244	117	12	5	18:35	Marchand	Yes	No	2	5	0	0	3	2	2	5
245	117	12	5	18:25	Kensington	No	Yes	1	5	0	0	3	2	3	6
246	117	12	5	18:28	Kensington	No	No	4	9	0	0	2	2	2	2
247	121	27	6	18:10	Sheffield	No	No	9	0	0	0	0	0	0	0
248	130	1	8	16:38	Blake	No	Yes	1	2	0	0	5	2	3	5
249*	139	30	4	9:19	Highridge	Yes	Yes	1	1	0	0	3	2	2	5
250*	139	9	5	10:24	Highridge	Yes	Yes	1	5	9	0	3	5	2	5
251	139	29	4	16:59	Highridge	Yes	Yes	1	2	2	0	8	2	3	3
252	139	29	4	17:20	Highridge	No	No	1	2	7	0	4	2	1	2
253*	139	11	5	14:05	Crestview	Yes	Yes	1	1	9	0	4	2	3	2
254*	139	23	4	13:44	Briar	Yes	No	1	1	0	0	4	4	0	9
255	139	29	4	15:48	Billings	No	Yes	1	7	2	0	3	5	1	7
256	139	29	4	16:35	Briar	No	No	1	6	7	0	3	5	2	7
257	139	29	4	17:05	Crestview	No	No	1	1	9	0	3	4	1	4

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
258	139	29	4	16:25	Briar	No	Yes	1	5	9	0	2	9	1	9
259	139	29	4	16:00	Billings	No	No	2	5	0	0	1	9	0	0
260	139	29	4	16:05	Billings	No	No	1	5	9	0	1	4	0	0
261	139	29	4	16:43	Briar	No	Yes	1	2	9	0	1	5	1	7
262	139	29	4	15:50	Billings	No	Yes	1	2	4	6	0	0	0	0
263*	141	17	4	17:00	Abbey	Yes	Yes	1	1	5	0	3	2	1	7
264*	141	17	4	13:25	Abbey	No	No	1	1	5	0	3	2	2	5
265*	141	17	4	20:43	Balfour	Yes	No	1	7	7	9	5	5	2	7
266	141	6	5	16:20	Abbey	No	Yes	1	1	7	0	3	1	3	5
267	141	6	5	16:25	Abbey	No	No	1	3	0	0	3	2	3	6
268	141	6	5	16:30	Balfour	No	No	1	2	5	0	3	2	3	7
269	145	18	7	15:35	Newman	Yes	Yes	1	1	2	0	8	2	4	2
270	145	18	7	15:00	Lawson	No	Yes	1	1	0	0	7	2	7	5
271	145	18	7	15:44	Donald	No	No	1	2	8	0	5	7	NA	NA
272*	145	24	7	9:49	Newman	Yes	No	1	7	9	0	5	2	1	7
273	145	18	7	15:21	Lawson	No	NA	1	1	5	0	4	2	NA	NA
274	145	18	7	15:20	Lawson	No	No	1	3	4	0	3	2	1	7
275	145	18	7	15:53	Donald	No	No	1	5	9	0	2	5	2	7
276	145	18	7	15:30	Newman	No	No	1	1	9	0	2	5	1	6
277*	145	18	7	16:21	Frances	No	No	1	1	9	0	1	9	0	0
278	145	18	7	16:01	Frances	No	No	2	5	4	0	0	0	0	0
279	145	18	7	15:58	Donald	No	No	0	NA	0	NA	0	0	NA	NA
280	145	18	7	15:49	Donald	No	No	1	2	5	0	0	0	0	0
281*	145	19	7	16:02	Frances	Yes	No	1	1	0	0	0	0	0	0
282	146	9	6	15:20	Gladys	No	No	1	5	5	0	15	2	4	2
283	146	9	6	14:48	Maple	No	No	1	2	0	0	5	1	NA	NA
284	146	9	6	14:57	Maple	No	No	1	7	9	0	5	1	5	5

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
285*	146	9	6	17:14	Olmstead	Yes	No	7	0	0	0	4	2	0	0
286*	146	9	6	20:06	Maple	Yes	No	1	5	9	0	2	5	1	5
287	147	23	5	17:00	Crescent	No	Yes	1	5	2	0	2	5	0	0
288*	147	23	5	21:18	Cloverdale	No	No	1	1	5	5	2	9	0	0
289	147	23	5	17:00	Hillsdale	No	Yes	1	5	9	0	1	3	1	7
290	147	23	5	17:15	Crescent	No	No	1	4	0	0	0	0	0	0
291	147	23	5	17:20	North Court	No	No	1	NA	8	0	0	0	0	0
292*	158	16	4	13:53	K1S 0P6	No	No	1	5	7	0	3	2	0	0
293	158	5	6	15:13	Riverdale	Yes	No	1	NA	0	0	8	2	2	5
294	158	5	6	16:05	Glencairn	Yes	No	1	1	5	0	5	2	1	9
295	158	5	6	16:00	Glencairn	No	Yes	1	1	2	9	5	2	4	4
296	158	5	6	16:08	Southern	Yes	No	1	5	8	0	5	3	0	0
297	158	5	6	16:12	Southern	No	No	1	1	7	9	5	5	5	7
298*	158	28	7	14:32	Avenue	Yes	No	1	1	5	7	5	2	NA	NA
299	158	5	6	15:30	Southern	No	No	1	1	9	9	4	5	4	6
300	158	5	6	16:15	Avenue	No	Yes	1	7	7	0	3	5	0	0
301	158	5	6	16:12	Glencairn	No	No	1	1	8	0	3	2	0	0
302	158	5	6	15:38	Southern	No	No	2	7	9	0	3	2	1	5
303	158	5	6	15:32	Southern	No	No	1	5	9	0	3	4	1	7
304	158	5	6	16:15	Southern	No	Yes	1	1	9	0	3	5	1	9
305	158	5	6	15:20	Riverdale	Yes	No	1	1	8	0	2	4	1	8
306	158	5	6	15:36	Riverdale	No	No	1	5	0	0	2	4	0	0
307	158	5	6	16:35	Avenue	No	Yes	1	7	5	9	2	5	0	0
308	158	5	6	16:20	Southern	No	No	1	1	2	0	2	1	0	0
309*	158	16	4	16:47	Southern	Yes	Yes	1	1	9	0	2	2	1	5
310	158	5	6	15:20	Riverdale	No	No	1	9	0	0	1	5	0	0
311	158	5	6	17:50	Avenue	No	No	1	2	0	0	1	6	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
312	158	5	6	15:08	Southern	No	Yes	1	1	0	0	1	5	1	7
313	158	5	6	15:35	Southern	No	No	1	7	0	0	1	7	0	0
314*	158	17	4	10:46	Southern	Yes	Yes	1	1	7	0	1	7	0	7
315	174	19	6	17:22	Grenoick	No	No	1	7	0	0	5	3	2	7
316	174	19	6	18:07	Hilbrook	Yes	No	1	5	9	0	5	2	1	7
317	174	19	6	17:49	deer park	No	No	1	5	9	0	3	2	2	5
318	174	19	6	17:55	Hilbrook	No	No	1	2	9	0	3	5	0	0
319	174	19	6	17:00	deer park	No	No	1	1	2	0	3	7	1	9
320	174	19	6	17:30	Hilbrook	No	No	1	1	0	0	3	3	3	9
321	174	19	6	17:45	Hilbrook	No	Yes	1	1	0	0	3	2	0	0
322	174	19	6	18:11	Hilbrook	Yes	No	1	5	0	0	3	5	NA	NA
323	174	19	6	17:28	Hilbrook	No	No	5	4	8	8	2	5	0	0
324	174	19	6	17:05	deer park	No	No	1	7	6	0	2	7	0	0
325	174	19	6	17:15	Hilbrook	No	No	1	0	7	0	2	1	0	0
326	174	19	6	17:40	Hilbrook	No	Yes	1	5	0	0	2	4	1	9
327	174	19	6	17:45	deer park	No	No	1	5	0	0	1	7	0	0
328	174	19	6	18:15	Hilbrook	Yes	No	1	4	0	0	1	5	1	5
329	174	19	6	17:59	Hilbrook	No	No	4	3	0	0	0	0	0	0
330	174	19	6	17:50	Hilbrook	No	No	7	7	0	0	0	0	0	0
331*	176	9	7	19:44	Gwynne	No	No	1	5	7	9	5	2	2	5
332	176	8	7	15:27	Fairmont	No	No	1	5	7	9	3	5	2	7
333	178	4	6	15:04	Clemow	Yes	No	1	2	2	7	5	1	5	1
334	178	4	6	15:44	Glebe	No	No	1	1	2	0	5	2	5	2
335	178	4	6	15:47	Glebe	No	Yes	1	5	5	0	4	2	4	5
336	178	4	6	16:50	first	Yes	No	1	7	7	9	4	4	4	4
337	178	4	6	15:57	Glebe	No	No	1	1	6	0	3	5	2	6
338	178	4	6	17:47	first	No	No	1	5	5	0	3	3	2	6

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
339	178	4	6	15:24	Clemow	Yes	No	1	5	7	0	2	2	2	7
340	178	4	6	16:07	Glebe	No	No	1	NA	2	0	2	2	NA	NA
341	178	4	6	17:15	first	No	No	1	2	4	0	2	2	NA	NA
342	178	4	6	17:02	first	No	No	1	1	2	NA	2	2	2	2
343	178	4	6	16:56	first	No	No	1	2	5	NA	2	3	2	3
344	178	4	6	17:25	first	No	No	2	5	6	0	2	5	1	9
345	178	4	6	16:39	first	No	Yes	1	7	6	0	1	2	1	2
346	178	4	6	17:06	first	No	No	1	1	5	5	1	2	1	2
347	178	4	6	17:21	first	Yes	No	1	1	7	0	1	2	1	NA
348	178	4	6	17:25	first	No	No	NA	NA	0	0	1	6	0	0
349*	181	23	6	20:36	Wilshire	No	No	1	1	7	0	3	7	0	0
350	181	12	6	16:40	Sanford	No	Yes	1	1	5	0	12	2	2	5
351	181	12	6	17:20	Sanford	No	Yes	1	1	0	8	12	2	5	5
352	181	12	6	17:48	Sanford	No	Yes	1	1	NA	0	5	2	0	0
353	181	12	6	18:13	Wilshire	No	No	1	1	2	0	5	5	2	7
354*	181	15	5	18:23	Morley	Yes	Yes	1	1	5	9	5	2	3	5
355*	181	12	6	18:30	K2C1R2	No	No	1	1	7	0	5	1	5	2
356	181	12	6	17:13	Sanford	No	Yes	1	1	3	7	4	2	0	0
357	181	12	6	16:45	Morley	Yes	No	1	1	5	0	3	2	0	0
358	181	12	6	17:05	Chandler	Yes	No	1	2	2	0	2	2	0	0
359	181	12	6	16:55	Morley	Yes	No	1	2	0	0	2	5	0	0
360	181	12	6	17:30	Sanford	No	Yes	1	2	2	0	2	5	0	0
361*	181	15	6	19:29	Morley	Yes	Yes	1	0	9	0	2	7	0	0
362*	181	12	6	17:54	Sanford	No	No	1	7	NA	0	2	2	0	0
363	181	12	6	16:43	Prince of Wales	No	Yes	1	1	8	0	1	7	0	0
364	181	12	6	17:56	Sanford	Yes	Yes	1	1	2	0	1	7	0	0
365*	181	27	5	8:02	Sanford	Yes	Yes	1	1	7	0	1	5	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
366	181	12	6	16:05	Morley	No	No	1	1	0	0	0	0	0	0
367	181	12	6	16:10	Prince of Wales	No	No	1	1	7	0	0	0	0	0
368	181	12	6	16:21	Prince of Wales	No	No	1	NA	8	0	0	0	0	0
369	185	9	6	15:27	Gladys	No	Yes	1	NA	9	NA	0	0	NA	NA
370	201	26	4	15:45	Russel	No	No	1	1	9	0	10	1	8	2
371	201	26	4	15:30	Russel	No	No	1	1	0	0	10	2	10	2
372	201	26	4	15:20	Boundary	No	Yes	1	5	5	0	10	2	10	5
373*	204	30	4	9:16	Boundary	No	Yes	1	5	0	0	3	8	2	9
374	204	26	4	14:47	Boundary	Yes	Yes	1	1	5	0	3	5	0	0
375	204	26	4	14:30	Boundary	No	Yes	1	1	0	0	2	5	2	5
376	204	26	4	14:15	Boundary	Yes	Yes	1	3	7	NA	1	1	1	2
377	228	27	6	16:20	Trim	No	Yes	1	1	7	0	0	0	0	0
378	231	27	6	16:49	Colonial	Yes	Yes	1	NA	0	0	2	2	1	2
379	231	27	6	16:34	Loeper	No	No	5	7	0	0	2	5	0	0
380	255	26	4	16:00	Letnic Rd	No	No	NA	NA	NA	NA	0	0	0	0
381*	260	23	4	19:36	Upwood	Yes	No	1	9	5	0	12	1	8	2
382	260	23	4	17:05	Upwood	No	No	1	1	9	0	6	1	6	1
383	260	23	4	16:30	Upwood	No	Yes	1	2	7	9	5	2	2	7
384*	260	23	4	22:47	Upwood	Yes	No	1	1	7	9	5	2	2	2
385	260	23	4	16:23	Upwood	No	No	1	1	0	0	4	1	3	2
386	260	23	4	16:50	Upwood	No	Yes	1	5	0	0	4	2	1	2
387	260	23	4	17:09	Allenford	Yes	No	1	5	5	7	4	2	2	2
388	260	23	4	17:50	Bramblegrove	Yes	Yes	1	4	0	0	4	4	2	7
389	260	23	4	15:12	Allenford	No	No	1	2	5	0	3	2	3	0
390	260	23	4	15:45	Allenford	No	Yes	1	7	9	7	3	2	3	5
391	260	23	4	15:57	Allenford	No	No	1	1	9	0	3	2	0	0
392	260	23	4	16:20	Upwood	No	No	2	NA	0	NA	3	3	3	3

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
393	260	23	4	16:04	Allenford	Yes	No	1	2	0	0	3	2	3	2
394	260	23	4	16:40	Upwood	No	Yes	1	1	6	0	3	6	2	7
395	260	23	4	17:20	Allenford	No	No	1	0	0	0	3	5	3	4
396	260	23	4	17:42	Bramblegrove	No	No	1	NA	0	0	3	1	3	2
397	260	23	4	17:57	Briermore	No	No	1	5	0	0	3	7	3	9
398	260	23	4	16:46	Upwood	No	No	1	NA	0	0	2	2	0	0
399	260	23	4	17:30	Upwood	No	No	3	6	0	0	2	5	1	7
400	260	23	4	17:52	Bramblegrove	No	No	1	5	7	0	2	5	2	7
401	260	23	4	18:10	Briermore	Yes	Yes	1	1	0	0	2	4	2	4
402	260	23	4	15:19	Allenford	No	No	1	2	0	0	1	7	1	9
403	260	23	4	15:30	Allenford	No	No	1	4	0	0	1	2	0	0
404	260	23	4	18:17	Briermore	Yes	No	1	1	0	0	1	9	0	0
405	260	23	4	18:05	Briermore	No	No	2	NA	0	0	0	0	0	0
406	263	8	7	15:38	Cellini	No	No	2	7	9	0	2	2	0	0
407	263	8	7	15:24	Cellini	No	No	2	7	8	0	2	5	1	9
408	263	8	7	15:35	Cellini	No	No	1	4	0	0	1	7	0	0
409	263	8	7	15:28	Cellini	No	No	1	4	9	0	1	2	0	0
410	270	25	6	19:59	Davidson	No	Yes	1	1	7	0	0	0	0	0
411	279	24	7	15:00	University	No	No	2	5	0	0	0	0	0	0
412*	285	25	6	18:05	K1V 6Y1	No	No	1	1	0	0	3	5	1	7
413	285	25	6	15:43	Thorndale	No	No	1	NA	9	0	5	2	NA	NA
414	285	25	6	17:05	Thorndale	No	Yes	1	1	7	0	2	5	2	7
415	285	25	6	16:55	Thorndale	No	No	1	NA	0	NA	2	6	NA	NA
416	285	25	6	17:24	Thorndale	No	No	1	NA	0	0	2	2	0	0
417	285	25	6	17:29	Thorndale	No	No	1	2	0	0	2	5	2	7
418	285	25	6	17:14	Thorndale	No	No	1	9	8	0	2	5	0	0
419	285	25	6	16:06	Rand	No	Yes	4	9	9	0	2	5	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
420	285	25	6	15:57	Garwood	No	No	1	1	0	0	2	4	1	8
421	285	25	6	17:11	Thorndale	No	No	1	1	4	0	1	5	1	5
422	285	25	6	16:41	Thorndale	No	No	1	1	8	0	1	6	NA	NA
423*	285	26	6	15:04	Rand	No	Yes	1	1	5	9	1	5	0	0
424*	285	26	6	8:45	Thorndale	No	No	1	0	9	0	1	9	0	9
425	287	26	6	14:55	Vancouver	No	No	1	2	7	9	6	2	2	4
426	287	26	6	15:00	Vancouver	No	No	1	1	5	7	4	2	4	4
427	287	26	6	14:58	Banff	Yes	No	2	2	7	0	3	3	3	NA
428	287	26	6	15:33	Brookline	Yes	No	2	NA	0	NA	3	2	NA	NA
429	287	26	6	14:50	Vancouver	Yes	Yes	1	2	9	0	3	2	4	2
430	287	26	6	15:20	Surrey	No	No	1	4	2	0	2	2	2	5
431	287	26	6	15:42	Brookline	No	Yes	1	1	0	0	2	5	2	7
432	287	26	6	15:10	Surrey	No	No	2	0	9	0	2	5	0	0
433*	287	18	7	16:20	Brookline	Yes	Yes	1	1	7	7	2	5	2	7
434	287	26	6	15:09	Surrey	No	No	0	0	0	0	1	2	NA	NA
435	287	26	6	15:28	Brookline	No	No	1	1	2	0	1	9	0	0
436	287	26	6	15:05	Notting Hill	Yes	No	2	0	0	0	1	5	1	7
437*	287	26	6	15:42	Brookline	No	Yes	1	5	0	0	0	0	0	0
438	290	25	6	19:33	Holmes	Yes	No	1	1	8	0	6	4	6	5
439	290	26	6	16:33	Southgate	No	No	1	1	0	0	5	2	2	2
440	290	25	6	19:21	Holmes	Yes	No	1	1	4	0	3	2	1	2
441	290	26	6	16:59	Southgate	No	No	1	NA	3	0	3	2	3	2
442	290	26	6	16:35	Southgate	No	Yes	1	1	5	7	3	2	1	5
443	290	25	6	19:16	Holmes	No	No	1	1	9	0	2	3	1	7
444	290	26	6	16:47	Southgate	No	No	1	1	7	9	2	2	2	5
445	290	26	6	16:40	Southgate	Yes	No	1	NA	0	NA	2	7	NA	NA
446	290	26	6	16:10	Southgate	No	No	1	4	0	0	2	7	1	9

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
447	290	26	6	16:15	Southgate	No	No	1	1	8	0	2	8	0	0
448	290	25	6	19:30	Holmes	No	Yes	1	1	0	0	1	7	0	0
449	290	25	6	19:07	Fontenay	No	No	1	1	0	0	1	2	0	0
450	290	25	6	19:24	Holmes	No	No	1	2	0	0	1	2	1	4
451	290	25	6	19:20	Southgate	No	No	1	5	0	0	1	2	0	0
452	290	26	6	17:13	Southgate	No	Yes	1	0	9	NA	1	2	1	7
453	290	26	6	16:45	Southgate	No	No	1	1	0	0	1	2	0	0
454	290	26	6	16:50	Southgate	No	No	1	1	0	0	1	2	0	0
455	290	26	6	16:55	Southgate	Yes	No	1	1	0	0	1	2	0	0
456	290	25	6	19:36	Holmes	No	Yes	1	NA	7	0	0	0	0	0
457	290	26	6	16:00	Southgate	No	No	1	5	0	3	0	0	0	0
458	316	25	6	18:30	Bank	No	No	0	0	0	0	0	0	0	0
459	321	20	5	17:50	Woodstream	No	No	1	7	9	0	3	2	0	0
460	321	20	5	17:28	Tintern	Yes	Yes	1	4	6	0	2	5	0	0
461	321	20	5	17:40	Woodstream	No	Yes	1	4	0	0	2	9	0	0
462	321	20	5	17:30	Tintern	Yes	Yes	7	0	9	0	1	2	1	2
463	321	20	5	17:55	Woodstream	Yes	No	1	0	0	0	1	2	1	5
464	321	20	5	18:10	Woodstream	No	Yes	1	2	0	0	1	7	0	0
465*	321	20	5	19:41	Woodstream	Yes	No	5	9	0	0	1	0	0	0
466	322	8	7	16:35	Fox Valley	No	No	1	2	0	0	3	3	0	0
467	322	8	7	16:24	Fox Valley	No	No	2	5	9	0	1	7	0	0
468	322	8	7	16:39	Gordon Pratt	No	No	1	8	0	0	1	NA	NA	NA
469	329	20	5	17:06	Bowesville	Yes	Yes	1	4	0	0	0	0	0	0
470	338	26	5	16:30	Fenton	No	No	9	0	0	0	1	9	0	0
471	341	25	6	18:23	Bank	No	Yes	1	0	0	0	0	0	0	0
472	344	7	5	16:03	Bank	No	No	2	0	0	0	0	0	0	0
473	344	7	5	16:12	Bank	No	No	2	NA	0	NA	0	0	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
474	344	7	5	16:15	Bank	No	No	2	7	9	0	0	0	0	0
475	357	25	6	18:10	Del Zotto	No	No	7	0	0	0	1	9	0	0
476	368	20	5	16:19	Ficko	No	No	1	1	5	0	4	2	2	2
477	368	20	5	16:46	Bowesville	Yes	No	1	1	0	0	4	5	1	5
478	368	20	5	16:08	Ficko	No	No	1	4	5	0	3	4	0	0
479	368	20	5	16:28	Ficko	No	Yes	1	1	4	0	3	4	0	0
480	368	20	5	16:05	Ficko	No	No	1	7	0	0	3	2	0	0
481	368	20	5	15:53	Ficko	No	Yes	1	2	9	0	3	3	0	0
482	368	20	5	16:27	Ficko	No	No	1	1	0	0	2	2	2	2
483	368	20	5	16:30	Ficko	No	Yes	1	1	0	0	2	5	0	0
484	368	20	5	15:48	Bowesville	Yes	Yes	1	1	4	0	1	2	1	9
485	368	20	5	16:41	Bowesville	No	No	1	2	0	0	1	5	1	7
486	378	8	7	17:40	Limebank	No	No	7	9	0	0	0	0	0	0
487	379	8	7	16:20	Limebank	No	Yes	5	0	9	0	1	9	0	0
488	382	8	7	17:59	Airport Parkway	No	No	0	0	0	0	0	0	0	0
489	388	14	5	17:20	Wyman	Yes	No	1	5	0	0	5	2	2	7
490	388	14	5	17:15	Wyman	No	No	1	1	9	9	3	5	0	0
491	388	14	5	17:26	Wyman	No	No	1	1	8	9	3	7	3	8
492	388	14	5	17:05	Wyman	No	No	1	1	9	0	3	5	3	6
493	388	14	5	17:10	Wyman	No	No	1	2	4	0	3	4	0	0
494	388	14	5	17:11	Wyman	No	No	5	2	0	0	2	5	2	7
495	388	14	5	17:48	Wyman	No	No	1	0	0	0	2	3	0	0
496	388	14	5	17:45	Wyman	No	No	1	2	0	0	2	7	0	0
497	388	14	5	17:10	Wyman	Yes	Yes	1	1	0	0	1	8	0	0
498	388	14	5	17:35	Wyman	No	Yes	1	1	0	0	1	7	1	7
499	388	14	5	17:30	Wyman	No	Yes	1	2	9	NA	1	6	0	0
500	388	14	5	17:17	Wyman	Yes	No	1	5	0	0	1	4	1	4

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
501	388	14	5	17:42	Wyman	No	Yes	5	2	0	0	1	8	0	0
502	388	14	5	17:05	Wyman	No	No	1	5	0	0	1	8	0	0
503	388	14	5	17:30	Wyman	No	No	1	9	0	0	1	7	0	0
504	388	14	5	17:40	Wyman	No	No	2	2	9	0	1	8	0	0
505	388	14	5	17:36	Wyman	No	No	1	3	0	0	0	0	0	0
506	388	14	5	17:37	Wyman	No	No	4	7	0	0	0	0	0	0
507	388	14	5	17:20	Wyman	No	No	1	5	0	0	0	0	0	0
508	388	14	5	17:25	Wyman	No	No	1	9	5	9	0	0	0	0
509	388	14	5	17:35	Wyman	No	Yes	1	2	7	0	0	0	0	0
510	389	16	7	16:07	Riversedge	Yes	No	0	0	0	0	2	8	0	0
511	389	16	7	16:11	Riversedge	No	No	0	0	0	0	2	9	1	8
512	389	16	7	16:06	Riversedge	Yes	No	1	1	0	0	1	5	0	0
513	389	16	7	16:10	Trailgate	No	No	7	NA	0	NA	0	0	NA	NA
514	389	16	7	16:20	Trailgate	No	No	0	NA	0	NA	0	0	NA	NA
515	392	7	5	17:15	Rideau Cove	No	No	5	0	0	0	2	2	0	0
516	392	7	5	17:20	Rideau Cove	No	Yes	1	5	0	0	2	5	2	7
517	392	7	5	16:02	Rideau Cove	No	No	4	4	0	0	1	7	NA	NA
518	392	7	5	16:55	Rideau Cove	Yes	No	4	NA	0	0	0	0	0	0
519	396	14	5	15:20	Glesby	Yes	No	1	2	5	0	6	4	2	4
520	396	14	5	15:40	Hackett	No	Yes	1	0	9	0	6	4	0	0
521*	396	14	5	17:00	K1V 0P8	No	No	1	5	7	0	5	2	5	2
522	396	14	5	15:58	Webley	No	No	1	2	7	0	4	2	4	2
523	396	14	5	15:00	Gillespie	No	No	1	1	9	9	4	2	4	2
524	396	14	5	15:20	Hackett	No	No	1	1	9	8	4	3	4	2
525	396	14	5	15:25	Hackett	Yes	Yes	1	1	7	0	4	3	3	3
526	396	14	5	15:00	Glesby	No	Yes	1	2	9	0	4	2	2	2
527	396	14	5	15:25	Glesby	No	No	1	7	5	0	4	2	1	7

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
528	396	14	5	15:50	Hackett	No	No	2	5	8	0	4	5	2	7
529	396	14	5	16:05	Hackett	No	No	1	1	9	0	4	2	2	7
530*	396	14	5	16:54	k1v 0h7	No	No	1	5	9	0	4	2	4	5
531	396	14	5	15:36	Webley	No	No	1	1	9	0	3	4	3	5
532	396	14	5	15:44	Webley	No	Yes	1	2	0	0	3	2	3	2
533	396	14	5	16:09	Webley	Yes	No	1	7	7	0	3	2	1	9
534	396	14	5	15:05	Gillespie	No	Yes	1	0	7	0	3	2	1	6
535	396	14	5	15:38	Hackett	No	Yes	1	1	4	0	3	2	1	5
536	396	14	5	16:15	Hackett	No	Yes	1	1	1	0	3	1	1	1
537	396	14	5	16:42	Hackett	No	No	1	1	1	1	3	2	1	5
538	396	14	5	15:15	Glesby	No	No	8	0	9	0	3	4	2	5
539	396	14	5	15:55	Hackett	No	No	1	5	5	8	3	5	0	0
540	396	14	5	15:06	Springer	No	No	1	2	0	0	2	2	2	5
541	396	14	5	15:16	Springer	Yes	Yes	1	3	8	0	2	2	2	2
542	396	14	5	16:04	Webley	No	No	1	NA	7	NA	2	2	NA	NA
543	396	14	5	15:35	Hackett	No	No	1	7	0	0	2	7	2	9
544	396	14	5	16:30	Hackett	Yes	No	1	0	0	0	2	2	2	7
545	396	14	5	15:30	Hackett	No	Yes	1	5	9	0	2	2	0	0
546	396	14	5	15:35	Hackett	No	No	1	2	8	0	2	2	1	0
547	396	14	5	16:10	Hackett	Yes	No	1	1	9	0	2	4	1	5
548	396	14	5	15:10	Springer	No	No	1	NA	0	NA	1	1	NA	NA
549	396	14	5	15:23	Springer	No	No	1	1	9	0	1	2	0	0
550	396	14	5	15:48	Webley	No	Yes	1	1	9	0	1	2	NA	NA
551	396	14	5	16:30	Webley	No	Yes	1	2	4	0	1	4	0	0
552	396	14	5	16:00	Hackett	No	No	1	0	9	0	1	2	0	0
553	396	14	5	16:00	Hackett	No	No	1	8	0	0	1	9	0	0
554	398	8	7	17:18	Sandy Forest	No	No	1	1	9	0	3	2	3	7

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
555	410	16	7	16:59	River	No	Yes	1	1	7	0	1	2	1	2
556	410	16	7	16:52	River	Yes	Yes	1	2	9	0	1	4	1	4
557	410	16	7	16:49	Rideau	No	No	2	NA	9	NA	1	2	NA	NA
558	411	11	7	18:00	Old Mill	No	Yes	1	4	0	0	4	4	4	6
559	411	11	7	18:15	Old Mill	Yes	No	2	2	2	0	2	5	2	5
560	411	11	7	18:05	Old Mill	Yes	Yes	2	2	2	0	2	5	2	5
561	416	8	7	18:16	North	No	Yes	1	2	0	0	0	0	0	0
562	420	10	6	17:45	Queen Anne	No	Yes	1	2	9	0	2	7	1	9
563	420	10	6	17:58	Queen Anne	No	No	2	7	0	0	1	7	0	0
564	420	10	6	17:43	Queen Anne	No	Yes	2	2	2	0	1	5	0	0
565*	420	12	6	21:07	Prince of Wales	No	Yes	1	1	9	0	1	7	0	7
566	420	10	6	17:50	Queen Anne	No	No	5	7	5	0	0	0	0	0
567	423	10	6	15:07	Wellsmere	No	Yes	1	6	0	0	1	7	0	0
568	423	10	6	15:22	Wellsmere	No	No	1	NA	0	0	0	0	0	0
569	423	10	6	15:25	Wellsmere	No	No	1	7	0	0	0	0	0	0
570	423	10	6	15:29	Wellsmere	No	No	1	5	6	0	0	0	0	0
571*	444	19	5	0:03	newborough	No	No	1	5	0	0	3	2	2	5
572	444	15	5	18:00	Stoneway	Yes	Yes	1	2	0	0	5	2	2	4
573	444	15	5	17:55	Stoneway	No	Yes	1	5	5	7	5	1	2	5
574	444	15	5	17:40	Stoneway	No	Yes	1	5	0	0	4	5	2	7
575	444	15	5	17:30	Markland	No	Yes	1	5	0	0	3	5	2	9
576	444	15	5	17:37	Markland	No	No	1	1	0	0	3	4	0	0
577	444	15	5	17:20	Stoneway	No	No	1	9	9	0	3	2	1	7
578	444	15	5	17:30	Stoneway	No	Yes	2	6	7	9	3	2	3	4
579	444	15	5	17:50	Stoneway	No	No	1	5	6	9	3	1	3	1
580	444	15	5	18:05	Stoneway	No	Yes	1	2	9	0	3	7	1	7
581	444	15	5	18:10	Stoneway	Yes	No	1	5	9	9	3	7	1	9

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
582	444	15	5	18:25	Stoneway	Yes	No	2	7	7	7	3	5	3	7
583	444	15	5	17:02	Newborough	No	Yes	2	4	0	0	2	5	2	5
584	444	15	5	17:15	Newborough	No	No	1	5	0	0	2	8	2	9
585	444	15	5	17:43	Mayford	No	No	1	1	8	0	2	5	2	5
586	444	15	5	18:32	Markland	Yes	Yes	1	1	8	0	2	5	1	6
587	444	15	5	17:15	Stoneway	No	No	2	7	2	0	2	2	0	0
588	444	15	5	17:35	Stoneway	No	No	2	0	7	0	2	2	0	0
589	444	15	5	18:17	Stoneway	No	No	1	5	5	7	2	5	2	7
590	444	15	5	16:59	Newborough	No	No	1	5	0	0	1	9	1	9
591	444	15	5	17:52	Mayford	No	Yes	3	5	0	0	1	2	0	0
592	444	15	5	17:51	Mayford	No	No	1	1	0	0	1	4	1	6
593	444	15	5	18:05	Markland	No	Yes	1	5	5	0	1	2	1	2
594	444	15	5	16:57	Stoneway	Yes	No	2	0	0	0	1	7	0	0
595	444	15	5	17:03	Stoneway	No	No	4	0	0	0	1	7	0	0
596	444	15	5	17:06	Stoneway	No	No	1	1	5	6	1	8	0	0
597	444	15	5	17:10	Stoneway	No	No	4	2	3	0	1	2	0	0
598	444	15	5	17:33	Stoneway	No	No	2	2	9	0	1	2	1	2
599	444	15	5	18:14	Stoneway	No	No	1	0	2	0	1	5	0	0
600	444	15	5	17:09	Newborough	Yes	Yes	1	2	0	0	0	0	0	0
601	444	15	5	17:23	Markland	No	No	1	5	0	0	0	0	0	0
602	444	15	5	18:35	Stoneway	No	No	2	5	9	0	0	0	0	0
603	446	15	5	16:16	Geddes Way	No	No	2	5	0	0	6	4	0	0
604	446	15	5	15:47	Haileybury	No	No	1	0	7	0	3	5	1	7
605	446	15	5	16:00	Barcham	No	Yes	1	2	5	7	3	3	1	5
606*	446	15	5	7:57	Balinroan	Yes	Yes	9	0	0	0	2	5	2	5
607	446	15	5	15:36	Paul Metivier	No	No	8	0	0	0	1	5	0	0
608	446	15	5	15:55	Haileybury	No	No	5	0	5	9	1	3	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
609	446	15	5	16:05	Haileybury	No	No	7	0	9	0	1	9	0	0
610	446	15	5	15:50	Barcham	Yes	No	1	2	5	9	1	2	1	7
611	446	15	5	16:10	Bren Maur	No	No	1	0	0	0	1	5	0	0
612	446	15	5	16:20	Geddes Way	No	No	NA	NA	5	0	1	8	0	0
613	446	15	5	15:38	Paul Metivier	No	No	5	0	0	0	0	0	0	0
614	446	15	5	15:49	Haileybury	No	Yes	5	NA	0	0	0	0	0	0
615	446	15	5	16:00	Haileybury	No	No	3	5	0	0	0	0	0	0
616	446	15	5	15:20	Geddes Way	No	Yes	0	0	7	7	0	0	0	0
617	446	15	5	16:14	Geddes Way	No	No	1	0	7	0	0	0	0	0
618*	463	16	7	19:31	K2J3Y1	Yes	No	5	0	7	0	3	7	0	0
619*	463	15	7	13:28	Starling	Yes	Yes	1	1	0	0	3	1	1	2
620	463	14	7	17:31	Chester	Yes	Yes	1	1	0	0	NA	1	NA	5
621	463	14	7	17:29	Chester	No	No	1	3	8	0	6	1	0	0
622	463	14	7	17:40	Bentbrook	Yes	No	1	4	8	0	5	5	3	6
623	463	14	7	17:36	Chester	No	Yes	1	5	0	0	4	3	3	4
624	463	14	7	17:30	Chester	No	No	1	5	5	0	4	2	3	5
625	463	14	7	18:22	Bentbrook	No	No	2	2	5	0	4	5	1	5
626	463	14	7	17:46	Starling	No	No	1	5	9	0	3	4	0	0
627	463	14	7	17:35	Chester	No	No	1	5	9	0	3	2	1	6
628	463	14	7	17:35	Chester	No	Yes	1	1	5	0	3	3	1	9
629	463	14	7	18:13	Bentbrook	No	No	1	NA	6	NA	3	2	NA	NA
630	463	14	7	18:15	Bentbrook	No	No	2	0	0	0	3	5	0	0
631	463	14	7	17:40	Starling	Yes	Yes	1	0	0	0	2	4	1	8
632	463	14	7	17:37	Chester	No	No	2	5	9	0	2	7	0	0
633	463	14	7	17:23	Bentbrook	No	No	2	3	6	9	2	4	2	5
634	463	14	7	18:38	Bentbrook	No	No	1	7	0	0	2	4	0	0
635	463	14	7	18:00	Bentbrook	No	No	1	1	NA	NA	2	5	2	5

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
636	463	14	7	18:10	Bentbrook	No	No	NA	NA	2	0	2	2	0	0
637	463	14	7	17:43	Starling	No	No	1	0	8	0	1	8	0	0
638	463	14	7	17:41	Starling	Yes	No	1	0	9	0	1	7	0	0
639	463	14	7	17:32	Chester	No	Yes	1	2	0	0	1	5	0	0
640	463	14	7	18:02	Bentbrook	No	No	1	5	7	0	1	7	0	0
641*	463	15	7	10:24	K2J3X9	Yes	No	1	1	0	0	1	5	0	0
642	463	14	7	17:25	Bentbrook	No	No	2	8	0	0	0	0	0	0
643	463	14	7	17:33	Bentbrook	Yes	Yes	1	1	0	0	0	0	0	0
644	463	14	7	17:37	Bentbrook	No	No	2	NA	7	Na	0	0	0	0
645	463	14	7	17:50	Bentbrook	No	No	1	7	5	0	0	0	0	0
646*	473	12	7	22:25	Woodpark	No	No	1	5	9	0	3	5	0	0
647	473	11	7	16:03	Armagh	No	No	1	8	9	0	6	2	1	5
648	473	11	7	15:39	Armagh	No	No	1	1	9	0	6	2	3	4
649	473	11	7	15:29	Armagh	No	No	1	5	9	0	5	1	3	1
650	473	11	7	15:57	Armagh	No	No	1	NA	9	NA	4	2	NA	NA
651	473	10	7	18:25	Woodford	No	No	1	3	6	0	3	3	1	7
652	473	10	7	18:07	Woodford	Yes	No	2	9	0	0	3	5	0	0
653	473	10	7	17:52	Woodford	No	No	2	2	9	NA	3	3	1	6
654	473	10	7	17:57	Woodford	No	No	1	NA	9	0	3	2	1	2
655	473	10	7	17:50	Woodford	No	No	1	1	9	9	3	2	1	2
656	473	10	7	17:32	Woodford	No	Yes	1	1	9	0	2	4	2	6
657	473	10	7	17:44	Woodford	No	No	2	2	9	0	2	2	1	5
658	473	11	7	16:45	Woodford	Yes	No	1	2	0	0	2	7	0	0
659	473	11	7	15:44	Armagh	No	Yes	1	NA	0	0	2	4	1	7
660	473	11	7	15:32	Armagh	Yes	No	1	5	0	0	2	4	0	0
661	473	11	7	16:14	Mountshannon	No	Yes	1	2	2	0	2	1	1	9
662	473	10	7	17:49	Woodford	No	No	1	4	0	0	1	2	1	5

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
663	473	11	7	16:35	Armagh	Yes	No	1	NA	0	0	1	9	0	0
664	473	10	7	17:30	Woodford	No	Yes	1	2	8	0	1	4	0	0
665	473	11	7	16:26	Mountshannon	No	No	1	NA	0	0	0	0	0	0
666	490	10	7	16:24	Lytle	Yes	Yes	1	1	3	0	1	9	1	9
667*	491	23	5	13:22	Langholm	Yes	Yes	1	1	9	0	2	5	1	7
668	491	8	5	16:43	Langholm	No	Yes	1	2	7	0	1	2	1	2
669	491	8	5	16:50	Langholm	No	No	1	4	9	0	1	4	1	4
670	491	8	5	16:59	Langholm	No	Yes	1	2	0	0	1	5	0	0
671	491	8	5	17:01	Langholm	No	No	1	5	0	0	1	5	NA	NA
672	491	8	5	16:28	Langholm	Yes	Yes	1	NA	NA	NA	0	0	NA	NA
673*	493	12	6	16:47	Fieldgate	Yes	No	1	5	0	0	5	5	2	5
674	493	10	6	16:44	Fieldgate	Yes	Yes	1	2	0	0	4	5	1	9
675	493	10	6	16:59	Fieldgate	No	No	1	5	0	0	3	5	0	0
676	493	10	6	15:57	Grouse	No	No	1	7	9	0	2	2	2	2
677	493	10	6	15:59	Fieldgate	No	Yes	1	7	4	0	2	4	2	6
678	493	10	6	16:34	Fieldgate	No	Yes	1	7	9	0	2	2	2	7
679	493	10	6	16:30	Fieldgate	No	No	1	1	2	0	2	2	2	2
680	493	10	6	16:39	Fieldgate	No	No	1	9	0	0	2	4	0	0
681	493	10	6	16:50	Fieldgate	Yes	No	1	5	0	0	1	5	0	0
682	493	10	6	16:47	Fieldgate	No	No	5	0	0	0	1	2	0	0
683	493	10	6	17:05	Fieldgate	No	Yes	1	5	7	0	1	5	1	9
684*	498	27	6	10:07	Furlong	No	Yes	1	1	0	0	3	2	0	0
685*	498	24	6	17:46	Furlong	Yes	No	5	0	5	NA	8	2	NA	NA
686	498	23	6	16:52	Furlong	No	No	1	1	8	0	7	2	2	1
687	498	23	6	15:33	Kinghaven	No	No	1	2	5	0	4	2	2	5
688*	498	24	6	10:06	K2M 2J1	No	No	1	5	7	0	4	2	3	5
689	498	23	6	16:23	Furlong	No	Yes	1	1	0	0	3	2	1	7

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
690	498	23	6	16:30	Furlong	Yes	No	1	1	8	0	3	4	3	4
691	498	23	6	16:20	Furlong	No	No	1	2	0	0	2	2	1	4
692	498	23	6	16:36	Furlong	No	No	1	1	0	0	1	7	0	0
693	498	23	6	16:07	Kinghaven	No	Yes	1	2	0	0	1	5	0	0
694	498	23	6	15:47	Kinghaven	No	No	1	5	7	0	0	0	0	0
695	498	23	6	15:52	Kinghaven	No	Yes	5	4	5	0	0	0	0	0
696	498	23	6	15:20	Kinghaven	No	No	1	2	NA	NA	0	0	0	0
697*	508	6	6	16:25	Mattata	No	No	1	7	7	0	3	2	2	2
698*	508	13	6	20:53	K2M 2E8	Yes	No	1	5	7	0	3	5	1	9
699	508	6	6	15:20	Mattata	No	No	1	1	0	0	3	2	0	0
700	508	6	6	16:19	Mattata	No	Yes	1	1	0	0	3	7	3	7
701	508	6	6	16:07	Mattata	No	Yes	1	1	7	0	3	5	3	4
702	508	6	6	16:23	Mattata	No	No	1	5	9	0	3	2	3	5
703	508	6	6	15:39	Mattata	No	No	1	2	6	0	3	5	0	0
704	508	6	6	15:15	Mattata	Yes	No	1	6	5	0	2	2	0	0
705	508	6	6	15:34	Mattata	Yes	No	1	7	6	0	2	7	1	5
706	508	6	6	16:30	Mattata	No	No	1	7	8	0	2	1	2	1
707	508	6	6	15:40	Mattata	Yes	Yes	1	1	6	0	2	6	0	0
708	508	6	6	16:32	Mattata	No	Yes	1	1	6	9	2	2	2	6
709*	508	6	6	19:19	Mattata	Yes	Yes	1	1	7	0	2	7	0	0
710*	508	10	6	6:35	Mattata	No	Yes	1	5	9	0	1	5	1	9
711	508	6	6	15:10	Mattata	No	Yes	1	NA	9	NA	0	0	NA	NA
712	519	18	6	15:58	Emperor	No	No	1	2	9	0	5	1	2	5
713	519	18	6	15:14	Dorchester	No	Yes	1	1	0	0	4	2	2	2
714	519	18	6	15:33	Emperor	No	No	2	NA	7	8	3	2	3	5
715	519	18	6	15:26	Emperor	No	No	1	2	8	0	3	2	0	0
716	519	18	6	15:19	Dorchester	No	No	1	1	0	0	2	4	2	5

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
717	519	18	6	16:14	Emperor	No	No	1	NA	NA	9	2	2	2	2
718*	519	18	6	21:17	Emperor	Yes	No	1	5	0	0	2	5	1	5
719*	527	19	6	21:26	Bonnie	Yes	No	1	5	7	0	3	2	1	5
720	527	18	6	18:02	Greyrock	No	No	1	1	6	0	6	2	4	5
721*	527	18	6	19:19	Bonnie	No	No	1	5	9	0	6	4	0	0
722	527	18	6	17:52	Greyrock	No	No	2	2	9	0	5	2	1	2
723	527	19	6	16:50	Castlehill	No	Yes	1	1	8	8	5	2	3	4
724	527	18	6	18:38	Greyrock	Yes	Yes	1	1	9	0	5	2	5	5
725	527	18	6	18:56	Castlehill	No	Yes	1	1	0	0	5	2	2	5
726	527	18	6	18:50	Greyrock	No	No	1	2	7	0	5	1	1	0
727	527	19	6	16:54	Castlehill	No	Yes	1	1	6	0	4	1	4	1
728	527	18	6	17:12	Castlehill	No	No	1	1	4	0	4	2	2	5
729	527	18	6	16:55	Castlehill	No	Yes	1	1	9	0	4	2	4	5
730	527	18	6	17:05	Castlehill	Yes	No	1	2	0	0	4	2	4	5
731	527	18	6	18:13	Greyrock	Yes	Yes	1	2	9	0	4	4	4	4
732	527	18	6	18:40	Greyrock	No	No	1	2	7	0	4	2	2	5
733	527	19	6	16:55	Castlehill	Yes	Yes	1	2	8	0	3	2	2	2
734	527	18	6	17:46	Bonnie	No	No	2	2	0	0	3	2	NA	NA
735	527	18	6	18:48	Greyrock	No	No	1	9	9	0	3	4	3	7
736	527	18	6	18:27	Greyrock	No	Yes	1	1	0	0	3	2	2	5
737	527	18	6	17:39	Greyrock	No	No	1	5	9	0	2	4	0	0
738	527	18	6	18:21	Greyrock	No	No	1	3	7	0	2	2	2	5
739	527	18	6	19:04	Castlehill	No	No	1	0	0	0	2	2	1	2
740*	527	19	6	0:28	Castlehill	No	Yes	1	1	0	0	2	8	2	8
741	527	18	6	17:18	Castlehill	No	No	1	1	0	0	1	9	0	0
742*	527	19	6	19:30	Castlehill	No	Yes	1	9	0	0	1	9	0	0
743	532	19	6	16:05	Oakville	No	Yes	1	1	9	0	12	1	10	3

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
744	532	19	6	15:00	Oakville	No	No	1	0	0	0	8	2	4	3
745	532	19	6	15:13	Oakville	Yes	No	1	1	8	0	5	2	5	2
746*	532	23	6	10:41	Oakview	Yes	No	1	1	7	9	5	1	8	1
747	532	19	6	15:22	Oakville	No	yes	1	1	9	0	4	2	0	0
748	532	19	6	15:50	Fieldrow	No	Yes	1	2	7	0	4	5	0	0
749	532	19	6	15:52	Stanwood	No	No	1	NA	9	0	3	7	0	0
750	532	19	6	15:20	Oakville	No	Yes	1	1	8	NA	3	2	1	2
751	532	19	6	15:35	Fieldrow	No	Yes	1	1	9	0	3	4	3	4
752	532	19	6	16:10	Fieldrow	No	No	1	1	0	0	3	2	0	0
753	532	19	6	15:30	Aldercrest	No	No	1	1	0	0	2	5	0	0
754	532	19	6	15:10	Oakville	No	No	1	1	9	0	2	2	2	2
755	532	19	6	15:25	Fieldrow	No	No	1	7	9	0	2	7	0	0
756	532	19	6	15:40	Fieldrow	No	Yes	2	5	9	9	2	2	2	2
757	532	19	6	16:00	Fieldrow	No	No	0	0	0	0	2	5	0	0
758	532	19	6	16:00	Stanwood	No	No	1	NA	6	NA	1	5	NA	NA
759	532	19	6	15:49	Stanwood	No	No	2	2	7	0	1	2	1	9
760	532	19	6	15:38	Aldercrest	No	Yes	1	7	0	0	1	7	0	0
761	532	19	6	15:15	Fieldrow	No	No	1	4	0	0	1	4	1	7
762*	539	15	3	9:24	Strathmore	No	Yes	1	1	7	0	3	2	2	7
763*	539	6	3	23:06	Strathmore	No	Yes	1	1	5	0	3	5	0	0
764*	539	5	3	7:45	Benjamin	No	Yes	1	5	0	0	3	5	3	9
765*	539	14	3	19:12	Riddell Ave North	Yes	Yes	1	5	7	7	3	9	3	9
766*	539	3	3	13:02	Strathmore	Yes	NA	0	0	0	0	NA	NA	NA	NA
767*	539	14	3	19:19	Parkhurst	Yes	No	1	1	9	0	3	5	1	5
768*	539	5	3	14:03	Strathmore	No	No	1	1	9	9	3	5	3	5
769	539	14	3	16:50	Parkhurst	No	Yes	1	1	7	9	3	5	3	5
770	539	14	3	15:38	Benjamin	No	Yes	1	5	0	0	3	7	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
771	539	14	3	15:50	Blythdale	Yes	No	1	1	9	0	3	1	1	1
772*	539	14	3	22:48	Benjamin	Yes	Yes	1	1	9	0	3	5	1	7
773*	539	8	3	16:56	Harmany	Yes	Yes	1	1	7	9	3	2	1	5
774	539	14	3	16:02	Blythdale	No	Yes	1	1	7	0	6	2	6	2
775	539	14	3	17:26	Parkhurst	No	No	1	5	6	9	6	1	6	1
776	539	14	3	16:10	Blythdale	No	Yes	1	1	9	NA	5	1	5	1
777	539	14	3	16:50	Parkhurst	No	Yes	1	1	7	9	4	2	4	5
778	539	14	3	17:30	Parkhurst	No	NA	1	1	9	0	2	2	2	NA
779	539	14	3	16:30	Parkhurst	No	No	1	0	NA	0	2	1	2	1
780	539	14	3	15:55	Blythdale	No	No	1	2	9	9	2	5	1	5
781*	539	5	3	16:08	Parkhurst	Yes	No	1	5	9	0	2	7	0	0
782*	539	14	3	21:24	Kingsmere	No	Yes	1	1	9	0	2	7	0	0
783	541	9	7	17:45	Algonquin	No	No	1	1	5	7	6	2	6	7
784	541	9	7	18:15	Rice	No	No	1	4	6	6	5	4	3	4
785	541	8	7	17:11	Wayne	No	No	1	1	7	9	3	5	2	7
786	541	9	7	17:33	Algonquin	No	No	1	5	5	0	2	5	1	7
787	541	9	7	18:07	Ayllen	No	No	1	2	5	0	2	5	0	0
788	541	9	7	17:54	Algonquin	No	No	1	2	NA	NA	2	2	2	5
789	541	8	7	17:21	Wayne	No	No	1	1	7	0	1	2	1	2
790	541	9	7	17:21	Ayllen	No	No	1	1	0	0	1	7	NA	NA
791	541	9	7	17:38	Algonquin	No	Yes	1	1	7	0	1	2	1	8
792*	547	18	4	16:41	K2H 5A1	No	No	1	5	9	0	3	2	1	5
793*	547	5	5	19:02	K2b6m6	Yes	Yes	1	1	9	9	3	5	1	5
794*	547	5	5	22:20	Maplehurst	No	No	1	1	7	9	3	2	1	7
795*	547	24	4	17:35	Birchdale	Yes	NA	NA	NA	NA	NA	NA	NA	NA	NA
796	547	1	5	17:20	Birchdale	Yes	Yes	1	1	NA	NA	6	2	NA	NA
797*	547	17	4	18:40	k2b6m6	Yes	Yes	1	1	7	0	4	NA	3	9

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
798	547	1	5	15:46	Maplehurst	No	No	1	2	8	0	3	2	0	0
799	547	1	5	16:15	Maplehurst	No	Yes	1	9	9	0	3	2	2	7
800	547	1	5	16:50	Birchdale	No	Yes	1	NA	9	NA	3	2	NA	NA
801	547	1	5	17:50	Birchdale	No	Yes	1	1	8	NA	3	4	1	7
802	547	1	5	15:59	Maplehurst	Yes	Yes	1	1	5	9	2	6	1	NA
803	547	1	5	17:55	Birchdale	No	Yes	1	1	6	0	2	4	2	4
804*	547	17	4	15:59	K2H 5A1	No	No	1	7	9	0	2	7	0	0
805	547	1	5	15:54	Maplehurst	No	No	1	2	8	0	1	8	0	0
806	547	1	5	16:30	Maplehurst	Yes	No	1	9	5	0	1	7	1	9
807	547	1	5	16:40	Maplehurst	No	Yes	1	1	0	0	1	8	0	0
808	547	1	5	17:38	Birchdale	Yes	Yes	1	1	7	9	1	2	1	9
809	547	1	5	18:00	Birchdale	No	No	1	NA	9	NA	1	7	NA	NA
810	547	1	5	16:03	Maplehurst	No	No	1	1	5	0	0	0	0	0
811	571	22	8	12:00	Carling Place	No	No	2	7	0	0	0	0	0	0
812*	573	18	4	22:42	Aero	No	Yes	1	1	0	0	3	5	0	0
813	573	25	4	16:00	Aero	No	No	1	1	4	0	7	2	5	4
814	573	25	4	16:20	Aero	Yes	Yes	1	2	5	0	7	1	7	2
815	573	25	4	15:37	Aero	Yes	Yes	2	4	9	0	6	1	6	1
816	573	25	4	15:40	Aero	Yes	No	1	2	0	0	6	2	4	2
817	573	25	4	15:48	Aero	No	Yes	1	1	8	0	6	1	6	1
818	573	25	4	16:45	Aero	No	No	2	5	6	0	6	4	NA	NA
819	573	25	4	17:20	Horner	Yes	Yes	1	5	5	0	6	2	2	5
820	573	25	4	15:37	Horner	Yes	Yes	1	0	2	0	6	1	2	5
821*	573	18	4	19:02	K2h 5g1	Yes	Yes	1	7	9	9	5	2	3	5
822*	573	4	5	14:56	k2h5e4	Yes	Yes	1	5	7	9	5	2	3	2
823	573	25	4	16:05	Aero	No	No	1	1	9	0	4	2	3	7
824	573	25	4	16:30	Aero	Yes	Yes	1	2	2	7	4	2	2	5

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Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
825	573	25	4	16:40	Aero	No	Yes	1	5	5	0	4	2	1	4
826	573	25	4	16:58	Aero	Yes	Yes	1	2	5	9	4	4	2	7
827	573	25	4	17:10	Aero	No	No	1	1	8	0	4	2	4	2
828*	573	17	4	16:45	Aero	Yes	Yes	1	1	0	0	4	2	NA	2
829*	573	25	4	18:41	Horner	Yes	Yes	1	5	7	0	4	1	3	1
830	573	25	4	15:10	Horner	No	NA	1	4	0	0	3	3	NA	NA
831	573	25	4	16:11	Aero	No	No	1	2	8	0	3	5	2	8
832	573	25	4	16:24	Aero	No	Yes	1	1	0	0	3	4	2	5
833	573	25	4	15:24	Horner	No	Yes	1	2	0	0	2	2	1	5
834	573	25	4	16:36	Aero	No	No	1	6	9	0	2	5	2	7
835	573	25	4	15:12	Horner	No	No	1	3	9	0	1	1	1	1
836	573	25	4	15:30	Horner	No	No	2	2	8	0	1	2	1	2
837	576	9	7	16:09	Cyrus	No	Yes	1	1	2	4	6	2	6	2
838*	576	10	7	20:11	James Cummings	Yes	No	1	1	5	0	5	1	1	5
839	576	9	7	16:23	James Cummings	No	Yes	1	1	7	0	4	2	4	2
840	576	9	7	16:15	Cyrus	No	Yes	1	1	2	2	3	2	1	2
841	576	9	7	16:34	James Cummings	Yes	No	1	1	4	4	2	2	2	4
842	576	9	7	16:34	James Cummings	Yes	No	1	1	4	4	2	2	2	4
843*	576	22	7	11:49	Cryus	Yes	No	1	NA	5	7	2	5	2	7
844*	576	12	7	9:24	Cryus	No	Yes	1	1	7	9	2	9	2	9
845	576	9	7	16:28	James Cummings	No	No	1	6	8	0	1	6	0	0
846	588	11	5	14:05	Post	Yes	No	1	5	7	0	6	1	3	5
847	588	11	5	13:51	Post	No	Yes	1	1	9	0	5	2	5	2
848	588	11	5	14:15	Post	No	Yes	1	1	7	0	4	3	3	5
849	588	11	5	14:32	Post	No	No	1	1	5	0	4	2	2	2
850	588	11	5	15:20	Old Colony Rd	No	Yes	1	1	4	0	4	2	1	5
851	588	11	5	14:28	Post	No	No	1	9	0	0	3	3	2	9

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
852	588	11	5	14:39	Post	Yes	No	1	2	3	0	3	4	3	5
853	588	11	5	13:58	Post	No	No	1	4	NA	NA	2	5	1	5
854	588	11	5	14:59	Old Colony	No	No	1	NA	2	0	2	5	0	0
855*	588	12	5	10:12	Old Colony	Yes	Yes	1	1	1	5	2	2	2	5
856	588	11	5	14:53	Old Colony	No	No	1	3	8	0	1	4	0	0
857	588	11	5	15:10	St Andrew	Yes	Yes	1	5	4	0	1	7	0	NA
858	588	11	5	15:25	Old Colony	No	No	1	1	5	0	1	2	1	2
859	588	11	5	14:20	Post	No	No	4	NA	2	2	0	0	0	0
860*	592	23	5	16:16	Sherring	No	Yes	1	1	9	0	3	2	1	5
861*	592	19	4	12:31	Sherring	No	No	1	7	9	0	3	5	1	9
862	592	13	5	15:53	Blackdome	No	No	1	2	4	NA	NA	1	NA	NA
863	592	13	5	15:30	Sherring	No	Yes	1	1	7	0	6	2	0	0
864	592	13	5	15:35	Blackdome	No	No	1	5	5	NA	5	1	5	1
865	592	13	5	15:30	Sherring	No	No	1	1	0	0	5	2	0	0
866	592	13	5	15:52	Sherring	No	No	1	0	8	0	5	5	0	0
867	592	13	5	15:25	Blackdome	Yes	No	1	4	9	0	4	5	1	9
868	592	13	5	16:00	Blackdome	Yes	No	1	1	2	2	4	4	4	4
869	592	13	5	15:05	Sherring	No	Yes	1	5	9	0	3	5	2	0
870	592	13	5	15:15	Sherring	No	No	2	8	0	0	3	9	0	0
871	592	13	5	16:07	Blackdome	No	Yes	1	1	NA	0	3	NA	NA	NA
872	592	13	5	15:15	Sherring	Yes	Yes	1	0	4	0	3	2	3	9
873	592	13	5	15:40	Sherring	No	No	1	1	0	0	3	2	3	5
874	592	13	5	15:50	Sherring	No	No	1	1	7	0	3	5	1	7
875	592	13	5	16:05	Blackdome	No	Yes	1	3	7	0	2	6	0	0
876	592	13	5	15:46	Blackdome	Yes	No	1	7	7	0	2	2	2	7
877	592	13	5	15:10	Sherring	No	No	4	9	7	0	2	7	0	0
878	592	13	5	15:59	Blackdome	Yes	No	1	3	0	0	1	2	1	5

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
879	598	23	6	16:54	Valhalin	No	No	0	NA	0	NA	0	0	NA	NA
880	599	13	5	17:30	Hastings	No	No	1	1	7	7	3	5	1	7
881	599	13	5	17:40	Hastings	No	Yes	1	9	7	7	2	5	0	0
882	599	13	5	17:35	Hastings	No	Yes	1	1	7	0	1	7	0	0
883	605	8	7	18:39	Industrial park	No	No	5	0	0	0	1	7	0	0
884	608	16	6	16:42	Pipers	No	No	2	0	7	0	6	2	1	9
885	608	16	6	16:00	Pipers	No	Yes	2	8	0	0	3	5	0	0
886	608	16	6	16:46	Pipers	No	No	1	NA	0	0	3	2	0	0
887	608	16	6	16:39	Pipers	Yes	Yes	1	1	2	0	2	2	2	7
888	608	16	6	16:17	Pipers	Yes	Yes	1	7	7	0	1	2	1	6
889	623	24	7	15:23	March	No	No	0	0	0	0	0	0	0	0
890	652	13	5	16:41	Klondike	No	Yes	1	1	2	0	8	1	8	1
891	652	13	5	16:23	Klondike	Yes	Yes	5	0	5	0	2	5	1	5
892	652	13	5	16:44	Sandhill	No	No	1	9	9	0	1	7	0	0
893	652	13	5	16:15	Klondike	Yes	Yes	1	2	1	5	1	5	0	0
894	652	13	5	16:37	Klondike	No	No	NA	NA	NA	0	1	2	NA	NA
895	665	23	6	17:45	Grenadine	Yes	No	0	0	0	0	3	4	0	0
896	665	23	6	17:15	Maple Grove	No	No	0	NA	0	NA	2	2	NA	NA
897	665	23	6	17:22	Grenadine	No	Yes	2	2	0	0	2	5	0	0
898	665	23	6	17:34	Grenadine	Yes	No	5	0	0	0	2	7	0	0
899	665	23	6	17:42	Grenadine	Yes	No	9	0	0	0	2	4	0	0
900	665	23	6	17:20	Grenadine	No	No	9	0	0	0	1	6	0	0
901	665	23	6	17:30	Grenadine	No	No	9	0	0	0	1	2	0	0
902	665	23	6	17:36	Grenadine	No	No	0	0	0	0	0	0	0	0
903	665	23	6	17:50	Grenadine	No	No	0	0	7	0	0	0	0	0
904	667	23	6	18:10	Didsbury	No	No	9	0	0	0	0	0	0	0
905	678	26	4	17:00	Huntmar	No	No	0	0	0	0	0	0	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
906*	680	20	5	19:32	K2S 1M8	No	Yes	1	1	0	0	3	9	0	9
907	680	19	5	15:32	Caribou st	No	Yes	1	1	9	0	3	5	0	0
908	680	19	5	15:00	Basswood	No	No	1	1	0	0	3	2	3	2
909	680	19	5	15:05	Basswood	No	No	1	2	0	9	3	5	3	7
910	680	19	5	15:20	Basswood	No	Yes	1	1	NA	0	3	2	1	3
911	680	19	5	15:09	Caribou st	No	Yes	1	1	9	0	2	8	0	0
912	680	19	5	15:30	Caribou st	No	No	1	1	0	0	2	8	0	0
913	680	19	5	14:59	Orville	No	No	1	1	8	0	2	7	0	0
914	680	19	5	15:15	Basswood	Yes	No	1	5	0	0	2	3	2	7
915	680	19	5	15:25	Basswood	No	No	1	1	9	0	2	3	0	0
916	680	19	5	15:30	Caribou st	No	No	1	2	0	0	2	4	0	0
917	680	19	5	15:35	Caribou st	No	No	1	3	8	0	2	8	0	0
918	680	19	5	15:13	Caribou st	No	Yes	2	5	9	0	1	5	1	5
919	680	19	5	15:26	Caribou st	No	Yes	1	1	6	0	1	7	0	0
920	680	19	5	15:05	Caribou st	No	No	1	1	7	0	1	7	1	9
921	680	19	5	15:10	Basswood	No	No	1	2	0	0	1	2	0	0
922	682	19	5	16:20	Shining Star	No	No	1	1	9	0	4	5	4	7
923	682	19	5	16:03	Fernbank	Yes	Yes	2	2	7	6	2	6	0	0
924	682	19	5	16:10	Fernbank	No	Yes	1	0	7	7	1	5	1	5
925	682	19	5	16:18	Shining Star	Yes	No	5	7	0	0	1	0	1	7
926	682	19	5	16:03	Fernbank	Yes	Yes	5	7	9	0	0	0	0	0
927	683	19	5	17:45	Etta	Yes	No	2	0	7	0	5	2	1	2
928	683	19	5	17:45	Etta	No	No	1	2	0	0	4	2	4	5
929	683	19	5	17:45	Etta	No	No	1	2	5	0	4	1	4	5
930	683	19	5	17:45	Etta	Yes	No	1	7	9	0	4	1	1	1
931	683	19	5	17:45	Etta	No	No	1	2	0	0	4	4	0	0
932	683	19	5	17:46	Fernbank	No	No	1	2	7	7	3	5	1	7

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
933	683	19	5	17:30	Fernbank	Yes	No	1	1	0	0	2	7	2	7
934	683	19	5	17:45	Etta	No	No	1	7	0	0	2	1	0	0
935	683	19	5	17:45	Etta	No	No	1	7	8	0	2	7	0	0
936	683	19	5	17:43	Fernbank	No	No	2	5	0	0	1	7	0	0
937	683	19	5	17:35	Fernbank	No	No	1	2	7	7	0	0	0	0
938	683	19	5	17:40	Fernbank	Yes	No	5	0	9	0	0	0	0	0
939	705	19	5	17:05	Thresher	No	No	1	2	9	0	10	1	10	2
940	705	19	5	16:55	Coachman	Yes	No	1	5	4	0	6	1	6	2
941	705	19	5	17:11	Coachman	No	No	1	1	4	0	5	2	2	5
942	705	19	5	16:55	Coachman	No	No	1	1	0	0	3	3	0	0
943	705	19	5	16:50	Coachman	Yes	No	1	5	0	0	3	2	3	5
944	705	19	5	17:10	Thresher	Yes	No	1	1	0	0	3	4	1	7
945	705	19	5	17:02	Coachman	No	No	2	5	0	0	2	7	0	0
946*	705	19	5	18:33	K2S1X7	No	No	5	0	9	0	2	5	0	0
947	705	19	5	17:04	Coachman	No	Yes	2	2	0	0	1	7	1	7
948*	711	20	6	20:42	Avignon	No	No	1	5	7	0	3	5	2	7
949*	711	13	7	16:45	Avignon	Yes	No	1	9	7	0	3	2	0	0
950*	711	27	6	9:34	Avignon	Yes	Yes	1	5	9	0	3	2	1	5
951*	711	24	6	21:29	Avignon	Yes	No	1	1	7	0	3	5	1	7
952	711	20	6	17:08	Avignon	No	Yes	1	2	6	0	8	2	4	5
953	711	20	6	17:05	Avignon	Yes	No	1	2	8	0	6	4	3	4
954	711	20	6	17:40	Avignon	Yes	No	1	5	7	0	5	5	1	9
955	711	20	6	17:50	Avignon	No	No	1	7	7	0	5	2	3	7
956	711	20	6	17:17	Avignon	No	No	1	2	5	0	4	5	0	0
957	711	20	6	17:10	Avignon	Yes	Yes	1	5	8	0	4	2	1	4
958	711	20	6	17:30	Avignon	No	No	1	3	5	0	4	2	4	2
959	711	20	6	16:52	Avignon	Yes	No	9	9	0	0	3	4	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
960	711	20	6	17:55	Avignon	No	No	1	NA	4	0	3	4	3	4
961	711	20	6	17:36	Avignon	Yes	No	1	1	9	0	3	7	1	9
962	711	20	6	17:25	Avignon	No	Yes	1	7	0	0	3	2	0	0
963	711	20	6	16:58	Avignon	Yes	No	1	1	6	0	3	5	0	0
964	711	20	6	16:41	Avignon	No	No	1	5	0	0	3	2	3	5
965	711	20	6	16:50	Avignon	Yes	No	1	2	0	0	3	6	0	0
966	711	20	6	17:15	Avignon	No	No	2	3	0	0	3	1	1	4
967	711	20	6	17:11	Avignon	No	Yes	1	5	5	0	2	2	1	5
968	711	20	6	16:59	Avignon	Yes	Yes	1	2	5	0	2	5	1	7
969	711	20	6	17:20	Avignon	No	No	1	2	3	0	2	2	2	3
970*	711	20	6	22:46	Avignon	No	Yes	1	9	9	9	2	6	1	5
971*	711	23	6	11:35	Avignon	No	No	1	9	5	9	2	2	1	5
972	711	20	6	16:46	Avignon	No	Yes	1	2	8	8	1	5	NA	NA
973	711	20	6	17:40	Avignon	No	No	1	2	4	0	1	5	0	0
974	711	20	6	17:57	Avignon	Yes	No	1	1	6	0	1	2	1	5
975	711	20	6	17:10	Avignon	No	Yes	1	1	0	0	1	1	0	0
976	711	20	6	17:29	Avignon	No	Yes	1	4	2	6	0	0	0	0
977	711	20	6	17:27	Avignon	No	No	2	NA	0	NA	0	0	NA	NA
978*	717	23	5	14:23	Wincanton	Yes	No	9	9	0	0	3	5	3	5
979*	717	22	5	16:42	Falconcrest	Yes	Yes	1	9	7	0	3	5	1	7
980*	717	24	5	10:03	k4a 3y2	Yes	No	1	5	7	0	3	2	2	5
981*	717	1	6	20:33	Wincanton	No	No	5	5	9	0	3	5	1	7
982	717	22	5	16:20	Falconcrest	No	No	1	1	0	0	10	2	0	0
983	717	22	5	17:12	Wincanton	No	No	1	8	4	0	10	4	1	1
984*	717	22	5	18:50	Falconcrest	Yes	Yes	1	9	8	0	4	2	2	4
985	717	22	5	15:35	Falconcrest	Yes	No	1	4	5	9	2	1	2	5
986	717	22	5	16:09	Falconcrest	No	Yes	1	1	6	9	2	7	0	0

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
987	717	22	5	16:11	Falconcrest	No	Yes	2	NA	2	0	2	5	2	5
988	717	22	5	16:30	Wincanton	No	Yes	2	5	0	0	2	2	2	2
989	717	22	5	16:40	Wincanton	No	No	1	1	NA	NA	2	5	NA	NA
990	717	22	5	17:20	Wincanton	No	No	1	5	2	2	2	2	NA	NA
991	717	22	5	16:52	Wincanton	Yes	No	2	9	0	0	2	5	0	0
992	717	22	5	15:13	Falconcrest	No	No	1	3	0	0	1	9	0	0
993	717	22	5	15:16	Falconcrest	No	No	1	1	0	0	1	4	1	4
994	717	22	5	15:43	Falconcrest	No	No	1	2	0	0	1	5	0	0
995	717	22	5	16:03	Falconcrest	No	Yes	1	1	9	9	1	2	1	2
996	717	22	5	17:14	Wincanton	No	No	1	2	9	0	1	5	0	0
997	717	22	5	17:23	Wincanton	No	No	1	1	5	9	1	2	0	0
998	717	22	5	15:38	Falconcrest	No	Yes	1	1	8	0	0	0	0	0
999	717	22	5	15:53	Falconcrest	No	Yes	1	7	7	0	0	0	0	0
1000	717	22	5	16:17	Falconcrest	Yes	No	NA	NA	0	0	0	0	0	0
1001	722	27	6	17:12	Youville	No	No	7	0	0	0	0	0	0	0
1002	722	27	6	17:19	Youville	No	No	7	0	0	0	0	0	0	0
1003	751	23	5	16:06	Quigg	No	NA	1	NA	5	0	NA	NA	NA	NA
1004	751	23	5	15:15	Quigg	Yes	No	1	2	0	0	5	2	NA	5
1005	751	23	5	14:55	Quigg	No	No	1	0	2	0	4	2	2	4
1006	751	23	5	15:10	Quigg	No	No	1	5	0	0	3	5	1	7
1007	751	23	5	14:50	Quigg	No	No	1	7	0	0	2	7	1	7
1008	751	23	5	14:55	Quigg	No	No	1	7	8	0	1	7	1	7
1009	751	23	5	15:40	Quigg	No	No	1	2	0	0	1	7	1	7
1010	751	23	5	15:00	Quigg	No	Yes	1	1	2	0	0	0	0	0
1011	751	23	5	14:50	Quigg	No	No	1	6	7	0	0	0	0	0
1012	786	6	5	17:50	Charmers	Yes	Yes	1	1	4	6	6	3	4	6
1013	786	6	5	17:32	Charmers	No	No	1	1	9	NA	3	4	2	2

Appendix F1 continued

Survey Id.	Site No	Day	Month	Time	Street/ Postcode	Own cat	Bird feeder	Summer squirrel freq	Winter squirrel freq	Summer raccoon freq.	Winter raccoon freq.	Summer cat no.	Summer cat freq.	Winter cat no.	Winter cat freq
1014	786	6	5	17:25	Charmers	No	Yes	1	2	0	0	2	5	0	0
1015	786	6	5	17:31	Charmers	Yes	No	2	7	8	0	2	2	2	2
1016	786	6	5	17:40	Charmers	No	Yes	1	4	2	0	2	1	1	4
1017	786	6	5	17:35	Charmers	Yes	No	1	2	2	NA	1	7	0	0
1018	786	6	5	17:59	Charmers	No	Yes	1	1	8	0	1	5	0	0

Appendix F2: Responses by residents who owned cats at each 100 sites across Ottawa. Cat owners was asked the age of their cat, whether it had any anti-predator devices (Bell, leash or was declawed), the average number of hours it spent outside in summer and winter. Owners were also asked to estimate the frequency at which each cat brought home mice, birds or other prey. Responses were recorded for each individual cat owned.

Surveys marked with an * were completed online.

Survey Id.	Site no.	Total cats	Cat ID	Age	Bell	Leash	Declawed	Hours outside Summer	Hours outside Winter	Mice freq.	Bird freq.	Other Prey freq	Other Prey type
14	20	1	1	6	Yes	NA	NA	8	0	Never	Never	Never	
20	20	1	1	9	No	NA	NA	0	0	Never	Never	Never	
32	20	1	1	11	No	NA	NA	0	0	Once a month	Never	Never	
34	20	1	1	16	No	NA	NA	0	0	Never	Never	Never	
38	29	2	1	8	Yes	NA	NA	8	2	Once a year	Never	Never	
38	29	2	2	5	No	NA	NA	0	0	Never	Never	Never	
42	29	1	1	4	No	NA	NA	1	0	Never	Never	Never	
54	29	1	1	2	Yes	NA	NA	0	0	Never	Never	Never	
55	29	1	1	16	No	NA	NA	0	0	Never	Never	Never	
56	29	1	1	8	No	NA	NA	8	0.5	Never	Never	Never	
57	29	2	1	10	Yes	NA	NA	10	2	Once a day	Once a year	Never	rabbits, squirrels
57	29	2	2	10	Yes	NA	NA	24	0	Once a year	Once a year	Never	
58	29	1	1	5	No	NA	NA	4	0	Never	Never	Never	
63	29	1	1	6	Yes	NA	NA	8	0	Twice a year	Twice a year	Twice a week	frogs, voles, mice
64	29	1	1	10	No	NA	NA	NA	0	Once a week	Once a year	Once a year	Rabbit, voles
70	29	1	1	2	No	NA	NA	4	0	Once a month	Once a year	Once	rabbit
71	29	2	1	11	No	NA	NA	0	0	NA	Never	Never	
71	29	2	2	9	No	NA	NA	0	0	NA	Never	Never	

Appendix F2 continued

Survey Id.	Site no.	Total cats	Cat ID	Age	Bell	Leash	Declawed	Hours outside Summer	Hours outside Winter	Mice freq.	Bird freq.	Other Prey freq	Other Prey type
79	29	1	1	12	No	NA	NA	8	0	Never	Never	Never	mice, frogs, chipmunks, moles
87	36	1	1	10	No	NA	NA	6	2	Once a month	Never	Once a year	
92	44	1	1	15	Yes	NA	NA	0.5	0	Never	Never	Never	
98	44	1	1	16	No	NA	NA	8	0	Never	Never	Never	
125	58	6	1	14	No	NA	NA	0.5	0	Never	Never	Never	voles, rabbit kits
125	58	6	2	13	No	NA	NA	0	0	Never	Never	Never	
125	58	6	3	10	No	NA	NA	0.5	0	Never	Never	Never	
125	58	6	4	4	No	NA	NA	2	0	Once a year	Never	Never	
125	58	6	5	3	No	NA	NA	4	0.5	Never	Never	Never	NA
125	58	6	6	6	NA	NA	NA	4	0.5	Never	Once a year	Once a year	
133	58	2	1	9	No	Yes	NA	8	0	Never	Never	Never	
133	58	2	2	9	No	NA	Yes	10	0	Never	Never	Never	
147	61	2	1	3	Yes	NA	NA	8	0	Once a week	Once a month	Never	Moles and Shrews
147	61	2	2	2	Yes	NA	NA	8	0	Never	Never	Never	
149	64	1	1	7	No	NA	NA	2	0.5	Once a year	Once a year	Once a year	
180	73	2	1	5	No	NA	NA	0	0	Never	Never	Never	
180	73	2	2	3	No	NA	NA	0	0	Never	Never	Never	frogs, snake, chipmunks
185	73	2	1	6	No	NA	NA	0.5	0	Once a year	Never	Never	
185	73	2	2	3	No	NA	NA	4	0	Twice a week	Once a month	Once a year	
214	78	1	1	3	No	NA	NA	0	0	Never	Never	Never	
222	78	2	1	8	No	NA	NA	0	0	Never	Never	Never	bats
222	78	2	2	8	No	NA	NA	0	0	Never	Never	Never	
242	117	2	1	4	No	NA	NA	2	0	Once a year	Never	Never	
242	117	2	2	2	No	NA	NA	2	0	Never	Never	Never	
244	117	2	1	12	Yes	NA	NA	0	0	Never	Never	Once a year	bats
244	117	2	2	10	Yes	NA	NA	0	0	Never	Never	Never	
269	145	2	1	7	No	NA	NA	0	0	Once a year	Once a year	Never	

Appendix F2 continued

Survey Id.	Site no.	Total cats	Cat ID	Age	Bell	Leash	Declawed	Hours outside Summer	Hours outside Winter	Mice freq.	Bird freq.	Other Prey freq	Other Prey type
269	145	2	2	3	No	NA	NA	0	0	Never	Never	Never	
293	158	1	1	11	Yes	NA	NA	0	0	Never	Never	Never	
305	158	1	1	12	No	NA	NA	0	0	Never	Never	Never	
322	174	2	1	13	No	Yes	NA	0.5	0	Never	Never	Never	
322	174	2	2	12	No	NA	Yes	1.5	0	Never	Never	Never	
328	174	1	1	10	No	NA	NA	0	0	Never	Never	Never	
333	178	2	1	4	No	NA	NA	8	2	Once a year	Once a year	Never	
333	178	2	2	4	No	NA	NA	10	2	Never	Never	Never	
347	178	3	1	6	No	NA	NA	0	0	Never	Never	Never	
347	178	3	2	3	No	NA	NA	0	0	Never	Never	Never	
347	178	3	3	3	No	NA	NA	0	0	Never	Never	Never	
357	181	1	1	18	No	NA	NA	NA	NA	NA	NA	Never	
358	181	1	1	16	No	Yes	NA	0.5	0	Never	Never	Never	
364	181	2	1	7	No	NA	NA	0	0	Never	Never	Never	
364	181	2	2	3	No	NA	NA	0	0	Never	Never	Never	
374	204	1	1	10	No	NA	NA	8	2	Once a year	Never	Once	rabbit
376	204	2	1	10	No	NA	NA	0	0	Never	Never	Never	
376	204	2	2	9	No	NA	NA	4	2	Once a week	Once a month	Never	
378	231	1	1	5	No	NA	NA	8	0	Twice a year	Once a year	Never	
387	260	2	1	8	Yes	Yes	NA	2	0	Twice a year	Once a year	Never	
387	260	2	2	5	Yes	NA	Yes	2	0	Once a year	Once a year	Never	
428	287	2	1	6	No	NA	NA	0	0	Never	Never	Never	
428	287	2	2	4	No	NA	NA	0	0	Never	Never	Never	
429	287	2	1	11	No	Yes	NA	0.5	0	Never	Never	Never	
429	287	2	2	8	No	NA	Yes	0.5	0	Never	Never	Never	
440	290	1	1	6	No	NA	NA	2	0	Never	Never	Never	
445	290	2	1	7	No	NA	NA	0	0	Never	Never	Never	
445	290	2	2	9	No	NA	NA	0	0	Never	Never	Never	

Appendix F2 continued

Survey Id.	Site no.	Total cats	Cat ID	Age	Bell	Leash	Declawed	Hours outside Summer	Hours outside Winter	Mice freq.	Bird freq.	Other Prey freq	Other Prey type
455	290	1	1	9	No	yes	NA	0	0	Never	Never	Never	
462	321	1	1	5	No	NA	NA	2	0	Never	once	Once a year	chipmunks
463	321	2	1	2	No	No	No	24	24	Once a month	NA	Never	
463	321	2	2	3	No	NA	NA	24	24	Once a month	Unsure	Unsure	
512	389	1	1	4	No	No	No	0	0	Never	Never	Never	
519	396	1	1	7	No	No	No	0	0	Never	Never	Never	
525	396	1	1	7	No	No	No	2	0	Once a week	Once a season	Once a year	chipmunks
547	396	1	1	10	No	No	Yes	1	0	Never	Never	Never	
620	463	1	1	7	No	No	No	0.5	0	Never	Never	Never	
638	463	1	1	5	No	No	No	0	0	Never	Never	Never	
660	473	1	1	1	No	No	No	0	0	Never	Never	Never	
672	491	2	1	0.5	Yes	No	No	0	0	Never	Never	Never	
672	491	2	2	0.5	Yes	NA	NA	0	0	Never	Never	Never	
704	508	1	1	5	Yes	No	No	0	0	Never	Never	Never	
705	508	1	1	4	No	No	No	0	0	Never	Never	Never	
707	508	1	1	2	No	No	No	0	0	Never	Never	Never	
745	532	2	1	11	No	No	No	0	0	Never	Never	Never	
745	532	2	2	10	No	NA	NA	0	0	Never	Never	Never	
802	547	1	1	6	No	No	No	0	0	Never	Never	Never	
814	573	1	1	8	No	No	No	2	0.5	Never	Never	Never	
820	573	1	1	Unsure	No	No	No	1	0	once a year	Never	Never	
846	588	1	1	10	No	No	No	0	0	Never	Never	Never	
893	652	1	1	4	No	No	No	0	0	Never	Never	Never	
938	683	2	1	3	No	Yes	No	1	0	Never	Never	Never	
938	683	2	2	10	No	NA	NA	2	0	Never	Never	Never	
944	705	2	1	2	No	No	No	1	1	Once a week	Never	Once a year	snake
944	705	2	2	2	Yes	NA	NA	1	0	Never	Never	Never	
959	711	1	1	6	Yes	No	No	0	0	Never	Never	Never	

Appendix F2 continued

Survey Id.	Site no.	Total cats	Cat ID	Age	Bell	Leash	Declawed	Hours outside Summer	Hours outside Winter	Mice freq.	Bird freq.	Other Prey freq	Other Prey type
974	711	2	1	1.5	Yes	No	No	4	0	Never	Never	Never	
974	711	2	2	0.5	No	NA	NA	0	0	Never	Never	Never	
1012	786	2	1	9	No	No	No	1	0	Never	Never	Never	
1012	786	2	2	9	No	NA	NA	1	0	Never	Never	Never	
1015	786	2	1	10	No	No	Yes	0	0	Never	Never	Never	
1015	786	2	2	3	No	NA	NA	0	0	Never	Never	Never	
1017	786	2	1	17	No	Yes	No	0	0	Never	Never	Never	
1017	786	2	2	17	No	NA	NA	0	0	Never	Never	Never	
159*	73	1	1	8	No	NA	NA	4	0	Once a year	Once a year	Once	rabbit
211*	78	3	1	13	No	NA	NA	0	0	Never	Never	Never	
211*	79	3	2	6	No	NA	NA	0	0	Never	Never	Never	
211*	80	3	3	3	No	NA	NA	0	0	Never	Never	None	
229*	78	2	1	6	No	NA	NA	8	0	Once a week	Once a week	Never	
229*	79	2	2	4	No	NA	NA	2	0	Never	Never	Once a year	Chipmunks.
250*	139	4	1	15	No	NA	NA	0	0	Never	Never	Never	
250*	140	4	2	14	No	NA	NA	4	0	Once a year	Never	Never	
250*	141	4	3	6	No	NA	NA	10	0	Once a month	Never	Never	
250*	142	4	4	6	No	NA	NA	8	0	Once a week	Once a month	Never	
254*	139	1	1	9	No	NA	NA	0	0	Once a year	Never	Once a year	Bugs, flies
263*	141	3	1	20	No	NA	NA	0	0	Never	Never	Never	
263*	141	3	2	10	No	NA	NA	0	0	Never	Never	Never	
263*	141	3	3	10	No	NA	NA	0	0	Never	Never	Never	
272*	145	1	1	10	Yes	NA	NA	8	0	Once a month	Once a week	Twice a month	
309*	158	3	1	1	Yes	NA	NA	8	0	NA	NA	Never	
309*	158	3	2	3	yes	NA	NA	0	0				
309*	158	3	3	5	No	NA	NA	4	2				
314*	158	2	1	4	No	NA	NA	8	2	Once a year	Once a year	Never	
314*	158	2	2	4	No	NA	NA	10	2	Once a year	Never		Butterflies

Appendix F2 continued

Survey Id.	Site no.	Total cats	Cat ID	Age	Bell	Leash	Declawed	Hours outside Summer	Hours outside Winter	Mice freq.	Bird freq.	Other Prey freq	Other Prey type
365*	181	1	1	4	No	NA	NA	2	0	Once a year	Never	Never	
381*	260	2	1	7	No	NA	NA	0	0	Once a year	Never	Never	
314*	158	2	2	7	No	NA	NA	0	0	Once a year	Never	Never	
433*	287	2	1	11	No	NA	NA	0	0	Never	Never	Never	NA
433*	287	2	2	10	No	NA	NA	0	0	Never	Never		
618*	463	1	1	3	No	No	No	0	0	Never	Never	Never	
641*	463	3	1	15	No	No	No	0	0	Never	Never	Never	
641*	463	3	2	10	No	NA	NA	0	0	Never	Never	Never	
641*	463	3	3	1	No	NA	NA	0	0	Never	Never	Never	
673*	493	1	1	4	No	No	No	0	0	Never	Never	Never	
698*	508	4	1	9	No	No	No	0	0	Never	Never	Never	
698*	508	4	2	7	No	NA	NA	0	0	Never	Never	Never	
698*	508	4	3	7	No	NA	NA	0	0	Never	Never	Never	
698*	508	4	4	3	No	NA	NA	0	0	Never	Never	Never	
709*	508	2	1	5	No	No	No	0	0	Never	Never	Never	
709*	508	2	2	5	No	NA	NA	0	0	Never	Never	Never	
718*	519	1	1	1	No	No	No	0	0	Never	Never	Never	
719*	527	1	1	5	No	No	No	3	0	Never	Never	Never	
746*	532	1	1	16	No	No	No	0	0	Never	Never	Never	
76*	29	1	1	2	No	NA	NA	8	0	Never	Never	Never	
766*	539	1	1	11	No	No	No	0	0	Never	Never	Never	
77*	29	1	1	6	No	NA	NA	2	0	Never	Never	Never	
773*	539	3	1	15	No	No	No	0	0	Never	Never	Never	
773*	539	3	2	8	No	NA	NA	0	0	Never	Never	Never	
773*	539	3	3	2	No	NA	NA	0	0	Never	Never	Never	
781*	539	2	1	5	No	No	No	4	2	Never	Never	Never	
781*	539	2	2	15	No	NA	NA	4	2	Never	Never	Never	
828*	573	1	1	3	No	Yes	No	1	0	never	Never	Never	

Appendix G: Predator observation data collected at all 100 sites where residents were interviewed. Sampling data including date of observation, detectability measures such as temperature (C), number of people, dogs or cars observed during surveys, start time and total time taken. Total number of cats and squirrels were recorded, (sum of three repeat transects) and standardized by observable areas within each site (ha).

Note: Due to the small number of observations, cat survey data were not included in the final analysis.
Sites marked with (*) represent those included in the final analysis.

Site No.	Day	Month	Year	Weather	Temp	People	Dogs	Cars	Start time	Total time	Area observed	Cats total	Ave cats /ha	squirrel total	Ave squirrel /ha
1*	20	8	2014	Overcast	27	0	0	1	15:36	0:35	2.19	0	0	3	0.46
4*	24	8	2014	Sunny	29	0	0	48	14:38	0:31	1.94	0	0	0	0
18*	20	8	2014	Overcast	27	0	0	64	15:12	0:30	1.88	0	0	0	0
20*	25	7	2014	Overcast	25	15	4	17	17:35	0:47	2.94	0	0	0	0
29*	20	8	2014	Overcast	26	27	2	22	16:17	1:03	3.94	4	0.25	18	1.78
36*	24	8	2014	Sunny	29	2	0	7	15:22	0:35	2.19	0	0	6	0.91
44*	31	7	2014	Cloudy	23	52	13	75	17:57	0:48	3	3	0.33	3	0
49*	31	7	2014	Cloudy	22	25	1	300	17:45	0:30	1.88	2	1.06	0	0
58*	20	8	2014	Overcast	26	20	1	22	17:51	0:35	2.19	3	0.46	26	4.11
61*	29	8	2014	Cloudy	27	4	1	94	16:10	0:33	2.06	1	0	4	0.97
64	29	8	2014	Cloudy	27	14	3	25	15:10	0:30	1.88	0	0	0	0
68	29	8	2014	Cloudy	26	2	0	24	17:00	0:30	1.88	0	0	8	1.6
73	1	8	2014	Sunny	28	8	7	47	16:55	0:40	2.5	0	0	0	0
78	24	8	2014	Sunny	29	39	3	12	13:44	0:39	2.44	4	0.82	3	0.41
93	20	8	2014	Overcast	26	6	0	16	18:30	0:30	1.88	0	0	0	0
97*	24	8	2014	Sunny	29	7	0	26	12:45	0:32	2	0	0	4	1

Appendix G continued

Site No.	Day	Month	Year	Weather	Temp	People	Dogs	Cars	Start time	Total time	Area observed	Cats total	Ave cats /ha	squirrel total	Ave squirrel /ha
117*	23	8	2014	Sunny	26	3	0	15	18:40	0:30	1.88	2	0.53	1	0
121	27	6	2014	Sunny	31	0	0	5	18:11	0:29	1.81	0	0	0	0
130*	1	8	2014	Cloudy	28	1	0	32	16:24	0:33	2.06	0	0	5	1.46
139*	18	5	2014	Sunny	17	27	5	64	15:15	0:59	3.69	2	0.27	15	1.08
141*	6	5	2014	Sunny	16	16	3	154	16:40	0:30	1.88	1	0.53	22	3.72
145*	23	8	2014	Sunny	27	19	5	101	18:00	0:35	2.19	2	0.46	21	3.65
146*	18	7	2014	Sunny	28	12	3	250	16:50	1:00	3.75	5	0.27	9	0.8
147	9	6	2014	Sunny	28	25	9	19	16:05	0:52	3.25	0	0	31	3.08
158*	18	5	2014	Sunny	18	23	3	127	13:54	0:57	3.56	0	0	10	0.56
174	18	8	2014	Cloudy	23	15	2	19	18:18	0:32	2	0	0	3	0.5
176	22	8	2014	Cloudy	23	25	3	300	18:57	0:33	2.06	0	0	12	1.94
178	5	6	2014	Overcast	17	45	5	45	16:00	0:55	3.44	4	1.16	5	0.29
181*	28	8	2014	Cloudy	22	23	2	268	15:17	0:55	3.44	2	0.29	12	1.45
201*	25	7	2014	Cloudy	26	0	0	300	15:09	0:47	2.94	0	0	0	0
204*	31	7	2014	Sunny	22	1	1	0	17:04	0:24	1.5	0	0	3	1.33
228	24	8	2014	Sunny	29	2	0	87	14:55	0:33	2.06	0	0	0	0
231	25	7	2014	Cloudy	25	3	0	300	16:33	0:32	2	12	2	0	0
255	25	7	2014	Overcast	26	0	0	300	16:04	0:34	2.12	0	0	0	0
260*	23	7	2014	Cloudy	24	8	1	20	16:38	0:47	2.94	3	0.34	0	0
263*	1	8	2014	Sunny	29	10	1	7	15:45	0:40	2.5	0	0	3	0.4
270*	27	8	2014	Cloudy	23	0	0	104	18:05	0:30	1.88	0	0	0	0
279	28	7	2014	Overcast	16	28	0	300	16:40	0:46	2.88	0	0	10	1.04
285*	30	7	2014	Cloudy	19	17	5	10	17:50	0:50	3.12	0	0	16	2.88
287*	18	7	2014	Sunny	28	4	1	56	18:19	0:51	3.19	2	0.63	7	0.63
290*	16	7	2014	Sunny	22	7	3	15	19:08	0:44	2.75	4	0.36	12	2.91

Appendix G continued

Site No.	Day	Month	Year	Weather	Temp	People	Dogs	Cars	Start time	Total time	Area observed	Cats total	Ave cats /ha	squirrel total	Ave squirrel /ha
316	23	7	2014	Cloudy	23	0	0	300	17:58	0:22	1.38	0	0	0	0
321*	31	7	2014	Cloudy	21	2	1	7	15:42	0:55	3.44	0	0	5	0.58
322*	31	7	2014	Cloudy	21	2	0	8	16:03	0:32	2	0	0	9	3
329*	24	8	2014	Sunny	28	0	0	18	16:49	0:36	2.25	0	0	0	0
338	16	7	2014	Sunny	23	0	0	2	18:36	0:30	1.88	0	0	0	0
341	27	8	2014	Cloudy	23	0	0	300	17:35	0:30	1.88	0	0	0	0
344*	27	8	2014	Cloudy	23	0	0	300	17:44	0:31	1.94	0	0	0	0
357	27	8	2014	Overcast	23	1	0	61	17:28	0:30	1.88	0	0	0	0
368*	16	7	2014	Cloudy	22	0	0	0	17:49	0:31	1.94	2	0.52	2	0
378*	24	8	2014	Sunny	28	0	0	141	17:03	0:30	1.88	0	0	0	0
379	24	8	2014	Sunny	28	0	0	151	17:09	0:30	1.88	0	0	0	0
382	27	8	2014	Cloudy	24	34	0	300	18:10	0:32	2	0	0	0	0
388	23	7	2014	Cloudy	24	20	2	21	18:32	0:33	2.06	0	0	0	0
389*	24	8	2014	Sunny	28	3	0	122	17:37	0:32	2	0	0	0	0
392*	28	8	2014	Overcast	23	3	0	4	16:56	0:32	2	0	0	1	0.5
396	21	8	2014	Overcast	25	17	4	26	15:29	0:43	2.69	0	0	7	0.74
398*	24	8	2014	Sunny	28	2	0	300	17:20	0:30	1.88	0	0	0	0
410*	27	8	2014	Overcast	24	1	0	177	16:25	0:34	2.12	0	0	3	0.47
411*	27	8	2014	Overcast	25	11	4	126	15:30	0:45	2.81	4	0	11	1.78
416	27	8	2014	Overcast	24	0	0	300	16:14	0:31	1.94	0	0	0	0
420	29	7	2014	Cloudy	23	2	2	300	17:50	0:35	2.19	0	0	4	0.46
423	28	8	2014	Cloudy	22	13	0	300	16:08	0:43	2.69	0	0	5	0.74
444*	24	7	2014	Sunny	25	30	7	300	18:29	0:56	3.5	2	0.29	0	0
446	29	7	2014	Sunny	23	46	1	300	17:41	0:55	3.44	2	0	7	0.29
463*	28	8	2014	Overcast	20	61	9	113	16:58	0:41	2.56	3	0.39	0	0

Appendix G continued

Site No.	Day	Month	Year	Weather	Temp	People	Dogs	Cars	Start time	Total time	Area observed	Cats total	Ave cats /ha	squirrel total	Ave squirrel /ha
473*	24	7	2014	Sunny	25	27	20	41	18:38	0:47	2.94	1	0.34	0	0
490	30	8	2014	Overcast	27	1	0	3	12:41	0:35	2.19	0	0	11	1.83
491*	30	8	2014	Overcast	27	13	3	16	12:00	0:34	2.12	1	0	3	0.94
493*	28	8	2014	Overcast	21	16	3	38	17:40	0:30	1.88	0	0	2	0.53
498*	26	8	2014	Sunny	31	15	3	98	16:04	0:39	2.44	2	0.41	4	0.41
508*	26	8	2014	Sunny	31	3	1	11	16:40	0:31	1.94	0	0	1	0
519*	18	8	2014	Cloudy	23	42	8	28	18:55	0:40	2.5	12	1.6	3	0.4
527*	29	7	2014	Sunny	24	36	5	300	15:16	1:00	3.75	1	0	6	0.27
532*	29	7	2014	Cloudy	24	14	5	10	15:29	0:48	3	2	0	9	2
539*	18	5	2014	Sunny	15	12	2	24	17:38	0:53	3.31	6	0.6	20	1.81
541	18	8	2014	Sunny	23	20	4	3	17:12	0:38	2.38	1	0	7	0
547	19	5	2014	Sunny	17	25	6	300	11:50	0:36	2.25	0	0	5	0.89
571	22	8	2014	Overcast	23	5	0	10	16:57	0:36	2.25	0	0	4	0.89
573*	22	8	2014	Overcast	24	5	2	9	15:57	0:41	2.56	3	0.78	4	1.17
576*	24	7	2014	Sunny	25	4	1	300	15:52	0:47	2.94	0	0	4	0.68
588*	26	8	2014	Sunny	31	13	1	31	17:08	0:37	2.31	0	0	4	0.43
592	22	8	2014	Overcast	23	30	0	93	18:13	0:57	3.56	5	0.56	4	0.28
598	26	8	2014	Sunny	31	18	0	86	17:42	0:32	2	0	0	0	0
599*	21	7	2014	Overcast	30	5	4	10	17:16	0:39	2.44	0	0	9	1.23
608	22	8	2014	Overcast	23	49	8	300	17:21	0:58	3.62	0	0	0	0
623	24	7	2014	Sunny	25	19	0	300	15:35	0:32	2	0	0	0	0
652	21	7	2014	Overcast	30	7	0	32	16:31	0:37	2.31	0	0	1	0.43
665	26	8	2014	Sunny	31	12	3	88	18:14	0:30	1.88	1	0.53	0	0
667	23	6	2014	Sunny	28	0	0	300	18:00	0:45	2.81	0	0	0	0
678	28	8	2014	Cloudy	27	3	0	82	18:30	0:34	2.12	0	0	0	0

Appendix G continued

Site No.	Day	Month	Year	Weather	Temp	People	Dogs	Cars	Start time	Total time	Area observed	Cats total	Ave cats /ha	squirrel total	Ave squirrel /ha
680	24	7	2014	Cloudy	25	3	1	6	17:17	0:28	1.75	1	0	0	0
682	26	8	2014	Sunny	31	0	0	300	17:58	0:36	2.25	0	0	2	0.44
683	26	8	2014	Sunny	30	3	0	34	18:14	0:31	1.94	0	0	0	0
705*	24	7	2014	Sunny	25	4	1	0	17:06	0:47	2.94	0	0	1	0
711	24	8	2014	Sunny	29	12	3	109	13:24	0:31	1.94	0	0	7	1.03
717*	25	7	2014	Overcast	24	11	0	20	18:17	0:54	3.38	0	0	3	0.3
722*	20	8	2014	Overcast	26	2	0	73	17:10	0:30	1.88	0	0	0	0
751*	24	8	2014	Overcast	29	29	7	48	12:12	0:36	2.25	0	0	9	0.44
786*	23	7	2014	Overcast	24	8	0	0	15:30	0:45	2.81	0	0	13	0.71

Appendix H1: Plots to assess model fit for selected GLM to test the relationship between total bird abundance and cat density while controlling for vegetation. Model residuals are plotted with fitted values to check for non-linearity, unequal variance and outliers (A). Q-Q plots are used to check for skewness in the data (B). Correlograms were used to identify areas of spatial autocorrelation of both raw bird abundance data (C), and model residuals (D).

Appendix H2: Plots to assess model fit for selected GLM to test the relationship between total bird richness and cat density while controlling for vegetation. Model residuals are plotted with fitted values to check for non-linearity, unequal variance and outliers (A). Q-Q plots are used to check for skewness in the data (B). Correlograms were used to identify areas of spatial autocorrelation of both raw bird richness data (C), and model residuals (D).

Appendix I: Model fit parameters for GLMMs for bird abundance as grouped by risk traits (ground nesting, ground feeding, feeder birds and migrants). All models included outside cat density (cats), risk trait (trait), their interaction (cat x trait) and total vegetation (veg.) as fixed effects using a negative binomial distribution. Abundance is modelled by random effects, which vary among species, for the effect of cat density and the effect of total vegetation. Two additional fixed effects were added to the model; squirrel density/ha (squirrels) and bird feeder density (bird feeder). Information theoretic criteria to assess best fit model included: Akaike Information Criteria, adjusted for small sample sizes (AICc) and $\Delta AICc$. If there were less than 2 AICc units between two or more models, I selected the model with fewer variables.

Trait	Fixed Model Covariates	df	AIC	ΔAIC	Selected Model
Ground	cats + trait + cat:trait + veg	9	2713.56	0.76	*
Nesting	cats + trait + cat:trait + veg + squirrel	10	2712.80	0.00	
	cats + trait + cat:trait + veg + squirrel + bird feeder	11	2714.52	1.72	
Ground	cats + trait + cat:trait + veg	9	2706.32	0.86	*
Feeding	cats + trait + cat:trait + veg + squirrel	10	2705.46	0.00	
	cats + trait + cat:trait + veg + squirrel + bird feeder	11	2707.18	1.72	
Feeder	cats + trait + cat:trait + veg	9	2715.40	0.78	*
Birds	cats + trait + cat:trait+ veg + squirrel	10	2714.62	0.00	
	cats + trait + cat:trait+ veg + squirrel + bird feeder	11	2716.30	1.68	
Migrants	cats + trait + cat:trait + veg	9	2716.78	0.82	*
	cats + trait + cat:trait+ veg + squirrel	10	2715.96	0.00	
	cats + trait + cat:trait+ veg + squirrel + bird feeder	11	2717.64	1.68	

Appendix J: GLM Poisson distribution model fit parameters for bird species richness as grouped by risk traits. All models included outside cat density (cats), risk trait (trait), their interaction (cat x trait) and total vegetation (veg). Additional covariates included squirrel (squirrel density) and bird feeder density (bird feeder). Information theoretic criteria to assess best fit model included: Akaike Information Criteria, adjusted for small sample sizes (AICc) and $\Delta AICc$. If there were less than 2 AICc units between two or more models, I selected the model with fewer variables.

Trait	Model Covariates	df	AICc	$\Delta AICc$	Selected model
Ground Nesting	cats + trait + cat:trait + veg	5	458.29	0.72	*
	cats + trait + cat:trait + veg + squirrel	6	458.88	1.31	
	cats + trait + cat:trait + veg + bird feeder	6	457.57	0.00	
	cats + trait + cat:trait + veg + bird feeder + squirrel	7	457.57	0.00	
Ground Feeding	cats + trait + cat:trait + veg	5	444.06	0.00	*
	cats + trait + cat:trait + veg + squirrel	6	444.64	0.58	
	cats + trait + cat:trait + veg + bird feeder	6	444.28	0.22	
	cats + trait + cat:trait + veg + bird feeder + squirrel	6	444.28	0.22	
Feeder Birds	cats + trait + cat:trait + veg	5	451.48	0.00	*
	cats + trait + cat:trait + veg + squirrel	6	452.07	0.59	
	cats + trait + cat:trait + veg + bird feeder	6	451.59	0.11	
	cats + trait + cat:trait + veg + bird feeder + squirrel	6	451.59	0.11	
Migrants	cats + trait + cat:trait + veg	5	455.07	0.00	*
	cats + trait + cat:trait + veg + squirrel	6	455.66	0.59	
	cats + trait + cat:trait + veg + bird feeder	6	455.13	0.06	
	cats + trait + cat:trait + veg + bird feeder + squirrel	6	455.13	0.06	