**Encouraging Ingenuity in Bañados del Este Biosphere Reserve: Urban
Biosphere Reserves and New Myths in Nature Conservation**

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Abstract

From its inception, the wilderness idea was closely related to the conservation movement, particularly in the United States of America. Although most of the current literature no longer embraces the wilderness approach to conservation, conservation is still based on a dualistic view of the world, and the integration of humans into reserves is still generally discouraged by elements of the conservation literature. This thesis shows that the integration of humans into protected areas sometimes can represent an important advantage for nature conservation, supporting the arguments of those who believe that integrating particular communities into protected areas can benefit nature conservation. Using the Uruguayan case study, I find evidence to suggest that the protected areas concept is less applicable to conservation needs in some countries, and that due to the persistence of a conservation discourse based on protected areas, the emergence of alternatives has been hindered. Local approaches, I argue, may be the only feasible ones in particular local situations. I explore the particularities of the Uruguayan conservation movement, local perceptions of nature and protected areas, and (1) conclude that, as currently structured, international approaches to conservation are unlikely to be successfully applied in the country; and (2) suggest examples of local conservation strategies that could be used to aid biodiversity conservation in the country. One of the local approaches suggested here is the inclusion of a small sized city inside the boundaries of the core area of a local Biosphere Reserve – in other words, the use of the concept of Urban Biosphere Reserves. Using the city of Castillos as a case study, I suggest that this approach can aid the conservation objectives of these areas by bringing the example of new conservation approaches to the city, therefore modifying attitudes

towards nature, and building new and much needed alliances. The two key arguments that run parallel in this thesis – that of a need for a particular, unique approach to conservation in Uruguay, and that of the value of urban biosphere reserves – are coupled by the essential need for a non dualistic approach to conservation.

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Aho Metakiase Oyasin

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Introduction

Nature conservation has come a long way since the British established the first game legislation in Africa in the 17th century. However, conservation approaches in the south are still heavily influenced by governments, environmental non-governmental organizations (NGOs), aid agencies, and individual researchers located in the north. The establishment of reserves – the main tool advocated and used by the international conservation community – in southern countries, has contributed a great deal to the protection of ecosystems and species that might have disappeared without the existence of such reserves. Reserves were, however, also a medium for oppressive measures against local populations that in most cases suffered the consequences of reserves without obtaining any benefits. As we shall see below, reserves have undergone significant changes in the recent past, but the international community approach to conservation (by no means a monolithic one) is still focused on the use of the reserve tool for conservation, and has not promoted the emergence of local approaches to conservation.

Local approaches, I argue, may be the only feasible ones in particular local situations. This thesis explores the particularities of the Uruguayan conservation movement, local perceptions of nature and protected areas and (1) concludes that as currently structured, international approaches to conservation are unlikely to be successfully applied in the country; and (2) suggests examples of local conservation strategies – i.e. temporary protected areas, inclusion of a small city in a core area of a biosphere reserve, commercial use of native species – that could be used to aid biodiversity conservation in the country. Some of these local approaches have been

applied elsewhere, such as commercial use of native species in South Africa or Brazil; others come from international forums, such as Urban Biosphere Reserves; and yet others are distinctively Uruguayan, such as temporary protected areas. While I do not discount the importance of international conservation efforts or the possibility of learning from international experiences, as a result of my case study I find evidence to suggest that the international community needs to encourage, foster and financially support local conservation strategies.

The past 50 years have seen a significant evolution in the management and perception of nature reserves. During the same period, western scientific perceptions of nature have also been shifting – from a static view of nature to a more recent view of a dynamic or changing nature. Scientific as well as cultural perceptions of nature have a profound influence on the management of nature reserves. The objective of nature reserve management used to be closely related to the preservation of wilderness, which is usually defined as the absence of human impacts on natural areas. The isolation of tracts of wilderness, the larger the better, from human use was the main goal of these reserves. Visits to these areas were permitted solely for scientific or spiritual reasons, illustrating the human-nature dualism that laid the foundation for these reserves. Particularly during the past three decades, the management of nature reserves has undergone profound changes. Among forces driving this shift in focus are the recognition of the land rights of indigenous peoples; respect for the human rights of local peoples; recognition of the role of historical human management of areas believed to be pristine; and the view of nature as dynamic, as opposed to the older, which saw nature as static or rebounding towards equilibrium or climax – the ‘Clementsian’ view (Worster 1998).

Despite the changes in the general objectives and perceptions of nature reserves, protected areas continue to be the most significant tool when it comes to conservation planning around the world. Protected areas still carry within them a strong dualistic component, rooted in the concept of wilderness preservation that has served as the objective of protected areas since its origins. Although the concept of reserves has been adapted to fit different situations in different regions, and this significant relaxation of the concept has been crucial to continue conservation efforts in many parts of the world, I argue that the use of this particular instrument, with its particular connection to human-nature dualism, has hindered the appearance of alternative conservation strategies. The use of 'wilderness' preservation as a conservation objective until recently exemplifies the case.

Wilderness does not exist. The "real" wilderness described, for example, by the U.S. Wilderness Act (1964), ceased to exist due to human actions that have impacted every corner of the globe. Its imaginary has been uncovered (Evernden 1992; Cronon 1993; Braun and Castree 1998; Castree and Braun 2001; Demeritt 2002). An analysis of this deconstruction of wilderness is done in the "re-enchantment of nature conservation" section in Chapter 1, and I argue that the concept should finally receive proper burial. However, a global and uniquely human mania, the "preservation of nature", continues to have strong ties with this decrepit conception. Despite the rivers of ink that have flowed intending to wash away this intricate human invention, its assumptions continue to serve as pillars for preservation factions, while they act as barriers against the emergence of a *consciously* human designed nature conservation movement. While wilderness preservation was based on human designed objectives, the intention was that humans

should have no input regarding what shape that wilderness should have – other than to be free of human intervention. The human role was limited to restraining other humans so as to leave nature alone, a nature that was only true when it was pristine, free of human impacts, wild. Even when human actions were proposed as restorative measures, the intention was to return nature to its pre-human, or, in the Americas, pre-European condition.

This fantasy of returning nature to a wilderness condition was in turn rooted in a Clementsian view of ecosystems that after disturbance are expected to return to their climax, even long after Clements' theory had been left behind (this point is further analyzed in the “the new ecology” section in Chapter 1 and in Chapter 4 with reference to grassland ecosystems). Only by believing that after a disturbance nature will return to its previous state and reach a sustained climax, can one pretend to return a system to its “wilderness” or “pre-human impact” condition. This old wilderness religion, like the mono-climatic vision of ecosystem development, only welcomed those willing to share the same myth. In contrast, it is argued here, the view of nature as evolving, and dynamic, may provide the foundation for a conscious human involvement in re-enchanted nature conservation. In opposition to conservation based on the wilderness idea, which left no room for alternative views, this re-enchanted nature conservation can be based on objectives that can be contested based according to new discoveries, which in turn can lead to new goals. This re-enchantment, I argue in Chapter 1, is necessary to avoid relativism, which could be the outcome of the new ecology and the post-structural analysis of nature as will be introduced next and analyzed in Chapter 1.

There is, however, a strong reason for the continued use of the wilderness idea as the foundation of conservation initiatives around the world: the absence of a clear alternative. The “new-ecology” precepts and the post-structuralist analyses of preservation and nature perception will be discussed in greater detail later, it should be recognized now, that in combination they have uncovered, respectively, a dynamic, non-predictable nature, and the social constructedness of the nature being preserved. However, the tremendous change that conservation theory has undergone was not always acknowledged by those criticizing wildlife conservation from a post-structural view point. These critics do not deny relativism nor they ignore the dangers resulting from new ‘discoveries’ and deconstruction, however, alternative foundations for the advocated “non-destruction” of “nature” are not proposed.

This thesis is partly a search for new alternative foundations for nature preservation, a search for a ‘re-enchantment of humans’ inter-relationship with nature.’ This ‘re-enchantment’ will heavily draw from Leopold’s Land Ethic and contemporary case study material. The Uruguayan case study will serve to demonstrate the need for an alternative approach in nature conservation, one that does not place the focal point on the use of nature reserves to achieve the objective of biodiversity conservation. It also offers evidence that opportunities for alternative approaches do indeed exist. Moreover, this thesis will argue that an alternative conservation strategy also needs to break the dualism embedded in the concept of nature reserves, and that urban areas must be part of sustainable planning. The city of Castillos and its area of influence (south-eastern Uruguay) are presented as a case study to demonstrate that including a small city inside a reserve can aid achieving the objectives of biodiversity conservation by introducing an

approach to conservation that does not ignore cities and is based on the perception of humans as part of, and not apart from, nature.

I will argue that alternative approaches are needed for biodiversity conservation to succeed in Uruguay, where 95% of the land is in private hands, resources are extremely limited, and a particular view of nature prevails. Here, the North American ideal of “wilderness” is inappropriate for it is considered oppressive, restrictive, and particularly unrealistic for Uruguayan circumstances. Alternatives could be based on a perception of nature and nature conservation that re-engages humans in a respectful and conscious nature management, and disposes of the concept of “wilderness”. This is not to say that protected areas do not have a role to play in Uruguayan conservation strategies; protected areas are still needed and should be part of a national conservation strategy, but they should not be the main focus of attention, for they become centers of controversies and conflict, and therefore hinder the emergence of alternative or parallel conservation strategies. Conflicts arising from the potential use of protected areas clearly manifested during the semi structured interviews I conducted with government officials and non-governmental organizations staff. Protected areas alone cannot adequately preserve biodiversity anywhere in the world. However, an analysis of the past century’s conservation legislation and the past 30 years of conservation forums and discussions in Uruguay lead me to believe that effective conservation in the country should not be centered in protected areas because few of them will have the effectiveness needed to succeed in their role, and therefore alternatives are even more important than they are in countries that have an adequate system of protected areas in place. The value of

landscape diversity is argued in Chapter 1, and its implications for Uruguay are discussed in Chapter 4 and in the conclusion.

Using the case study of Castillos and its area of influence I will investigate the idea that including a city inside the core area of a biosphere reserve could benefit conservation in Uruguay. Including a small city inside a core area is a symbolic way of breaking the human-nature dualism, which is still an important aspect of protected area design and management. On the one hand, by taking protected areas to the people that feel excluded from them, conservation initiatives can gain support. On the other hand, small and medium sized cities, which in many ways still affect the surrounding protected areas, have an incentive to promote green planning in the urban area. In both cases, the need for a shift on focus in conservation strategies in Uruguay, and the inclusion of a city in the core area of a biosphere reserve, an important emphasis is placed on going beyond the human-nature dualism characteristic of conservation strategies.

The underlying argument of this thesis is the following:

Due to the particular characteristics of its territory – land tenancy, use and topography – and its culture – perception of nature and conservation, politics – I argue that Uruguay needs a tailored approach to conservation. It is naïve to propose the establishment of large tracts of traditional protected areas in the country as *the* solution. Alternatives that adapt to the particularities of Uruguay need to be considered in order to spark pragmatic nature conservation activities in the country. Parallel to this argument, I suggest that the inclusion of relatively small and medium sized cities inside the boundaries of core areas in Biosphere Reserves – or the use of Urban Biosphere Reserves – can aid the conservation objectives of these areas by bringing the example of new conservation approaches to the city, therefore modifying attitudes towards nature, and building new and much needed alliances. Two arguments that run parallel in this thesis – the need for a particular approach to conservation in Uruguay, and the support for urban biosphere reserves – are coupled by the essential need of a non dualistic approach to conservation strategies.

Uruguay and Castillos as Case Studies

With the evolution in the management of protected areas for the last 40 years, the categories of The World Conservation Union (IUCN) have been expanded to include a gradient of protected areas. The IUCN argues that these categories “recognise the presence of humans, the system does imply a gradient of human intervention.” (Stolton and Oviedo 2003: 3) However, the emphasis of the gradient, and of the categories themselves, is placed on the naturalness of the environment, naturalness defined by the degree of absence of human intervention. (Ibid.) Even though categories were created to allow human intervention, their base is still rooted in human-nature dualism. The approach presented in figure I.1 below has two negative implications: (1) an area can be of extreme importance for biodiversity conservation, and at the same time populated by humans, which occurs in many biodiversity hotspots around the world (Cincotta et al 2000); (2) in countries like Uruguay almost the entire territory could be classified as significantly modified by human action, and if we follow the reasoning presented in figure 1, several IUCN categories would not exist in Uruguay.

In fact, this is precisely what happens in Uruguay when government officials and many conservationists discard the use of Category I, arguing that Uruguay does not have “natural” areas. Category I however, could be necessary for the reintroduction or protection of certain species or habitats that require certain areas of strict protection, even if these are “non-natural” areas. The second implication of this approach is that “although conservationists have long tacitly accepted the importance of reflecting nature conservation values within agricultural systems, this has generally taken second place to conservation of ‘natural’ areas.... [T]he conservation movement has often overlooked the potential of the various organic farming methods to contribute with the area of nature conservation” (Stolton et al 2000: 5). Although the context of this statement is agricultural systems and particularly organic agriculture, it could be extended to cattle grazing systems, or mixed agriculture. These have also taken second place to conservation of natural areas, and have seen their potential towards conservation overlooked. In the Uruguayan context this omission is particularly significant due to land tenancy and exploitation characteristics.

The above statement could also be extended to urban areas. As Harvey notes,

the long-standing hostility of... the environmental movement to the very existence of cities has created a blindspot of startling proportions. Usually depicted as the high-point of the pollution and plundering of planet earth, cities are either ignored or denigrated ...in that wing of environmentalism that focuses primarily on ‘nature’ as wilderness, species, and habitat preservation. Theoretically, ecologists may claim that everything is related to everything else, but they then marginalize or ignore a large segment of the practical ecosystem. (1996: 391-392)

To be fair, there is a group that belongs to the wing of environmentalism that focuses on protected areas but has been interested in including cities in the analysis. Within the framework of the Man and the Biosphere (MAB) program, the Urban Group has been

working on the issue for more than two decades. In 1996 the so called “Seville Strategy” was agreed for the MAB program. In it, it was stated that biosphere reserves should be models of land management and of approaches to sustainable development. In November of 2000 the MAB International Co-ordinating Council outlined the objectives of the Urban Group (UNESCO 2000b):

- a) Identify contributions that the biosphere reserve concept has made or could make in urban planning and management.
- b) Examine if there is, or should be, a place for urban areas and cities in the World Network of Biosphere Reserves (beyond as transition areas).
- c) Explore alternative ways and means of recognizing selected cities, or parts thereof, as sites that exemplify the Biosphere Reserve Model.

Castillos exemplifies the issue described by Harvey in the sense of being ignored by the conservation movement. It also represents an ideal case study to analyze the objectives outlined by the Urban Group of UNESCO and the potential benefits of including a city inside a reserve – a core area of a biosphere reserve in this particular case. Castillos is located in the *departamento* of Rocha, in south-eastern Uruguay, approximately 100 kms from the border with Brazil. The area (including Rocha and parts of two other *departamentos*) was designated as the Bañados del Este biosphere reserve in 1976. The reserve covers almost 4,000,000 million hectares according to the 1999 master plan (PROBIDES 1999). However, these limits only exist on paper, and they are likely to be modified in the future. Some of the few protected areas existent in Uruguay are inside the proposed borders. The institution in charge of management and research in the reserve is PROBIDES¹, which is governed by representatives from the Rocha municipal

¹ Programa de Conservación de la Biodiversidad y Desarrollo Sustentable en los Humedales del Este (PROBIDES) will be described in Chapter 5.

government, the University of the Republic, the UNDP, and the Ministry of the Environment (MVOTMA).

The proposed zoning for the biosphere reserve is illustrated in figure I.2 below. PROBIDES used IUCN categories for zoning inside the reserve. According to PROBIDES' Director, this was done in order to use a universal language. The main categories used are "wilderness area" (category Ib, in blue, dotted line in right hand map), "national park" (category II, in green), "protected landscape" (category V, in orange), and "managed resource protected area" (category VI, in brown).

Figure I.3 below provides more detail on the two protected areas ‘surrounding’ the city of Castillos and clearly illustrates that two parks would have not been proposed if Castillos had not been located where it is. There is no significant difference between the area inside and outside the suggested limits, and important parts of the *palmares* are left outside the reserves. During the interviews in Rocha I asked what was the reason for having two reserves instead of one, and I was told that the issue had been discussed during planning stages and it was decided that the city had to remain outside the boundaries of the reserves.

Figure I.3 shows the limits of two proposed protected areas in more detail. The satellite image on the left has the protected area proposed south of Castil347los and the map to the right the proposed area north of Castillos -- the dark areas in this map represent *palmares*, an endangered association of *Butia capitata*. It is clear that the only reason for having two reserves is the existence of Castillos city, left of the arrows. Source: PROBIDES 1999.

One of the interviewees who emphatically stated that a city could not be considered inside a reserve did however accept the inclusion of certain agricultural or cattle ranching uses. This is a general perception among many of the interviewees, but curiously they believe that the impact of Castillos on its surroundings has been less significant than that of agriculture or cattle ranching. The impact will of course depend on the issue being considered, for example, the regeneration of palm trees has been utterly impeded by cattle ranching. On the other hand, repopulation of capybaras in the surrounding areas has been difficult due to illegal hunting by people coming from nearby cities, including Castillos. The perception of cities as opponents of protected areas, or existing in conflict with them, is clear: even those who recognize the limited impact that Castillos has had on its surroundings share this view.

The importance of participation of local people in the planning and management of protected areas is recognized in the literature, and will be highlighted in Chapter 2. I argue that getting over this urban-reserve dichotomy, a legacy of the human-nature dichotomy in the wilderness idea, could be beneficial for biodiversity preservation, and that Castillos' case study is ideal for this analysis. Castillos is located in the center of an extremely diverse landscape of wetlands, coastal lagoons, unique 'ombu' forests, palm woodlands, native forests and sierras. The city and its inhabitants are deeply embedded in these landscapes, from having the palm trees in the coat of arms to more than two thirds of the population having visited the lagoons in the year before my survey was conducted. The city declared itself the environmental capital of Uruguay, and although it did not go much further than the declaration, Castillenses have an understanding of the surroundings and an environmental awareness uncommon in the rest of the country. It was clear from

the interviews conducted with local key informants that they were not satisfied with the level of participation in the planning and management of the reserve. Moreover, a survey conducted by a colleague in Aguas Dulces, which could be described as a coastal neighborhood of Castillos, shows that there is very little knowledge of the institution in charge of the management of the Biosphere Reserve, or the reserve itself, among the population. PROBIDES staff claims to have gone a long way to ensure participation, and there is no reason to doubt that this might have happened with landowners in the region, many of whom were consulted. However, Castillos' citizens, and probably those of other cities in the biosphere reserve, were ignored. I conducted a survey that included 5% of Castillos' population (see methodology below), and it clearly demonstrates the level of involvement Castillenses have with their surrounding landscapes. This involvement means that making them participants in the planning and management of the reserve is crucial for its success. However, including the city inside the reserve is unthinkable for many conservationists. I will argue that including the city in one single reserve will only benefit conservation objectives by involving its citizens in conservation initiatives, breaking the human-nature dualism, and helping Castillenses direct their current efforts towards environmental preservation.

In summary, the objective of this thesis is two-fold: first, to demonstrate that international conservation approaches cannot be copied directly in Uruguay, and that too much energy is being used to try to adjust them to the country's particularities; second, to show that including Castillos inside a core area of the reserve will in fact benefit biodiversity conservation efforts and not impair them.

Methodology

The field research for this thesis was approved by Carleton's Ethics Committee and Castillos' local government in May 2002. Of the 5 months spent in Uruguay in 2002, almost 2 were spent in Montevideo interviewing government officials and national environmental non-governmental organizations' authorities, and doing archival research in the National Library. The rest of the time was spent in Castillos and the area of influence interviewing stakeholders, conducting a survey in the city, familiarizing myself with the area, and carrying out archival research in the local library.

Key informants were interviewed in Montevideo, Castillos, Rocha (Municipal capital), and the countryside. In total 22 semi-structured interviews were completed, and they are distributed as follows:

- 6 were with local actors from the city of Castillos and the region around it (including environmental NGOs)
- 3 from the local government
- 5 from PROBIDES
- 3 from national environmental NGOs
- 5 from national authorities in the Ministry of Environment, Ministry of Cattle and Agriculture (MGAP), Botanical Garden and Faculty of Agronomy

Interview structure varied slightly depending on the level of involvement and/or knowledge the interviewee had of Castillos and its area of influence, more local examples were used and more questions regarding the local situation were asked to those involved or with knowledge about Castillos and its surroundings. The interviewees were chosen based on their involvement, or that of their organization, in national conservation issues. Almost all of the interviewees were heads or senior officers in their organization or department. Some of the interviewees (5), had a more local involvement, however,

conservation efforts in Uruguay are mainly focused on the *departamento* of Rocha, so these interviews were still valuable in a national context. The average duration of the interviews was 45 minutes, all respondents signed the consent form, and all but one agreed to have the interview recorded and transcribed. The notes from the unrecorded interview were obviously not as complete as transcriptions, but the main points of the interview were taken. Transcription of one interview was made difficult by construction noise in the background, some parts (approximately 30%) of that interview were inaudible and impossible to transcribe. Almost all the interviews were conducted in the interviewees' work place, and all sessions were very relaxed, and none of the interviewees refused to answer any question. The objective of the interviews was to understand the interviewees' perception of protected areas, conservation, and Uruguayan nature. Questions from each respondent were then tabulated, not an easy task due to the semi-structured nature of the interviews. However, the use of a semi-structured method provided me with valuable information on issues that would have not emerged in a more structured interview, and I do not believe the results obtained from the tabulation of questions would have been greater had I used a completely structured interview method. Questions were directed towards the following topics: protected areas general objectives; management objectives inside protected areas; management outside protected areas; concept of nature and Uruguayan nature; protected areas categories and approaches to conservation. The questionnaire is included in Appendix 4.

Informal meetings, round tables, participation in local events, and the media, secondary sources.

Informal meetings and participation in local events helped me achieve an excellent level of collaboration with local authorities, the managers of the Biosphere Reserve, and community members. A few meetings took place the year before my field research, when I was in the planning stages and visited the area to determine if it was an appropriate case study. These meetings helped me establish contact with key members of the community and staff from the local government and reserve management. During my stay in the Biosphere Reserve several informal meetings were held with members of the local community. These included the members of the local authority – Junta Local de Castillos - who have jurisdiction over the majority of the study area, the Grupo de Mujeres Rurales (Rural Women Group), private landowners with holdings near the proposed protected areas, park rangers, members of two local environmental NGOs (LNGOs): Grupo Palmar and Casa Ambiental, and citizens from Castillos. These meetings together with the participation in several events such as the organization of the local Earth Day festivities, local fairs, cattle dips and immunization, participation in the Junta Local weekly meetings, the Youth Group of a LNGO weekly meetings, and several local projects, and other activities, helped build important ties with several members of the community, which facilitated the exchange of information *in both directions*, and helped familiarize myself with their problems, concerns, and expectations.

In addition to these activities, I organized a formal round table to mobilize different stakeholders towards a solution for a critical local problem: the endangered palm tree (*Butia capitata*) woodlands ecosystem. Private landowners, park rangers,

LNGOs, local authorities and citizens were invited and participated in the round table. As a result of the round table, a working group including private landowners and local authorities was created to continue working for solutions to a very important local concern.

The close relationship established with the media, two local radio stations and one local TV channel, helped me further communicate the goals of the project to the stakeholders. Several interviews were used to inform Castillos citizens about the purpose of the project, the importance of the survey, and the value of participation. An informal agreement was made with reporters to inform them about the results of the survey, and the conclusions of the project.

One of the most important components of the fieldwork was to continue familiarizing myself with the area. Several car trips were taken during my stay in the Biosphere Reserve using topographic maps to get accustomed to the different features, characteristics, and important local sites. Long horseback rides in one of the protected areas and canoe rides in the other were made with the help and company of park rangers. These exercises proved to be extremely useful in meetings with stakeholders. Not only did it help me understand discussions better, it also created a stronger bond by allowing me to demonstrate familiarity with the area and with local concerns. Furthermore, a strong connection with the local environment was established that was essential to the understanding of local concerns including the palm tree landscape, the importance of certain landscapes and sites, and the strong feeling of being a unique cultural community.

Access to historical data from the area was obtained from two main sources: the National Library located in Montevideo and the local library located in the Junta Local de

Castillos in Castillos. In search of historical perceptions of nature and environmental concerns I reviewed 5 local newspapers, the earliest one starting in 1865, and found several reports from the area of research that appeared in national newspapers. I spent approximately 10 evenings browsing through the newspapers and photocopying any reference related to environment, natural resources and its management, tourism, etc. Historical literature with descriptions of the local landscape by travelers was obtained in the national library and from a local historian (or “curious fellow” as Jesus Perdomo would rather be called). The information was both photocopied and filmed due to the regulations imposed on the use of some of the publications. The Library of Congress was visited in order to obtain transcripts from the meetings of the Environment Commission of both chambers and a friend (Ignacio Paz) working at the parliament building was able to provide access to other parliamentary documentation and to the serial section of the Library of Congress where I was able to find a few issues of the Castillos local newspaper that were missing from the local library. In addition, information related to the palm trees was obtained from the Botanical Garden library, the Faculty of Agriculture library and an interview with staff from the Botanical Garden and conversations with several Castilleneses with plenty of empirical knowledge of the palms.

Survey Methodology.

A survey was conducted between the months of July and August 2003 in the city of Castillos with help from the Grupo de Jovenes de Casa Ambiental, a local NGO. During my stays in Rocha I spent as much time as I possibly could in Castillos and getting involved in local activities as described above. However, the use of this

quantitative survey method was necessary in order to obtain valuable information from Castillos citizens in a limited period of time. Interviewers were divided into 4 different groups and received instructions regarding sampling, how to reduce bias, and other basic interviewing techniques. Each interviewer was paid a fixed amount for the number of surveys conducted, no matter whether they were completed or not. Due to lack of resources it was impossible to conduct a totally random sampling. However, instructions were given to the interviewers to try to ensure a sample as random as possible given the circumstances:

- The sample consisted of 350 respondents, which constitutes approximately 5% of the population of Castillos according to the last Census (1996)
- The city was divided into different quadrants to assure a proportional representation of each area
- Interviewers were instructed not to exceed a maximum of surveys per area, but the number was higher for 3 areas with a higher concentration of population, and lower for 4 areas with a lower concentration of population
- In addition interviewers were asked not to concentrate surveys in one block, but to spread them as evenly as possible in the assigned area
- Surveys were conducted every day of the week, at different times of the day, and included houses and businesses
- A stratified sample was taken from an education center to ensure representation of ages 15 to 21
- No stratified sample was taken to ensure representation of people whose infancy was spent in the coastal area. This restricted the use of chi-square tests in one variable

The survey consists of 40 questions that can be divided into 4 different groups.

- a group of nominal questions
- a group of interval questions with rating from 1 to 10
- the ranking of photographs
- the mapping of areas that should be protected in the local surroundings.

Survey responses were analyzed using SPSS[®]. Every question was plotted and cross tabulations and chi-square tests were conducted between many variables. Attention was given to the cross tabulation of gender with all other variables, but no significant results were obtained. The results of the survey are reviewed in Chapter 5 and discussed in the final chapter.

Methodology for Landscape Perception Section

Included in the survey were two sets (A and B) of 5 color photographs, which were presented to all participants. Participants were asked to rank the photographs. This thesis is based on understanding local people's perception of "Nature" and "protected areas", and in order to do so, I considered necessary, and valid (Seale 1998; Feyerabend 1993), to use a wide range of methods ranging from "experiencing" the local environment to semi-structured interviews and questionnaires. The following quote from Scott (2002: 272) summarizes the reasons for including this type of study in the survey.

"...perception does not depend just on the physical landscape components, but also on the values, past experiences and socio-cultural conditioning of the observer. Landscape responses are therefore viewed as a product of the interaction of people with the physical and cultural environments at particular times"

Lothian, in his study on the perceptions of beauty, distinguishes between two views of landscape, which he calls the "objectivist and subjectivist paradigms" (1999:

178). The objectivist will argue that beauty is in the landscape, while the subjectivist will judge beauty “from the interpretation by the mind behind the eyes” (ibid.). My study follows the subjectivist paradigm in which “landscape provides the means of understanding the cognition, perception and preferences of human observers” (ibid.). In my case, respondents were not asked to judge beauty or preference, but certain qualities of the landscape –naturalness, fragility and usefulness- all of which could clearly not be studied under the objectivist paradigm.

Except for two photographs, the rest were taken by me at the beginning of my field-work (end of May 2003). All the photographs (except the rice paddy) were taken on the same cloudy day and when possible the same amount of sky (overcast) was shown. The sets of photographs included the following scenes:

Set A	Set B
1. Wetland with little green coverage	1. Palm tree landscape
2. Wetland with capybaras	2. Native forest landscape
3. Wetland with cattle grazing	3. Wetland with plant coverage landscape
4. Rice paddy	4. Grassland landscape
5. Grassland with cattle	5. Eucalyptus monoculture landscape

Set A was composed almost entirely of wetland scenes. Wetlands are a very large component of the ecosystem in the area and the center of discussion, conflicts, and problems. I expected the analysis of different scenes from this particular landscape would provide some insights as to how Castellenses perceive the different aspects of wetlands. In addition, the other characteristic and large ecosystem of the area (grassland) was included in this set (with one photograph) in order to compare responses to wetlands and to grasslands. The inclusion of cattle in the scene was intentional and the purpose was to have the opportunity to compare not only wetland and grassland perceptions but also two different possible uses of this ecosystem. Capybaras are a source of food and income for

some Castellenses and I wanted to analyze which sectors, if any, would consider the wetlands with capybaras more useful than the wetlands with cattle. Cattle ranching is a major source of foreign currency for the country and an important activity in the area. However, Castillos seems to be in a transition from a 'rural services' society to a possible 'tourism services' society and cattle ranching does not require much labor, so "cattle ranching" scenes were included in both sets to assess opinions of different sectors of Castillos' society towards this activity. At the same time, having wetlands with capybaras and wetlands with no visible fauna would help assess the importance of these mammals for the local population, and enable comparisons with the importance of cattle ranching and rice production.

Set B was composed of 5 different characteristic landscapes from the area (for a description of regional and national landscapes of Uruguay see Evia and Gudynas 2000). No animals were included in this set, all pictures were taken by me in the same season and all but one (eucalyptus plantation) show the same amount of overcast sky. It is important to note that pictures were taken in the same season because Brown and Daniel (1995) have reported that seasonality can have an effect on the preference for a landscape. At the same time, the amount of sky and weather conditions were identical so as to avoid idiosyncratic responses affecting the ranking (Kaplan and Kaplan 1989a).

Although wetlands by definition are composed of water, scenes with more striking local views of water (lakes, rivers or the ocean), were not included because there is a general preference – in different cultural backgrounds – for land cover types with water (Benayas del Alamo 1994; Kaplan et al 1989). In addition to this, "Daniel and Ittelson (1981) point out that responses to very diverse environments reflect stereotypical

reactions to the symbolic environment rather than a perceptual response based on specific landscape characteristics” (Vining and Stevens 1986: 175).

The use of photographs to evaluate landscape perceptions has been applied in landscape planning and environmental psychology studies for more than 30 years (Hagerhall 2001; Coeterier 1983; Kaplan and Kaplan 1989a; Kaplan and Kaplan 1989b; Kaplan et al. 1989; Ryan 2002; Shuttleworth 1980; Williams and Cary 2002). Moreover, psychology and geography share a long history of collaboration (Kitchin et al. 1997). A crucial question the research has to ask is whether the responses would vary if the assessment was done in the actual site. According to Kaplan and Kaplan, “the quick and straight forward answer to these questions is that people’s responses to the two-dimensional representation are surprisingly similar to what they are in the setting itself” (1989:16). Several other studies support this conclusion (Levin 1977; Coeterier 1983; Shuttleworth 1980 – last two also recommend color over black and white photographs; Brown and Daniel 1995; Buhyoff et al 1978 – use a ranking system).

Although some of the rules for the use of pictures recommend avoiding “sore thumbs (if a scene has something visually striking that most other scenes don’t have)...” (Kaplan and Kaplan 1989b: 209; also see above quote of Daniel and Ittelson 1981), I made specific use of visually striking objects, such as the capybara or cattle, in order to classify the different scenes.

One potential problem in the methodology could be the use of only one photograph for each scene. Some studies recommend the use of several photographs of each scene (Kaplan 1975; Shuttleworth 1980; Vinings and Stevens 1986). However, due to time and economic constraints, only one photograph of each scene was included. The

use of ranking instead of rating was another factor in the decision to include only one photograph per scene.

Finally, a logical methodological question would be: why photographs of landscape and not an oral description of the landscape or the use of one word like “palmar” or “monte” (native forest), or “pradera” (grassland)? There are two main reasons for choosing photographs instead of an oral description: (1) I did not conduct all the surveys myself and providing an oral description would have opened the door to bias on the part of the interviewers; and (2) The photographs used to “describe” the selected landscapes (particularly in set B) are clearly identified with the “real” landscapes. After the survey was finished I asked the participants I interviewed to “tell me what the picture was about” (for set B) and all the participants mentioned palmar or butia for landscape 1, monte nativo or monte for landscape 2, banado or humedal for landscape 3, pradera or campo for landscape 4, and eucalyptus for landscape 5. Moreover, questions 9 to 13 and 14 to 18 in the survey were related to local landscapes as well. In questions 9 to 13 respondents were asked to rate how important it is to protect lagoons, wetlands, fauna, palms and grasslands, and in questions 14 to 18 the question was to rate how endangered those same landscapes are. The landscapes that can be correlated with the photographs (wetlands, palms and grasslands) had the same ranking in fragility-endangered and need to protect-naturalness, supporting the results of the photograph analysis.

Mapping priority conservation areas

The final exercise of the survey consisted of asking participants to look at a map of Castillos area of influence and draw the areas they considered as important for

conservation. Understanding local priorities bring conservation efforts a step closer to success. The responses were digitized using GIS, and a map was produced with Castellenses priority areas for conservation. It is also important to try to determine why those priority areas are such. In order to do that ArcView was used to determine the priority areas of different sectors of society. Variables like gender, age, residency during infancy, degree of support to protected areas, and landscapes considered more beautiful or useful, among others, were mapped. The method was quite simple. A group of questions in the survey consisted on asking participants to identify the most natural, beautiful and useful places in Rocha. Then I “asked” ArcView to map only the responses of the respondents that had identified, for example, the palmares as the most useful area, and a map with the priority areas for conservation of these respondents was produced. Some interesting results were obtained and are described in Chapter 5 as well as in the discussion and conclusions chapter.

Overview

The importance of including urban areas in conservation planning, or of proposing alternative conservation strategies is based on the understanding that the involvement of humans in nature management will not *per se* be detrimental to the management of protected areas, moreover, I argue that it could enhance the goals of nature conservation both inside and outside protected areas. Chapter 1, which will expand on the concepts outlined above, will propose a land ethic with Castillos’ case study in mind and will review part of the literature on the “new ecology” and post-structuralism with relation to wilderness, nature and conservation. It is not my intention to re-explore

and analyze historical conceptions of nature or the origins of dualism, this has been done with supreme clarity and detail elsewhere (Glacken 1967; Merchant 1989; Coates 1998), nor will I provide a historical account of the science of ecology (Worster 1998 and Bramwell 1989 provide superb reviews of the topic). Rather, based on an analysis of the new ecology and of post-structural views of nature, I will lay the foundation for an alternative view of conservation, a necessary previous step when advocating for urban biosphere reserves or for the inclusion of urban areas in conservation planning.

Chapter 2 will explore what has been the relationship between local people and protected areas, and the related evolution of the conservation movement. This analysis is a continuation of Chapter 1 in the sense of laying the foundation for an alternative conservation theory, one that completely embraces humans as part of nature. The academic discussion of the role of people in protected areas and the goals of conservation will be presented and discussed. This discussion is centered in conservation in the tropics and the main arguments are applicable to Uruguay because they show the impacts that particular views of conservation can have at scales larger than that of single protected areas. Sometimes by focusing on protected areas conservationists can lose sight of the importance of protecting at a trans-scale, in their passion for protecting the perfect tree they risk losing the entire forest.

Chapter 3 will describe the Biosphere Reserve concept with an emphasis on urban areas and discuss whether urban areas have a place inside conservation planning. Without stating that urban areas are not unsustainable *per se* it cannot be argued that urban areas should be part of reserves, this argument is at the center of this chapter. The important

role that small and medium sized cities should have in conservation initiatives will then be introduced and further developed in the conclusion.

Chapter 4 provides a geographical description of the Pampas bioregion and of Uruguay, with special emphasis on grasslands. It also presents a historical analysis of conservation, including legislation, conferences, publications and recent interviews with key informants. This analysis provides the basis for a description of the main perceptions of nature and conservation in Uruguay. In light of the discussion in chapters 1 and 2, and based on the results of field work (both secondary and primary data) I argue that a custom-made approach to conservation needs to be developed for the country to have an effective biodiversity conservation strategy. The focus, I suggest, needs to move away from protected areas, without discarding them, to allow other alternatives to emerge. Chapter 5 repeats the methodology of Chapter 4 but it focuses on the Bañados del Este Biosphere reserve and particularly the city of Castillos. Castillenses perception of the environment and their relationship with their surroundings is described, and based on the survey results it is understood that Castillos and its area of influence have ideal characteristics for an Urban Region Biosphere Reserve, and that the crystallization of such a reserve would aid biodiversity conservation and traditional biosphere reserve objectives by breaking the human-nature dualism and building new alliances with urban citizens.

Chapter 1

Nature, Conservation, and Re-Enchantment

“Nature cannot solve our problems, it cannot give us guidance, it cannot give us direction. Humans, not nature, are the sole arbiters of their fate”

Mitman 1992: 212

“The evolution of a land ethic is an intellectual as well as emotional process.”

Leopold 1949: 225

Humans and Nature

An important issue to be addressed in a thesis that deals with “nature conservation” is the human-nature dualism. According to Braun and Castree (1998), “saving nature” reaffirms externality from it. The conservation literature has generally perceived humans as external from nature. Human involvement and modification of nature has been depicted with negative connotations no matter the type of management, and due to the current global scale of human impacts some authors have pronounced nature dead (McKibben 1989). It is only by understanding humans as apart from nature that we can sustain this view. Elephants can produce substantive “damage” in vegetation and beavers can alter the landscape, but these impacts are “natural” and accepted by the same authors who depict *any* human impact as negative (i.e. Rambo 1985).

Humans are animals with unique characteristics (Rolston III 1991; Soper 1995), but recognizing this uniqueness does not imply a separation from nature – on which we depend as much as any other animal – nor does it liberate us from responsibilities

towards nature protection. Soper, however, would argue that “there can be no ecological prescription that does not presuppose a demarcation between humanity and nature. Unless human beings are differentiated from other organic and inorganic forms of being, they can be no more liable for the effects of their occupancy of the ecosystem as can any other species.” (1995: 160) Soper is separating humans from nature because of their uniqueness. If we agree with this argument, where should we draw the line? Apes are another distinct species, they are known to use tools, and some authors see elements of culture in their populations (Janson and Smith 2003; Laland and Hoppitt 2003; Boesch 2003), should they too be set apart from nature? Understanding the uniqueness of the human animal should not lead to a separation of it from nature. I am not arguing that dualism is the only factor affecting human destruction of nature, but I believe that humans can at the same time be part of nature, and protect nature from certain human actions.

Thinking of the body as “nature” and the mind as “humans”, illustrates how humans can be part of nature and protect it at the same time. Suppose I have a disease and as a consequence I decide to change my habits, diet, etc to heal my body. I can think of it as mind “saving” body, on which it depends, or I can think of myself organically (body, spirit and mind) saving myself. From a dualistic perception, understanding of decision making is easier by thinking of humans (mind) saving nature (body). This, however, does not mean that humans are apart, or need to be apart from nature, in order for it to be saved. It is evident that humans are also saving themselves in the process, just as mind is saving itself when body heals. The problem lies when we suggest that humans (mind) need to be excluded from nature (body) in order for it to heal, or even exist. As

part of nature, humans are capable of intervening in it, with both positive and negative impacts, both to nature, and ultimately, to themselves. Therefore, the crucial aspect is not whether humans should or should not manage nature, but how, with what objective in mind, and for whose benefit (Braun and Castree 1998). By accepting the role of humans as managers I am not embracing an anthropocentric approach. Neither am I siding with biocentrists when I state, in the next section, that I believe in all species' right to existence. Despite my understanding of nature as unpredictable, and because I believe humans are not apart from nature, and nature has not been "free" from "impact" for a long time, I can only expect humans to be careful managers of nature. Scale is suggested as a fundamental guidance for this 'careful' management of nature. Scale is also the reason why humans need to act both as stewards and as equals in its relationship with nature. I believe humans on occasion need to act as stewards of natural processes and/or species, not out of a presumption of superiority of the human species, but because humans' appropriation of the earth's resources is beyond that of any other species (Vitousek et al 1986; 1997; Imhoff et al 2004). Under this situation, and believing in the intrinsic right to existence mentioned above, stewardship is sometimes the only option in human's relationship with certain species, which I nevertheless perceive on an equal footing.

The New Ecology

The new ecology – a term which describes a shift in the understanding of ecology from static to dynamic precepts – opens new perspectives on change, scale, and management (Zimmerer 1994; Botkin 1990; Worster 1998). According to Zimmerer,

these perspectives hold common aspects with human geography, namely the importance of history, space and perceptions of nature (1994). Zimmerer describes the new ecology as follows:

“...this new perspective calls attention to the instability, disequilibria, and chaotic fluctuations that characterize many environmental systems as it challenges the primordial assumption of systems ecology, namely that nature tends towards equilibrium and homeostasis. While the various conceptual orientations of the “new ecology” may not yet constitute a theoretical shift in the sense of a complete replacement of Kuhnian scientific paradigms, they nonetheless acknowledge the shared direction among discrete perspectives on the ecological properties of biophysical environments.” (1994: 109-110)

The new ecology forces us to accept that ecology is a science of ‘probabilism,’ as Simberloff described it (Simberloff 1988; Worster 1998), and that nature is unpredictable. We western ecologists, are then confronted with a moment of panic, for the “clock-work world” (Botkin 1990) that we came to depend on and trust suddenly disappears. If to our understanding of nature as changing we add the fact that humans are considered part of nature, several important questions arise: Where should the limits to human management of nature be drawn, and on what basis are those limits justified? Where do we look for guidance if nature is not able to provide it anymore? What should be the objectives of protected areas – if they should continue to function at all?

The new ecology presents several challenges to traditional conservation approaches. The view of nature as evolving and complex disputes the possibility of predicting nature’s path, challenges the value of pristine areas as baselines and impacts restoration objectives. Conservation theory has been strongly linked to the preservation of a static nature: in many cases reserves were used to prevent disturbances, even when disturbances were “natural”, as was the case with the prevention of wild fires. Preferably,

the habitats to be preserved should be as “pristine” as possible, and when previous management is recognized they should be in a late successional state, close enough to complete “recovery”, something that can only be possible if one believes in a single climax state maintained until new disturbances appear to renew the cycle. Voices of dissent were heard in the 20s and 30s, when Tansley’s and particularly Gleason’s ideas challenged Clements’ community-unit and final climax, and proposed new equilibriums with humans in mind (Tansley), and in the early 80s, when Simberloff, who saw ecology as a science of probabilism, challenged predictability in nature. However, only during the last decade and a half has the view of nature evolving been able to permeate into conservation theory discussions (Worster 1998). The reason for this reluctance lies heavily on these two factors: the dependence of conservation initiatives on the existence of a static nature to be preserved, and the challenges that emerge from acknowledging the unpredictability of nature. Until the challenges are resolved and new objectives arise, conservation initiatives depend on the “existence” of a “pristine”, or not-heavily-impacted nature to be preserved. However, when the possibility for a more consciously human based conservation theory was finding its way into the literature, the new paradigm of biodiversity conservation emerged.

What Is Being Conserved And What Should Be The Objective Of Conservation?

Ecologists began to argue that, whatever the uncertainties of theory, we must prevent the extinction of any and all species of plants or animals at the hand of man, and that the accumulated knowledge of biotic populations, so erratically rising and falling, could help us do just that. Even if we could not determine rigidly what a healthy ecosystem was, or a healthy state of homeostasis for the earth, or even identify a clear point of stable balance between competing species, we could at least use the new insights of ecology to save declining species, populations, communities,

and ecosystems from extinction. Ecology, which had become the immensely complicated study of the fluctuating abundance of species, must now become an instrument to stop an alarming trend toward plant and animal losses. (Worster 1998: 417)

The discussion of the merits of biodiversity conservation from scientific or moral grounds – from species interconnection or possible future medicinal or economic value to the discussion of the intrinsic value of other forms of life – cannot be covered in this thesis. However, after the goal of biodiversity preservation is established, it can be argued that the exclusion of humans from protected areas is not always the most effective strategy to preserve biodiversity. Critics say that humans are already allowed in certain categories of protected areas, and in fact a gradient of categories of protected areas exists that allows human involvement. However, because of the view of human management as degrading of nature and hazardous for biodiversity preservation persists, much of the emphasis of the conservation movement has been placed on the importance of those categories that completely exclude human intervention (see figure I.1). One of the main arguments has been that there are few records of “natural” extinctions – excepting those that happened in the geological past – and that the massive extinction we are presently facing is a result of human destruction of natural habitat. The fact that humans are destroying natural habitats is undeniable, but this does not mean that all human involvement in nature has to be negative. In order to envision a different relationship between humans and nature we need to accept that human involvement in nature is not *ipso facto* negative, and that modified areas can be as valuable as “pristine” natural areas, even for biodiversity preservation. It would be naïve to attempt a nature conservation strategy solely based on the vision of “harmonious” relationships between nature and humans, but so it is to attempt nature conservation based on protected areas alone. And as

we shall see in Chapter 2, the importance of a new approach to conservation goes beyond protected areas.

The argument for the existence of reserves in order to preserve biodiversity is less vulnerable to the findings of the new ecology than the justification of reserves for wilderness preservation. The biodiversity conservation movement, however, relied heavily on the exclusion of humans from nature in order for biodiversity to be properly preserved. Just like the early conservation movement did so to preserve wilderness, the “new” movement continued alienating humans from nature in order to preserve biodiversity. Any trace of human elements in the landscape needed to be removed, and even the enhancement of biodiversity by human action was considered far from ideal – it reduces integrity, and as Angermeir and Karr (1994) argue, is unnatural, and therefore is not as valuable as the “true” “natural” biodiversity. The Sonoran desert presents a case where human management increases diversity, this management has been persistent for at least 5000 years, and cultural remains can be traced back to more than 40,000 years. (Flores et al 1990; Reichhardt et al 1994; Davis et al 2002).

“Defenders of biological diversity, for instance, although sometimes appealing to more utilitarian concerns, often point to “untouched” ecosystems as the best and richest repositories of the undiscovered species we must certainly try to protect. Although at first blush an apparently more “scientific” concept than wilderness, biological diversity in fact invokes many of the same sacred values, which is why organizations like Nature Conservancy have been so quick to employ it as an alternative to the seemingly fuzzier and more problematic concept of wilderness.” (Cronon 1996: 81-82)

To be clear, management in protected areas is accepted and practiced, this management can be minimal, provide pigs for tigers to eat and therefore protect humans (Caughley and Gunn 1996); or intense such as fire suppression in many North American

protected areas. It can also vary from a micro to a macro scale. However, this type of management is accepted and practiced because it is designed to help nature return to its “natural” condition, generally understood as pre-human impact, or has the preservation of biodiversity as an objective. Moreover, it is generally understood that nature provides guidance as to how to perform this management. Reactions among managers are, understandably perhaps, different when human involvement is to gain a living from resources in the park, e.g. wood collection or wildlife hunting. In these cases human actions are prejudged as detrimental to the integrity of the park and generally forbidden.

There have been, and still are, cases in which certain uses of the park resources have been accepted. However, these have been exceptions, and it has been deemed necessary to re-classify the reserve designation to a different category. The dualistic view, which conservation science has been based on, prevents it from acknowledging the fact that humans can enrich nature and enhance biodiversity. Of course, species numbers can not be taken as a positive sign. “A zoo is the most biodiverse area I know” many traditional conservation advocates will argue. This has led to challenges to biodiversity as the goal of conservation by those who propose biological integrity as a goal (Angermeier 1994; Angermeier and Karr 1994; Callicott et al 1999). In turn the proponents of biological diversity argue that they refer to native biodiversity, not any biodiversity (Callicott et al 1999), making *any* humanly introduced species an unwanted guest. This creates new challenges for those who see any human “ on nature as challenging the integrity of the ecosystem. How long should the species be established before it is considered native? What if humans did not directly introduce the species but modified the habitat somehow and this disturbance created the opportunity for the species to colonize?

How do we know that disturbance would not occur “naturally”, making the species native and not exotic? Instead of basing the challenge to the ecosystem’s integrity on the fact that the species was introduced by humans, the emphasis should be placed on the impact of that species in the ecosystem. Some have been “harmless” or even “positive”, while others, like the sea lamprey in the Great Lakes or the Nile Perch in Lake Victoria have been disastrous (Callicott et al 1999: 25). Of course, the concept of “harmless” or “positive” value is tied to the objective of the management of the ecosystem.

In the Castillos area of influence, the guazuvira (*Mazama guazoupira*) – a local, small deer – has seen much of its habitat modified, but it is now known to use the acacia (*Acacia longifolia*) “forests” as its habitat. The acacia is an exotic and invasive species that has created problems in the dune system. If you are trying to preserve the guazuvira you may need to conserve the acacia “forests”, unless until you restore an alternative suitable habitat. If you are trying to solve the problems with the dune system your perspective will be different. This is not an isolated case; the removal of exotics can in occasions have unwanted consequences in native communities (Zavaleta et al 2001; Maezono and Miyashita 2004). The results of these studies underscore the importance of not acting based on absolutes that assume a radical view of humans’ place in nature.

It is of vital importance to define what the objectives of management are and why, and some authors make a distinction between the objectives inside or outside reserves. Callicott proposes the use of *ecological sustainability* or *ecosystem health* as the driving principle for the management of humanly inhabited and used areas, and *ecological integrity* as the norm for protected areas (Callicott 1999: 376). Definitions of these and other ‘buzzwords’ are provided by Callicott et. al. (1999). Ecological integrity is based

mainly on Angermeier and Karr's *biological integrity* concept, but incorporating ecological processes into the definition. "Biological integrity", and therefore "ecological integrity", specifically targets anthropogenic impacts: "variation in elements attributable to natural processes does not represent a variation in integrity, but variation caused by humans does" (Angermeier and Karr 1994, quoted in Callicott et al 1999: 26). A healthy ecosystem may be one that has lost ecological integrity due to human intervention, but that keeps ecological process as they occurred historically (Callicott et al 1999: 27). "Ecosystem health", they add, "is characterized by 'counteractive capacity,' the capacity to absorb external perturbations and rapidly resume normal activities after being substantially assaulted" (Ibid: 27). This definition is closely associated with resilience – defined by Gunderson and Holling (2002) – as we shall see below, the concept of 'normal activities' is hard to define. To clarify the distinction between 'ecosystem health' and 'ecological integrity' Noss states that 'ecosystem health' is necessary for 'ecological integrity' and that 'ecological integrity' is sufficient for 'ecosystem health,' but not necessary (Callicott 1999: 375).

Callicott et al (1999) conclude that "neither of these approaches to conservation can effectively proceed in isolation from the other" (Ibid: 32). The reason being on the one hand that "the maintenance of ecosystem health in humanly inhabited and economically exploited areas depends upon the existence of proximate reservoirs of biodiversity." (Ibid: 32) And on the other hand, "the preservation of islands of biological diversity and integrity and ecological restoration necessarily occurs at present in a humanly inhabited and economically exploited matrix" (Ibid: 32). Therefore the success of reserves depends on the management of the matrix, which as stated above affects the

effectiveness of the reserves. So these conceptually divided areas depend on each other to succeed in the objectives proposed – ecological integrity and ecosystem health. I agree with Callicott's argument about the necessary interconnection for this success to occur. However, I see these definitions of ecological integrity as incompatible with a view of humans as part of nature, and therefore substitute 'ecological integrity' for 'biodiversity protection' subject to the requirement that so called "exotic" species are not ipso facto detrimental to the goals of biodiversity protection. Each species raises different concerns, so this should be assessed on a case by case basis with the precautionary principle in mind – see for example Reckhow 1994, or Kendle and Rose 2000, or applications of the principle for genetically modified crops (Gaugitsch 2002). I believe this is necessary for consistency due to the historic disturbances that have occurred in ecosystems world wide, and particularly in Uruguay. Moreover and directly correlated to this last point, though I partially agree with the argument of having reserves as baselines, I do not think that those reserves that have ecological integrity or biodiversity protection as the objective are the *only* "databases of normal ecosystem function" (Callicott et al 1999: 32). If the premises of the new ecology described above are accepted, what is normal ecosystem function, and why is it that modified ecosystems – with different degrees and times of modification – cannot also function as baselines? I will go back to this argument below.

By establishing biodiversity preservation as the objective of reserves, and ecosystem health as the encompassing objective, I am taking a trans-scale approach to the management of nature. As will be established below and in Chapter 4, biodiversity preservation is an important goal in grassland ecosystems. As stated in the introduction, I also believe species have an intrinsic right to existence, which is a moral choice based on

personal spirituality, for I endorse what one of the many versions of Chief Seattle's speech says: "What is man without the beasts? If all the beasts were gone, man would die from a great loneliness of spirit." However, if forced to choose between either saving ecosystem health while losing the minimum number of species possible or fighting to save all species and lose ecosystem health and many species, I choose the former. In light of the debate over human involvement in tropic reserves and the political ecology of fortress parks, this is not just a rhetorical alternative; it is one that is being discussed in the literature, as we shall see in Chapter 2, and very relevant to the Uruguayan case study, as we note in Chapter 4 and in the conclusion. Moreover, reserves are needed to achieve the overall goal of ecosystem health, but I believe exotics are not detrimental to this ultimate goal.

Two scale concepts need to be introduced in order to measure ecosystem health. In terms of space, a trans-scale look is needed, for local areas used for industrial agricultural production for example might not be "healthy" if analyzed at a close scale, but the influence of the amalgamation of local scales might render the ecosystem as healthy. The second scale concept is related to human impact inside the reserves. There are plenty of examples of human involvement in reserves that have not compromised biological diversity. Therefore not all human involvement should be discarded, as it happens with ecological integrity, and which one is accepted or not is usually a matter of scale.

History reveals not merely that change is real but also that change is various....We can no more take any particular kind of change as absolutely normative than we can take any particular state of equilibrium as normative. The fact that ice sheets once scraped their way across Illinois does not provide any kind of justification for a corporation that

wants to strip coal from the state. We know this, but sometimes we get confused by talk about all change being “natural”. (Worster 1998: 432)

After accepting that change, under different time scales, naturally occurs in every ecosystem, the arguments for certain types of conservation can lose ground. The boreal forest was not always located in what is now Canada, in fact it reached as far south as Illinois. Nor was Florida always covered with wetlands, but in the past it supported a dry savanna (Holling and Gunderson 2002). In the future, should we try to keep environments looking the way they look now for as long as we can? What is the value in doing so? We cannot even be sure we would be helping the preservation of biodiversity by “freezing” ecosystems in the present state. Even restoring them to pre-human impact status and then letting nature take over makes little sense. We do not have the tools to make sure our restoration is close to the “original”, and even if we did, we cannot know what changes would the ecosystem had undergone had humans not impacted in it. What should be the reaction to this lack of certainty? As Botkin (1990) argues, the world of change and chance should not be overwhelming, and it takes a special appeal after we understand that chance is not chaos. Up to now we have been managing a nature that we wrongly believed to be predictable, mechanic. How can acknowledging that we have to manage a nature that we do not fully understand, and that we can not completely predict, make things worst? The new vision of nature management even forces us to be more cautious, for we must now recognize that the outcome is uncertain. Maybe recognition of this precept of the new ecology can do what years of disastrous engineering the landscape could not do with, to pick an example, the US Army corps in the Everglades, and finally it will be understood that nature is not a building that you can draft and then construct in the field.

However, and at the risk of sounding contradictory, at the same time I believe the new ecology unveils a view of nature that is liberating. It allows humans to make management decisions, (which can include no direct human involvement) based on what decision makers believe is best for the ecosystem and those affected by it, and without having to appease a particular conception of nature, which is nothing more than a “naturalized” truth. A new challenge however, emerges from this view of management and relationship with nature: Who makes what decision, based on whose interest, and most importantly, on which worldview? According to Demeritt, “in a world where the stamp of humanity is more extensive than ever and distinguishing the natural from the artificial is, at best, highly problematic, we must act to shape the best world we can, rather than appealing to some extra-social ‘nature’ to authorize someone to arbitrate between the moral from the immoral.” (1994: 216) A discussion on this grounds will be brought back in the Re-enchantment section, but a reminder of Leopold’s words, cited at the opening of this chapter, make an appropriate prelude to it: “The evolution of a land ethic is an intellectual as well as emotional process”. (1944)

“Recognizing the dynamism of natural and cultural systems does not, of course, mean that all change is good or that there are no benchmarks for comparing one kind of change with another.” (Cronon 1996: 14) But without the guidance of nature anymore, how do we recognize “good” change from “bad” change? How can we judge the management of Yellowstone or Yosemite – a landscape completely different from the one encountered by the pioneers - as better than the one of Disney’s Wilderness Lodge – a “savanna” in Florida? This is one of Worster’s (1998) main preoccupations after the rejection of guidance from nature that resulted from the new ecology. His concern is

justified if we understand that at stake are the very foundations on which the conservation movement has been based during the last century. Botkin (1990) places great emphasis on scale as our new guidance to fill up the gap. Scale is “the reason for the astonishing resilience of natural ecosystems...at which processes (including human ones) operate to control the systems,” Gunderson and Holling say (2002: 15). The importance of scale is also highlighted by Callicott, who believes Leopold “had the key” in *The Land Ethic*. Callicott also quotes Picket and Ostfeld, exponents of the new ecology, to highlight the importance of considering scale under the flux of nature paradigm. Picket and Ostfeld state:

the flux of nature is a dangerous metaphor. The metaphor and the underlying ecological paradigm may suggest to the thoughtless and greedy that since flux is a fundamental part of the natural world, any human-caused flux is justifiable. Such an inference is wrong because the flux in the natural world has severe limits. ...Two characteristics of human-induced flux would suggest that it would be excessive: fast rate and large spatial extent. (Quoted in pages 136-137 of Callicott 1999)

Related to the issue of scale as a guiding principle is that of human input for the maintenance of the ecosystem. After we accept that human enhancement of biodiversity is not negative per se, we need to place a limit between, for example, Disney's Wilderness Lodge and Yellowstone. The Wilderness Lodge fauna would die and the vegetation would collapse if humans stop intensively managing the ecosystem. Yellowstone and Yosemite would also suffer changes depending on the objective of conservation for the area. The degree of input from humans to the maintenance of such an ecosystem structure should therefore be included among the scale guiding principles. This discussion will continue in Chapter 4, where I describe the issues around the increase of biodiversity in cattle grazing areas.

The integration of conservation and appropriate management is not a new endeavor, “Leopold’s vision went beyond the *either* efficiently develop *or* lock up and reserve dilemma of the modern conservation *problematique*. Indeed, Leopold himself was primarily concerned, on the ground as well as in theory, with integrating an optimal mix of wildlife – both floral and faunal – with human habitation and economic exploitation of land” (Callicott 1999: 328). Callicott proposes a redefinition of Leopold’s land ethic to ‘dynamize’ it in view of new discoveries in the science of ecology. He believes scales – temporal and spatial – are a crucial element here. Botkin also believes scale of impact or modification is a crucial factor: “we have not abandoned that belief [harmony between ‘men’ and land] of Leopold’s ethic, but have redefined “harmony”. To achieve that new harmony, we must understand the character of nature undisturbed, that discordant harmony...” (Ibid: 191). In light of recent developments in ecology and to incorporate the importance of scale Callicott suggests the following changes to Leopold’s maxim on land ethic: “A thing is right when it tends to disturb the biotic community only at a normal spatial and temporal scales. It is wrong when it tends otherwise.” (Ibid: 138) Critics ask why is there a need to disturb the biotic community for a thing to be right, and Callicott accepts the criticism. But the new ecology shows that the biotic community is not a static entity, so the value of the non-humanly disturbed area does not come solely from the fact that it has not been disturbed, but from being a distinct area in a diverse landscape. An area that will create opportunities not only for humans but for other species as well.

I am not advocating a *potpourri* of management objectives just to diversify the landscape. Scale – spatial and intensity of impact – is a crucial factor. I would like to

quote two remarkable points from Leopold, which highlight the need for integration and the importance of not judging human involvement as detrimental per se (both quotes are extracted from “The Popular Wilderness Fallacy: An Idea That is Fast Exploding, 1918, in Flader and Callicott 1991):

- Who shall say that a square mile of suburban dwellings with modern methods of bird feeding and housing, cannot raise more wild life, though of a partly different kind, than the original wilderness?
- No wilderness seems vast enough to protect wild life, no countryside thickly populated enough to exclude it

Latin American legislation on reserves warns us of the dangers of using concepts designed for ecosystems as a whole as the objective of the reserves. This is clearly inconsistent with achieving sustainability in the overall system for several reasons (Martino 2000b), the most important ones being: First, due to the limited number and size of the reserves, the benefits of a limited objective for the parks will not be felt outside. Second, the boundary effect and the realization that outside the park other standards must rule, for if not the reserve would have no reason to exist. Therefore we conclude that ecosystem health is seriously compromised in the overall system. Two illustrative cases are the Mexican Law for protection of the environment (1988) which establishes among the objectives of protected areas, “to assure a rational utilization of the ecosystems,” or the Guatemalan Law of protected areas (1989), which establishes among the objectives the “use of the national species and ecosystems *in a sustainable way*” (My translation and emphasis). However, in order to prevent this type of “appropriation” of reserves, we need not go to the extremes of ecological integrity.

Callicott (1999) considers the preservation of biological integrity as “an instrumentally, aesthetically, and intrinsically valuable conservation goal parallel to the

maintenance of ecosystem health. The integrity of biotic communities is best secured by large reserves, from which human habitation and economic activity are excluded.” (363)

However, earlier he had stated that

integrity refers to conditions under little or no influence from human actions.... The fact that nearly all biotic communities have been substantially influenced by human actions for millennia creates a dilemma for Angermeir and Karr: Either they must ignore the considerable influence of indigenous peoples in deciding which communities manifest biological integrity or they must regard such peoples as wildlife and their influence as no different from that of any other indigenous omnivore. (Callicott 1999: 362)

Why then does Callicott need to affirm that ecological integrity should be secured in large reserves with no human habitation? If integrity by definition excludes human action, and we know that the ecosystems proposed for reserve conservation have been heavily modified by humans, why not look for a different concept to guide management of such reserves? Instead Callicott embraces it as the norm to use in protected areas because he considers that the incorporation of native influences into the definition of biological integrity should be resolved in future philosophical research (1999). Maybe we should not apply this concept until this dilemma is resolved. Moreover the fact that human influence was indigenous, though extremely important to recognize, should not privilege it from other forms of management – which could incorporate traditional environmental knowledge or not. The pressure to keep a conservation strategy based on wilderness areas and/or human exclusion or being cremated in the preservationists bonfire is such, that many authors, such as Callicott who promotes Leopold’s land ethic as one of integration of human production and nature conservation, feel the need to state that he “support[s] wilderness and nature reserves – categorically – with my purse as well as with my pen.” (1999: 329) Moreover, following that he assures as that “the only viable

philosophy of conservation is, I submit, a generalized version of Leopold's vision of a mutually beneficial and enhancing integration of the human economy with the economy of nature – *in addition to* holding on to as much untrammelled wilderness as we can.” (Ibid. 329) I believe Callicott is contradicting his previous arguments and sounding more like Rolston and Foreman, who do not understand the need to “destroy” national parks while pursuing sustainable development outside. Cronon is another prominent environmental philosopher that after revealing the social constructedness of many preservation foundations, needs to clarify his support for this type of conservation:

“By now I hope it is clear that my criticism in this essay is not directed at wild nature per se, or even at effort to set aside large tracts of wild land, but rather at the specific habits of thinking that flow from this complex cultural construction called wilderness. It is not things we label as wilderness that are the problem – for nonhuman nature and large tracts of the natural world do deserve protection – but rather what we ourselves mean when we use that label.” (1996: 81)

Cronon is more ambiguous than Callicott and leaves room for interpretation, for depending on what one considers to be “nonhuman nature” and “natural world”, previous human alteration, current inhabitation and management can be included or not. The reason for promoting these areas is usually their need in order to “provide habitat for viable populations of other species” (Callicott 1999: 367). Two questions arise from this argument. First, are these areas the best way to preserve biodiversity? Second, besides the moral argument of the intrinsic value of other forms of life, is biodiversity conservation a goal to be pursued and why?

I believe NO is the answer to the first question. And the answer to the second question will depend on the type of ecosystem and landscape under consideration. Despite the growth in the number and size of reserves in the last century, humans have

witnessed an increased loss of biodiversity world wide. It is argued, and I agree, that without those reserves the situation would have been a lot more dramatic. However, the main cause for the loss of biodiversity is the loss of habitat outside those reserves. This loss has in turn affected the reserves themselves by further isolating the increasingly small remnants of suitable habitat for wildlife. Despite the contribution of these reserves to the preservation of biodiversity world wide, I believe their existence has created two main effects detrimental to biodiversity. A boundary effect (McNeely 1990) that creates the illusion of having nature preserved inside the reserves and therefore giving us freedom to destroy the rest of the land, and – directly related to the first point – a devaluation of the environment that surrounds us, for it is not as magnificent and natural as that of the “natural” areas (Cronon 1996). “By teaching us to fetishize sublime places and wide open country, these peculiarly American ways of thinking about wilderness encourage us to adopt too high a standard for what counts as “natural” (Ibid. 1996: 86-87).

In the case of Uruguay the situation is exacerbated, for not only do Uruguayans not value what is close to home, but even our own “natural” areas lose value for they are compared with international wilderness areas. By raising the standards of “natural” areas worth of protection to those of US “wilderness” areas, few areas are considered worth of protection under category 1 of the IUCN. “Uruguay does not have “wilderness” areas” is the argument, but there is no recognition that neither does the US or Africa, no matter how prevalent the discourse is. However, this situation could be turned into a unique opportunity. After understanding the value of its own natural areas, Uruguay can design a conservation strategy with the “wilderness” monkey off its back. An opportunity to truly

embrace Leopold's renewed land ethic in which conservation and production planners are architects of nature conservation. I said I didn't believe protected areas were the best way to conserve biodiversity and I justified my answer in this paragraph. However, I do not believe it would be timely to get rid of them, at least not until a shift in industrial society's relationship with nature is well underway. I do believe that for that shift to happen conservation needs to move outside protected areas, something under way judging by the title of the last World Congress on National Parks – Benefits Beyond Boundaries. Moreover protected areas need also open up in order to break the dualism and allow for a truly consciously human designed conservation alternative. Biosphere Reserves have been proposing such alternatives for more than 3 decades, but, as we shall see in the next chapter, many obstacles lay in its way.

Regarding the importance of location for the answer to the second question (“should biodiversity conservation be pursued?”), I will argue that for the Uruguayan case, not only is biodiversity conservation a morally justifiable argument, it is also one that favors productivity and stability/resilience in the short term as much as it does in the long term.

Biodiversity – Stability/Resilience/Productivity

According to Escobar, “although biodiversity has concrete biophysical references, it must be seen as a discursive invention of recent origin.” (1998: 53). In this section I will be focusing on the concrete biophysical elements of biodiversity, but a reference to the discursive invention is inevitable and necessary. I agree with Escobar's argument that biodiversity “anchors a discourse” that exports new truths that reshape the relation

between nature and society (Ibid: 55). Moreover, as long as this discourse *is not* “*naturalized*”, and ‘sub-discourses’ (I trust postmodernists will consent to the term) are allowed to influence its continuous reshaping, I see less danger on the endorsement of this ‘myth’ than in the lack of any myths at all. This “re-enchantment” and the crucial discussion on relativism will be explored in the re-enchantment section below. By sub-discourses I refer to what Escobar calls “distinct discursive formations”, which include, among others, the following actors: international corporations and conservation organizations, third world national perspectives, southern NGOs, and social movements (1998: 56-63). These sub-discourses can be in conflict, and power struggles might impose some over others, but sometimes through negotiation – which might need a previous empowering of some sub-discourse to level the negotiating table – they can reach consensus. A case in point – though yet to be the norm in the field – is the agreement between *certain* pharmaceutical industries and local communities for bioprospecting (Escobar 1998: 58; Dutfield 1999; Posey and Dutfield 1996). Accepting biodiversity “not as a true object that science progressively uncovers, but as an historically produced discourse” (Escobar 1998: 54) should not prevent us from using the concept – which Escobar accepts “has concrete biophysical elements” – to aid us in our management decisions. How the concept is defined is, as we shall see below, of fundamental importance.

I can now turn to the analysis of biodiversity from as strictly a pure biophysical perspective as possible. Oelschlaeger in his analysis of Leopold states that “stability and diversity are associated. Both are the end-result of evolution to date. To what extent are they interdependent? Can we retain stability in exploited land without retaining diversity

as well?” (1991: 231) The relation between biodiversity and stability, acknowledged early in the century by Charles Elton and later, though with some caution (Callicott 1999), by Leopold, was first challenged by May in the early 70s using mathematical models and the example of the east coast marsh grass, which despite being relatively homogenous had been remarkably stable. In contrast, theoretical computer models showed that the more diverse the system the more fragile (Worster 1998), which interestingly enough could be used as an argument for the conservation of biodiversity. Another blow to the diversity-stability hypothesis came later from Goodman (1975). Today however, ecologists do not provide conclusive arguments to answer the questions posed by Oelschlaeger. Moreover the controversy is partly maintained because different ecosystems react in different ways, so a conclusive answer for *all* ecosystems will remain elusive. As Callicott points out, “to positively conclude that something does not exist – the correlation between diversity and stability, in this case – because scientists do not observe it or because they cannot model it is to commit the fallacy of the *argumentum ad ignorantum*” (Callicott 1999: 126). Therefore we need to analyze the question keeping in mind the ecosystem we are working on.

In Uruguay’s case we are upon a grassland matrix, and although local ecosystems, from forests to wetlands and even different areas of grasslands, might vary in their response, the analysis of the diversity-stability literature for grasslands is necessary to evaluate the merits of biodiversity conservation as an objective for Uruguay. This analysis will be done in great detail in Chapter 4, for now it should be noted that an article on grasslands published in *Nature* by Tilman and Downing (1994) shows a positive correlation between diversity and productivity and diversity and stability. This

and other findings specifically related to pampas grasslands will be visited in Chapter 4. Now I want to bring the discussion to the concept of stability or resilience, which is important to keep in mind during the analysis in Chapter 4.

Before entering into the definitions of resilience I want to introduce another side of the biodiversity-stability discussion. Zimmerer argues that under the systems ecology precepts, stability in an ecosystem will build up diversity due to ecological specialization. The new ecology “in contrast, offers an alternative and more nuanced view of the relations between biodiversity and the temporal attributes of environments. Natural ecological disturbance in this view is a determinant that in many cases enhances biological variety” (1994: 114). Under this view the systems needs disturbance in order to produce diversity. Keeping this in mind, I would now quote Gunderson and Holling’s two ways of looking at stability, which is referred to as resilience:

Resilience has been defined in two very different ways in the ecological literature.... One definition focuses on efficiency, control, constancy, and predictability.... The other definition focuses on persistence, adaptiveness, variability, and unpredictability.... The first definition, engineering resilience, focuses on stability “near an equilibrium steady state.... The second definition emphasizes conditions far from any equilibrium steady state, where instabilities can flip a system into another regime of behavior – i.e., to another stability domain. In this case resilience is measured by the magnitude of disturbance that can be absorbed before the system changes its structure by changing the variables and processes that control behavior. This we term *ecosystem resilience*.” (2002: 27-28)

I argue that Uruguay is being kept “stable” from an engineering resilience perspective. The ecosystem receives constant “disturbance” from cattle present in the landscape for the last 300 years. However, because this disturbance has been permanent and recursive, the biodiversity “created”, which is contested as we shall see in Chapter 4, has not built up a more resilient ecosystem in Gunderson and Holling’s second definition.

In fact, this “command and control” management of the rangelands “results in loss of resilience (Holling and Meffe 1996; Gunderson and Holling 2002: 117-118). Although it could not be said that, given an important disturbance, the system is in danger of flipping into a different regime, it could be argued that the system will keep losing resilience. Management could increase resilience by incorporating diverse practices into it (see section on baselines).

This diverse management should include reserves, in which biodiversity conservation is an objective, but that are also connected to, and not isolated from the rest of the landscape. “Nature reserves must be seen as parts of those systems, not separate from them,” stated Dasmann more than 20 years ago (Dasmann 1982). The landscape management should aim for diversity of grazing, agriculture, restoration, but also diversity within each one of the activities. Under this trans-scale view, every ecosystem – from the grassland matrix to the urban one – contributes to the goal of an overall healthy landscape. Agriculture and grazing are planned together with reserves and urban areas incorporate conservation and production planning in their agendas. By doing so humans can face “the challenge...[of conserving] the ability to adapt to change, to be able to respond in a flexible way to uncertainty and surprises, and even to create the kind of surprises that open opportunity. It is this capacity that a view of an evolving nature should be all about – i.e., maintaining options in order to buffer disturbance and to create novelty. A living system cannot be kept within some desirable state or on some desirable trajectory if adaptive capacity is continuously lost” (Gunderson and Holling 2002: 32).

The Value of Landscape Diversity

After acknowledging that there are no places completely unaffected by people, Botkin states:

there are three kinds of natural areas that we must maintain in the future, two of which we can regard as wilderness and designate legally as protected wilderness areas: no-action wilderness, preagricultural wilderness, and conservation areas. The first is an area untouched by direct human actions, no matter what happens. This kind of wilderness is necessary for observation as a baseline form which scientists can measure the effects of human actions elsewhere; it is an essential calibration of the dials we should set up to monitor the state of nature. (1990: 195)

Graber uses a similar argument for the preservation of protected wilderness areas:

“In North America, the wilderness parks and other designated wilderness are the closest thing we have to markers against which we can judge the World we have invented nearly everywhere else. They represent places where our species has exercised restraint, where we have resisted the wholesale conversion of material and energy to our own purposes. Whatever the “rightness” or “wrongness” of the civilization we continue to invent, wild nature and national parks represent – however imperfectly and however dependent on our continued care – ecological anchors to our own and the planet’s past.” (1995: 133-134)

However, if we accept that nature has been altered by humans, and we believe chance plays an important role in determining the direction of nature, how can modified areas serve as baselines or areas for calibration? Moreover, we can also judge against other inventions too, those inventions have modified nature in a different way, and in a more or less intense way, so we do not necessarily have to judge against pure nature for the purpose of having a baseline for future comparison. The problem lies in the homogenization of modification, not in the modification itself. It might well be the case that, bearing scale in mind, heterogeneous modifications might be more useful as a baseline than the “closest to the pristine as possible” baseline, which is a fallacy. Of course, if we want heterogeneous baselines, a slightly or not heavily modified site will be a useful one, but how can we judge if it is more or less useful than the rest of the

baselines? The value of “wilderness” areas as baselines does not lie in being closest as possible to the pristine, but in being one piece, an important one, of the heterogeneous cultural landscape. As “James Proctor reminds us [the] old-growth forests in the Pacific north-west are not just a ‘contested terrain’ between environmentalists and loggers, but also between different animal species: northern spotted owls may prefer a mature forest full of decomposing trees but deer and chipmunks, along with certain trees, thrive in the early stages of vegetational succession following felling” (Coates 1998: 187). The case of Guinea’s forests presented by Fairhead and Leach (1994; 1995) is an interesting example of diversification, to avoid the word enriching, of the landscape that might not have occurred if we were guided by the precepts of ecological integrity. And ironically the priorities for conservation were placed on the most anthropocentric ecosystems in the landscape, showing the dangers of focusing too much in ecosystems that appear closer to the ‘natural’ baseline. The importance and potential of management as described by Leopold would have been close to heretical, had it not been him making the statements. “Without any doubt, intelligent use of the western ranges for grazing purposes can be made an **improvement on nature** with respect to all our western big game except the buffalo” (Leopold 1919, in Flader and Callicott 1991: 52). In “The River of the Mother of God” (1924), Leopold foresees all the potential of management when he states that “any living thing” could be managed given the knowledge and the desire, and that rare species need remain no rarer than the people willing to venture their skill in *building a habitat*.” (190-191)

The contribution of biodiversity to agriculture is generally accepted (Altieri 1999), and lately an important body of evidence has been accumulating on the

contribution that semi-natural lands can make to biodiversity conservation. Gall and Oriens (1992: 4) state that “agriculture can be of enormous assistance to conservation biology in many ways.” Institutions like IFOAM, IUCN and AIAB have endorsed organic agriculture and believe agriculture can “enhance biodiversity rather than [deplete] it.” (Stolton et al 2000: 7) Pywell et al (2002) describe the ecological process that limit the creation of grassland communities in agricultural landscapes and describe the problems that wildlife can have with changes in land use, even when the new land use is a return to the ‘original’ ecosystem. Norderhaug et al describe the “remaining fragments of traditional hay meadow” as being of “vital importance for biodiversity” (2000: 201). Robinson et al (2001) showed that in an agricultural and grassland mosaic bird diversity was greater than under natural grassland conditions, and that a diversity in the agricultural crops also contributed to bird diversity. The existence of patches of agriculture in natural ecosystems lead to an increase in diversity and numbers. Virkkala et al (2004) suggest grid-based approaches that cover the whole landscape in order to better understand how patches affect red listed birds in northern Europe. Several other studies done for grasslands also highlight this point and they will be mentioned in Chapter 4. European agri-environment schemes for promotion of biodiversity show promise, but they yet lack enough evidence to judge their effectiveness (Kleijn and Sutherland 2003). Moreover, changing attitudes towards biodiversity preservation, *even* when no economic loss is at stake, has been a challenge (Lutz and Bastian 2002; Morris and Winter 1999). The fact that many of these studies come from European researchers and describe European case studies derives, in my opinion, from two factors. The acknowledgment of the inexistence of wilderness, which has yet to be broached in North America, and a

different conception of Landscape Ecology (Landscape Research) among European researchers. In this view, landscape studies are not directed towards ecological modeling, and humans and the environment are seen and studied as integrated parts of the landscape (Haber 2004). This has led to research for biodiversity conservation in mosaic landscapes that includes – and values each type's contribution to conservation - semi-natural, agricultural, grazing and 'natural' areas (van Langevelde et al 2000; Wahlberg et al 1996).

Management of productive areas can contribute to biodiversity conservation parallel to reserves, and a combination of the two could lead to a nature that is at the same time biodiverse and can meet socially endorsed objectives, such as stability, productivity and others. Worster summarizes the objective of diverse landscapes and baselines wonderfully:

“Each of those histories needs space in which to play itself out, to unwind its narrative. That is precisely what the modern idea of conservation must aim to do: provide the space, either set aside in large discrete blocks or protected within the interstices of the landscape, so that all the many earthly histories can coexist – the history of a coral reef alongside the history of a coastal city, the history of a tropical rainforest alongside the history of a political struggle. Such a strategy of trying to conserve a diversity of changes may seem paradoxical, but it is founded on a crucial and reasonable insight. We may have to live with change, may even be the products of change, but we do not always know –indeed, we *cannot* always know- which changes are vital and which are deadly.” (Worster 1998: 433)

I am not suggesting that we move from environmental diversity or land classes as a surrogate for species diversity, for evidence shows that their relationship has been rarely tested (Lombard et al 2003; Araujo and Humphries 2001; Brooks et al 2004). Species diversity is still a key factor in the selection and design of protected areas. However, in landscapes that include a gradient of human influence, and where data on

species diversity is not available, a combination of land classes or environmental diversity and species diversity is ideal – particularly if we are planning protected areas and productive lands for the conservation of nature in a trans-scale, where we are dealing with social and ecological systems. Here, “the issue of scale has implications for...perspectives that may be held by different agents.... One of the insights from complexity thinking is that a multiplicity of scales prevents there being one ‘correct’ perspective in a complex system” (Berkes 2004: 623) This will allow for biodiversity conservation groups to focus at different scales and use different approaches, which, for example, can contribute to a better understanding in the debate over extractive reserves or strict reserves in the tropics (Berkes 2004; Redford and Sanderson 2000; Schwartzman et al 2000a; Colchester 2000; Terborgh 2000).

Re-enchantment of Nature Conservation

While the new ecology managed to shake the foundations of conservation theory, post-modern deconstruction of the concepts of nature and wilderness, mainly the view of them as a social creation (Evernden 1992; Demeritt 2002), made it difficult for the movement to erect new pillars. This has been a positive outcome; by placing nature under a historical lens it protects us from accepting imposed truths (Cronon 1993). “We have to live with the fact that different individuals and groups use different discourses to make sense of the same nature/s. These discourses do not reveal or hide the truths of nature but, rather, *create their own truths*. Whose discourse is accepted as being truthful is a question of social struggle and power politics.” (Castree 2001: 12) However, recognizing the socially constructed bases of our views should not preclude us from accepting these

views, or new ones, nor does it make them “unworthy of belief.” (Demeritt 1994; 2001) Moreover, relativism need not be the only alternative to the ‘naturalized’ truths of realism (Demeritt 1994). In fact, it is important that we find new views, or ‘myths’ (Braun and Castree 1998; Castree and Braun 2001; Callicott 1999; Demeritt 1994; Berman 1981). In this new “myth” might lie our very survival as Worster suggests: “enduring communities...have had one dominant characteristic: they have created rules, and many of them, sometimes highly intentional rules and at other times rules embedded in folk tradition, but always rules based on intimate local experience” (1998: 431). Without these new myths, relativism in conservation, which brings fear to the heart of conservationists (Callicott 1999; Worster 1998; Demeritt 1994; Cronon 1993), will be the only outcome of the combination of the new ecology and post-modern deconstruction.

Although anti-foundationalism (Demeritt 1994) or constructive postmodernism (Callicott 1999) raise the risk of relativism taking over, their work is needed to “undermine exclusive claims to legitimate knowledge about the world, claims that both environmentalists and their political opponents have used entirely too much.” (Demeritt 1994: 222) A denaturalization of knowledges of nature is needed (Castree 2001). This ‘denaturalization’ is precisely what happened with the wilderness idea. However, the social struggles present in the imposition of the wilderness idea have not disappeared, and although the imposition of new ideas, like biodiversity conservation, have been less oppressive, the social struggle remains present, as proven by countless cases of protected areas established in the south. Biodiversity shows how myths are not discarded after they are denaturalized, which represents the difference between constructive and deconstructive postmodernism (Callicott 1999).

Callicott is uncomfortable, to say the least, with Cheney's suspicion of new myths, and disagrees with her proposal of social negotiation as the means to reach a new truth (not Truth). Moreover, he instead proposes persuasion and science, which Cheney considers politically suspect, as the means to reach a new myth, and states that negotiation as the only recourse is naïve, for "why negotiate with someone with whom agreement is hopeless when you can have your own way – when the "other" can be bombed, terrorized, bought, pacified, or sweet-talked into submission? Callicott 1999: 160-165). Needless to say that under the empire of reason the "other" has also been terrorized, bombed, colonized, etc. Persuasion and reason, however suspect they might be, should be combined with negotiation in the search for a new myth. Even Berman (1981: 256), who warns about "too much rational consciousness," which, I would add is related to Native Americans' Medicine Wheel and the emphasis on balance, believes that "despite its abuse, intellectual analysis is a very important tool for the human race to have" (Ibid: 270). Persuasion and reason are necessary to create a myth that is based on our current knowledge of nature, but negotiation is essential to incorporate several different knowledges into it, therefore allowing for adaptation and making it less colonizing. Of course,

"this project [re-enchantment of nature] is as dangerous as it is inevitable. Any thought of romancing nature or re-enchanting nature has first to unearth itself from the ideological mocus with which such ideas and concepts come to us. The critique of ideologies of nature... have to provide the medium in which a counter re-enchantment can maintain critical, vigilant distance from the social magnetism of a simultaneous sentimentalized and oppressive nature." (Braun and Castree 1998: 282)

Berman, aware of the dangers of myth "becoming an agent of tyranny", proposes decentralization, self determination and strong local community ties as a possible antidote

against the naturalization of myth in a global mass society. Translated to the re-enchantment of nature conservation, this means that the same conservation model is not imposed in every region as the international panacea that will work in any context. Even biodiversity conservation, which I embrace for my particular case study, and although rooted on personal moral convictions, needs to be rationalized and negotiated for each particular case. Local conservation can receive international support, but local initiatives should not be oppressed under a new global conservation Truth.

I propose a re-enchantment of nature conservation, a view of humans' relationship with the natural world that allow us to interact with nature, without the depressing feeling of being always an agent of corruption of something that would be always much better without us. This view gives humans the right to interact with nature, and the duty to take good care of it every time this interaction occurs. This is only possible under a new myth, one that needs to be agreed upon, but also one that makes us participants and not mere recipients of management truths. Leopold's land ethic, and the realization that under different worldviews other cultures have been able to relate with nature in a harmonic way – however un-harmonious nature might be – play a fundamental role. Leopold's land ethic can perfectly be adapted to the understandings of the new ecology. Although Leopold did not describe nature as chaotic, he believed, as we have seen above, that nature was too complex to be understood and predicted (1938). Leopold's caution, derived from the recognition of the complexity of nature, should also be remembered when we recognized the unpredictability of nature. I accept Callicott's dynamized land ethic: "A thing is right when it tends to disturb the biotic community only at a normal spatial and temporal scales. It is wrong when it tends otherwise" (Callicott 1999: 138).

This proposed modification embraces Leopold's view of the potential in human management of nature, and is appropriate for the case study being considered in this thesis. Urban areas were not seen as dead wild-less spaces by Leopold, but as areas with the potential to host a variety of wildlife, which, though different from that present in 'natural' ecosystems, had an important value. Leopold believed, as we saw in page 42, that suburban areas could host even more wildlife than original wilderness, with special management and specific wildlife, but important nonetheless (1918, in Flader and Callicott 1991: 51).

The intention of this chapter is to demonstrate that human habitation and management of protected areas has the potential to positively influence nature conservation. Moreover, the argument for rejecting the inclusion of humans from reserves, which was based on the importance of conserving human-empty areas, has lost ground. The pros and cons of this new approach to nature conservation can now be fairly judged, for the value of pristine nature preservation has been leveled with the proposed re-enchanting nature conservation. The re-enchantment of nature conservation has its pillars in the following concepts:

- The proposal of a conscious myth is important for it saves us from relativism, but by remaining conscious it allows for flexibility and it is less oppressive or colonizing
- The Biodiversity-stability hypothesis still holds for grassland ecosystems
- Change is a natural occurrence
- Humans are part of nature
- Landscape diversity is crucial, even for biodiversity preservation

- The diversity of baselines, a result of landscape diversity, can aid the prediction of management results
- Spatial, temporal and intensity scales should guide management

Chapter 2

People and Protected Areas

Conservation... is not a criterion for property rights employed by any modern state, so it is unethical, as well as unjust, to impose that condition on native people.

Kay, in Kay and Simmons 2002: 261

History and Evolution of Protected Areas

British Game Reserves in colonial Africa, Yosemite Wildland Park (1864) and Yellowstone National Park (1872), marked the beginning of an era in conservation of "nature" or wilderness. The first game legislation was introduced in Africa in 1657 by the Dutch East India Company. The British introduced their own game legislation in 1822. It consisted of the establishment of a closed hunting season and the regulation of licenses for hunting several species of large mammals (Adams and McShane 1992: 45). In 1900 the first international conference on the subject took place. Despite the fact that none of the parties (all European nations with colonies in Africa) ratified the convention, it set new bases for the establishment of game reserves. These early 'conservation' mechanisms were lobbied mainly by hunting-naturalists whose interest was the preservation of hunting herds for Europeans. However, the established laws were hard to enforce and pressure on game was rising. This led to the second international Conference for the Protection of African Flora and Fauna in 1933 which in turn stimulated the establishment of permanent reserves following the model of Prince Albert (1925) and Kruger (1926) National Parks in Congo and Kenya respectively (Adams and

McShane 1992: 47). In the US, on March the 1st, 1872 the Congressional Act created was approved and Yellowstone was created. The Act consisted of two sections, the first one described the park limits and the second one states:

That said public park shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be, as soon as practicable, to make and publish such rules and regulations as he may deem necessary or proper for the care and management of the same. Such regulations shall provide for the preservation, from injury or spoliation, of all timber, mineral deposits, natural curiosities, or wonders within said park, and *their retention in their natural conditions*.... He [the Secretary] *shall also cause all persons trespassing upon the same after the passage of this act to be removed therefrom*... (Forty-Second Congress. Session II Ch. 21-24. 1872. March 1, 1872. CHAP. XXIV, emphasis added)

From its inception two fundamental traits can be found in National Parks. The need of force to “protect” them, not in vain it was under the control of the Secretary of the interior and was later transferred to the army, and the absence of humans, which was presented as a precondition for the retention of natural conditions inside the park. This fact would be confirmed 92 years later in the Wilderness Act, which in section 2.c defined wilderness as:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where *the earth and its community of life are untrammelled by man*, where man himself is a visitor that does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected *and managed* so as to preserve its *natural conditions* and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable... (Callicott and Nelson eds., 1998: 121, emphasis added)

Wilderness is defined by the absence of human impact, and to preserve such ‘natural conditions’ a park, that will keep humans out, is needed.

Game Reserves in Africa and Parks in the US have different origins. The African case is directly tied to the 'need' for hunting by representatives of the empire. In the US groups related to the expanding railway with tremendous vision wanted to create destinations for urban dwellers. However, it was the intense work done by people like John Muir that built up the atmosphere necessary for the creation of National Parks. Muir, like Thoreau and Emerson were afraid that civilization could advance to the gates of Nature and contaminate it with its habits. Nature was presented as a cathedral where God's hand could be clearly felt, and where humans could rest from the illnesses of civilization and find a place for solitude and spiritual fulfillment. During the XX century, the objective of National Parks in Africa started to shift towards nature conservation, more in tune with North American national parks.

What both African Game Reserves and American National Parks share from their foundation is the mistreatment of Indigenous Peoples living in the area. Both in Africa and North America there were proposals to include natives in the parks, but only as part of the local landscape, or even fauna, that needed to be preserved (Adams and McShane 1992; Sant'ana Diegues 1996; Neumann 1997; Callicott and Nelson 1998). These proposals did not succeed and the need for empty parks brought the first conflicts between park authorities and Indigenous Peoples (Olwig 1996). The fact that Indigenous Peoples had been living in the area for centuries did not stop conservationists from embarking in relocations and wars that destroyed and affected indigenous communities all around the world for much of the 20th century. In Africa, fossil evidence long ago proved the coexistence of the Maasai and their cattle with wildlife, in fact the absence of these cattle could lead to serious changes in the structure of the grasslands (Adams and

McShane 1992). In North America archaeological studies in the Lost City of Sierra Nevada prove that there was intense human activity for at least 1000 years in the area occupied by the first National Parks. It is not surprising then that the 'management' of the parks had to be transferred to the army in order to displace the Shoshone, Crow, Blackfeet, Sioux, Utes, Navajo, Miwok, all of whom lived in the 'wild' areas designated as national parks (Callicott and Nelson 1998).

The issue of indigenous peoples, or for the case of local people as well, and protected areas needs to be discussed bearing in mind the situation in which this relationship occurs. Indigenous peoples are not a homogeneous group, and the context in which they relate to the reserves or resources can imply very different realities. Moreover, the situation outside reserves varies tremendously from one case to the other, as is the case between some heavily populated surroundings in Africa, suburbs expanding in North America, and depopulated areas in Uruguay. In Uruguay, the land is almost 100% in private lands and close to 90% under productive uses, at the same time rural areas are sparsely populated. In addition, the last remnant of Indigenous Peoples was exterminated by the first president in 1831. They belonged to the "Charruas" Nation, and after that episode only isolated members lived in the country. This makes the Uruguayan case different from most others in Latin America for example. Due to this situation, I will not get into details on the shared and different periods of conflict, shunning and collaboration that protected areas and Indigenous Peoples share. I will focus on the relationship between local people and protected areas, rather than attempting to address earlier indigenous peoples of Uruguay. However, in some cases, and, as we will see below, in order to underline the dualism present in the conservation movement, I will use

examples in which indigenous peoples are the subject of debate. This in no way limits the value, for non-indigenous case studies, of the particularities and experiences of indigenous peoples relationship with nature. Quite contrary, indigenous peoples relationship with nature has the extra value of cultural diversity as a factor in the preservation of biological diversity (Durning 1992; Posey 1999) and shows the importance worldviews, spirituality and myth can have in nature conservation (Berkes and Folke 2000), and these elements should not be disregarded when considering non-indigenous relationship with nature. For an account on issues regarding indigenous peoples and protected areas see Alcorn 1993; 1994; Redford and Stearman 1993a; 1993b; Doubleday 1993; Beltran 2000; Kemf 1993; the special issues in *Cultural Survival Quarterly* 1984 9 (1), and *Parks* 1998 8 (1)).

People and Parks, a Changing Relationship

In theory, the relationship between local people and protected areas has gone through profound changes since its inception. Categories have been created to integrate people into its management, and there has been an intention to make parks more 'friendly'. Whether or not this has been accomplished in the field is a different story. The 80s saw the rise of the so called ICDPs (Integrated Conservation Development Projects) (Wells and Brandon 1992), which were intended to marry conservation and development projects. These projects have been criticized for not achieving the expected development results, while endangering conservation or having negative effects on the reserves' conservation strategies (Redford and Sanderson 1992; 2000; Redford and Stearson 1989; Christensen 2004). Other authors believe the failure to marry conservation and development is not inherent in the proposition of incorporating humans into nature, as the

biosphere reserve concept proposes, but in the continuation of top-down, global management by conservation organizations using a tool based on the human-nature dualism (Colchester 1995). Goldan (2003) recently found that in Tanzania, despite the rhetoric of participation, conservation planning is still top-down. One of the early articles of the main critics (Redford and Stearman 1989) – based on studies on the Beni Biosphere reserve it concluded that a decrease in species abundance is an inherent trade-off of the Biosphere Reserve concept – conclusions were based on a case study in which participation, and even knowledge of the existence of the Biosphere Reserve, was extremely low.

After a strong debate on the role of indigenous peoples in protected areas in the early 90s (Alcorn 1993; 1994; Redford and Stearman 1993a; 1993b; Colchester 1995), the debate over the inclusion of humans in reserves has been recently reinvigorated (Berkes 2004; Redford and Stearman 2000; Redford and Sanjayan 2003; special conservation forum with 6 papers in *Conservation Biology* 2000, 14 (5)). Before entering into the ‘academic’ debate of the case for the inclusion or exclusion of humans from protected areas, I will analyze material from the 5 world congresses on national parks – Seattle 1962, Yellowstone and Grand Teton 1972, Bali 1982, Caracas 1992, and Durban 2003 – to understand how the issues have developed in a forum that is increasingly attended by reserve managers, government officials, and members of international conservation related organizations. Analyzing documents from the World Park Congress (WPC), IUCN and other international conservation organization is important due to the significant impact they have on governments and reserve managers, and in turn, over reserve management strategies. Moreover, they also reflect the debate over conservation

thinking, and are an important aid to analyze the evolution of the conservation movement. Yellowstone's model of national parks has been imitated, integrated and used as a 'conservation' strategy all over the world (Akama 1996: 567; Brandon and Wells 1992:558; Sant'ana Diegues 1996: 11; IUCN et al 1990: 58). "The inspiration of Yellowstone's establishment saw the national park concept expand slowly at first and then gain momentum until, by the time of Yellowstone's centennial in 1972, there were 1000 national parks worldwide, *meeting the definition adopted by IUCN*" (Lucas 1992: 4, emphasis added). The number of protected areas today is over 100.000, covering almost 20 million km², which is more than 11% of the land surface. (Chape et al 2003) Among the reasons for the spread of this particular conservation model, or this conservation tool, was the need for external funding by countries in the South (Sant'ana Diegues 1996). The categories and objectives of protected areas have had a remarkable evolution in the last 30 years. Despite the persistence of the dualism in the categories, the modern models objectives, reflected in IUCN publications and recommendations from WPC, are much more inclusive than they were, for example, in the first World Parks Congress held in Seattle in 1962. According to the IUCN the World Park Congress on Protected Areas, that has been held every 10 years since 1962, "offers a unique opportunity to take stock of protected areas; provide an honest appraisal of progress and; and chart the course for protected areas over the next decade and beyond" (IUCN 2002b). The analysis of the purposes and conclusions of each Congress sheds some light on the different stages protected areas have gone through conceptually.

The purpose of the first world conference on national parks "was to establish a more effective international understanding of national parks and *to encourage further*

development of the national park movement on a worldwide scale (IUCN 2002b, emphasis added). This was the kind of approach that fuelled the spread of protected areas following the national park model. This approach had, as we saw above, devastating consequences in local populations (Sant'ana Diegues 1996). Moreover, it cast a shadow that marked, and will mark, conservation and conservationists in the future. The IUCN in its World Conservation Strategy states that "most people take a narrow view of protected areas, so public support is comparatively weak. Protected areas are often seen only as exotic vacation spots or remote wilderness, not as essential elements of sustainable development. In fact, protected areas contribute to society in many ways..." (IUCN et al 1992: 119). This "narrow view" is justified in light of decades of establishment of National Parks and Strict Reserves that have as an objective keeping humans outside or allowing them inside only as researchers or tourists. On the other hand, it is important to highlight the benefits of "speaking a common language" in terms of being able to make international comparisons, statistics, monitoring, and inventories of protected areas, among others (IUCNb 2002).

At the Second World Conference (Yellowstone and Grand Teton 1972) the need to improve the global park system is discussed, and the needs and benefits of public support for national parks and equivalent reserves are introduced. It was not until the Third and Fourth World Congresses on National Parks (Bali 1982 and Caracas 1992), that clear statements started being made regarding the importance of native populations and their knowledge for the preservation of nature inside and outside protected areas (Sant'ana Diegues 1996). The two main conclusions were the need for further protection of national parks, due to the increase pressures, and the call for other protected areas

supplementing national parks and at the same time helping with development. (Mc Neely 1982) The Bali action plan, in its objective 5, calls “to promote the linkage between protected area management and sustainable development” (Miller 1982: 762, in McNeely and Miller 1984). It encourages the development of pilot protected areas to demonstrate that the new categories of protected areas are alternatives to supporting social and economic development. It also calls for an investigation and use of “traditional wisdom of communities affected by conservation measures, including implementation of joint management arrangements between protected areas authorities and societies which have traditionally managed resources” (IUCN et al. 1992: 144). In the Caracas Declaration it is considered that reserves can constitute the home of human communities and contain landscapes with historic interactions between humans and nature (Barzetti 1993: 236). However, 10 years later one of the conclusions from the Fourth World Congress was that “the relationship between people and protected areas is too often ignored,” (IUCN 2002) and among the objectives for the next decade was to expand the “support for protected areas by involving local communities and other various non-traditional interest groups” (Ibid.). It is clear that the issue of communities adjacent to protected areas continues to be at the top of the agenda. It was the case in the 1997 Albany Symposium, which concluded that some of the challenges for the 21st century would be the need “for protected areas to be managed *by, for* and with local communities, not against them” (Ibid. emphasis added). And it continued to be in Durban (2003), where indigenous peoples’ lobbying reached its maximum and the Action Plan recognized that “Indigenous Peoples and local communities are becoming increasingly engaged”, but also stated that indigenous

peoples, local communities, and other groups “are not sufficiently engaged in the identification and management of protected areas.” (Durban Action Plan, 2003)

Finally, it is curious that after all the efforts made by the IUCN to include local actors in their management of protected areas a four page recent document from the IUCN describes the major topics and resolutions of the Fourth World Park Congress without a single mention of the words ‘indigenous’ or ‘peoples’. What they do have instead is one brief mention of the need to expand “the support for protected areas by involving local communities and other *various non-traditional interest groups*” (IUCN 2002, emphasis added). However, the recent “Durban Accord”, a statement composed by those participating in the recent World Parks Congress in South Africa, and the Durban Action Plan do provide powerful statements with regards to the past and future relationships between indigenous peoples, local people and protected areas. This was certainly due to intense lobbying by indigenous peoples groups before and during the conference (Brosius 2004; Christensen 2004). At this venue, “indigenous peoples... challenged assumptions about the roles of both Western science and major conservation organizations.... Their message was that indigenous and local communities must represent something other than a “transaction cost, that threat assessments that classify their land use practices as disturbances are unacceptable...” (Brosius 2004: 611). The objections of indigenous peoples show how declarations have yet to reach the field, particularly if we consider that in 1999 the IUCN and the WWF – the two most important conservation organizations worldwide – adopted the *Principles and guidelines for indigenous/traditional peoples and protected areas* (Beltran 2000). These principles were an important step towards the recognition of indigenous peoples rights to manage their

lands, however, it seems that much remains to be done in practice, as the events in Durban, and the recent creation of a Truth and Reconciliation Commission for indigenous rights in protected areas - created during the last World Parks Congress – proves (Brosius 2004). Among the reasons behind the lack of progress are the persistence of the human-nature dualism among several conservationists, and the persistence of a particular view of indigenous peoples culture and rights to their lands. Kay's quote at the beginning of the chapter sheds some light on the expectations posed on indigenous peoples.

Analysis of the text of the guidelines and principles helps highlight the extra burden indigenous peoples are expected to carry: "In reality, *where* indigenous peoples are interested in the conservation and *traditional* use of their lands, territories, water, coastal seas and other resources, and their fundamental human rights are accorded, conflicts need not arise between those peoples' rights and interests, and protected area objectives (Beltran 2000: 3, emphasis added). In this ideal world protected areas would flourish all over the world, if people, indigenous or not, are interested in conservation and their rights are respected, everyone gets along and lives happily. But, this has not been the case, not with indigenous peoples, nor with other local people. In fact, as Bachert states, "acceptance of parks increases with increasing distance to the area" (1991: 239). This is intensified in the case of indigenous peoples, for we do not request that non-indigenous peoples freeze their culture and technology to a past era in order for this cooperation to work, as the word *traditional* imposes in the case of indigenous peoples. The following quote underscores this point: "Specifically, what many indigenous and other traditional peoples' organizations have *demand*ed is that protected areas established on their terrestrial, coastal/marine and freshwater domains: Incorporate sustainable

use of natural resources using methods that maintain the integrity of the ecosystem and *that have been used traditionally by indigenous peoples*" (Beltran 2000: 3, emphasis added).

This is repeated in principle 2 and its guidelines which confer indigenous peoples "rights with regard to sustainable, *traditional use* of their lands, territories, waters, coastal seas and other resources that fall within protected areas" (Beltran 2000: 8, emphasis added) I cannot think of instances in which indigenous peoples *demand*ed that they use traditional methods in the management of their resources. Indigenous peoples have demanded their right to change – be it through the adoption of modern technology or not – which might affect their culture and their relationship with the environment, but not necessarily precludes a degradation of it, just as keeping them using traditional methods does not secure the "integrity" of the ecosystem if their belief systems collapse. If we view it from a strictly ecological point of view, "the slaughter and consumption of a deer by a lion...and by hunters armed by bows and arrows or shotguns...are, ecologically speaking, transactions of the same general type. It does not, from the ecosystemic point of view, matter that the behaviour of the men is cultural and the behaviour of the lion is not" (Rappaport 1971 quoted in Milton 1996: 58). Moreover, as Berkes and Folke (2000) point out, the degradation of ecosystems by traditional cultures is usually preceded by a strong impact on their belief system, and as Callicott argues, we cannot know what would have happened if Europeans had arrived in the Americas, unloaded their technology, and left without contacting Native Americans directly (Callicott 1999).

Finally, in the introduction to the case studies provided by IUCN and WWF, it is stated that "most indigenous peoples rely heavily on natural resources, and most live in

remote areas. Because remote and pristine areas are often significantly rich in biodiversity, much of the land that indigenous peoples occupy has been designed as national parks or other types of protected areas.” (Beltran 2000: 21). Indigenous peoples do not rely more heavily on natural resources than any other living organisms, we all depend on natural resources for our survival. The fact that many indigenous peoples rely on *locally* obtained resources – ecosystem people (Dasmann 1988) – should not be used against them, for they have at least two advantages: Environmental costs of long transportation are not a factor, and feedback from the environment is easier to understand for adaptive management to occur. On the issue of the remoteness, richness, and value of these areas, the areas are remote to us, not to those who live there, who despite relying heavily on local resources have managed to keep it rich. Moreover, the argument seems to base the pristineness and richness in how ‘remote’ these areas are – management implies acknowledging that these areas are not pristine, in fact pristine areas are virtually non-existent, particularly in the tropics (Stokstad 2003; Heckenberger et al 2003; Willis et al 2004) – not in good management, and forgets that one of the reasons for the establishment of national parks in these remote areas was precisely the fact that they are remote, therefore easily set aside for conservation purposes, helping governments fulfill their international obligations, at least in paper, without compromising modern development objectives.

Some authors see this evolution in the objectives and approaches to protected area management critically, and argue that the shift in theory did not translate into a real shift in action (Neumann 1997: 561-562; Lewis 1990: 22). The agenda was to gain support for protected areas by local communities that were threatening the future of the national

parks with their practices (Ghimire 1994). This can also be interpreted from an analysis of the literature on buffer zones, which were designed to achieve the dual objective of protection of the core zone and establishment of sustainable development, but ended up being an extension of the reserve that further diminished the rights of local people in that area (Martino 2001; Neumann 1997). The wilderness concept and the human-nature dualism are articles of faith among the conservationist community, and as Cronon argues, “defenders of biological diversity...although sometimes appealing to more utilitarian concepts, often point to untouched ecosystems as the best and richest repositories of the undiscovered species we must certainly try to protect” (1997: 41).

In 1992 a publication from the IUCN, WWF, WRI and the WB recognized that “biological resources need protection against inappropriate uses and overexploitation, not against people” (1992: 49). The importance of shifting cultivation in the tropical forests is also highlighted and the fact that human management has shaped ecosystems for thousands of years is acknowledged. Moreover, they point out that “efforts to totally exclude human influence from ‘natural’ ecosystems as in strictly protected national parks, can lead to a situation that has not occurred in thousands of years and will have unknown ecological implications” (Ibid.: 51; Stokstad 2003; Heckenberger et al 2003; Willis et al 2004). Interestingly, in the same publication (IUCN et al 1992), scientific reserves are described as necessary to maintain “natural processes in an undisturbed state...” (59). In a IUCN publication 2 years later the term ‘natural’ is clarified and defined in the following way: “Ecosystems where since the industrial revolution (1750) human impact (a) has been no greater than that of any other native species, and (b) has not affected the ecosystem’s structure. Climate change is excluded from this definition” (IUCN 1994: Ch

2). This would give hope for a more inclusive approach, even in categories I and II. However, a 1999 publication by IUCN and EC seems to step in the brakes: "Care ohowever, needs to be taken that in this modern inclusive approach, the core values of the PA –the values it was created to protect- are not degraded" (IUCN AND EC 1999: 7). The core values are not defined, but one needs only remember the first years of protected areas to understand. This confusion and lack of definition regarding the role of humans in protected areas is interestingly manifested 2 pages later when the benefits from protected areas towards different stakeholders are described. The "public sector", the "commercial sector" and "local communities" benefits are quoted here.

The public sector- for example, electricity providers who use hydropower that depends on protected areas upstream, water companies who have similar needs, health ministries who may need reservoirs of medicinal plants.

The commercial sector, who may be interested in managing operations in protected areas for profit, in exploiting finds in protected areas, especially through biotechnology, and in sponsorship.

Local communities, *eager* to make use of the resources of the protected area, whether directly through collecting produce or indirectly through tourism, in pursuit of sustainable livelihoods. (IUCN and EC 1999: 9, emphasis added)

The ghosts of 'poachers' and 'encroachments' as well as the image of primitive locals "eager" to enter protected areas seems to be still wandering around the minds of conservationists who recognize the rights for profit, hydropower and bioprospection for the state and the commercial sector, but 'collecting' and tourism for 'sustainable livelihoods' for the local communities. Escobar argues that traditional conservation tactics maintain the focus "in a particular representation of the threats to biodiversity that emphasizes loss of habitats, species introduction in alien habitats, and fragmentation due to habitat reduction, rather than underlying causes..." (Escobar 1998: 56). However, it

should be noted that some of the causes of biodiversity loss pointed out by the IUCN in the World Conservation Strategy (1992) are:

- Economic systems and policies that do not value the environment
- Inequity in ownership and benefit distribution of conservation and use of natural resources
- Legal and institutional systems that promote unsustainable exploitation

The conservation movement, despite the injustices and mistakes of the past, cannot be asked to carry the responsibility to bring people out of poverty. The links between the conservation movement and colonialism, responsible for many of the problems of “underdevelopment” cannot be denied, but conservation initiatives are severely under funded – some calculations made during the last WPC situate it in 15 billion US\$ - and despite the need and intention to bring development and conservation together, conservation organizations lack the power and infrastructure to do so. The poverty of communities living near protected areas is not always a direct result of the reserve itself, and in some cases the reserve has proven valuable. In Uruguay for example, during the last financial crisis wildlife played a significant role in the diet of small urban populations that could not afford other meats offered in the regular market. At the same time, park degradation is not always a result of local population actions, much of the habitat being lost in Brazil is due to logging by big corporations, and industrial soy plantations, which ironically goes to feed cattle in Europe that will then compete with the Brazilian cattle, which is another important cause of forest degradation (Gudynas, personal communication; Schwartzman et al 2000a).

If parks were left behind without addressing the issues highlighted by the World Conservation Strategy (IUCN 1992), benefits could be short lived, specially in cases were

population growth has been substantial and where traditional knowledge has been lost. Moreover, local people cannot continue to be asked to carry the burden of national parks with few benefits. The example of CAMPFIRE project in Zimbabwe – though far from ideal – shows how spreading the benefits from protected areas among local communities can help development and conservation (Mwamfupe 1998: 12; Mbanefo and de Boerr 1993; Murombedzi 1999; see Kemf 1993; Beltran 2000 for other case studies). Urban dwellers in Western Countries, who demand the conservation of tropical forests or provide funding for conservation initiatives in the south need to take as much responsibility as people living beside a protected area in the south. It needs to be remembered that the urban or suburban area in which they live was also a ‘natural’ area a few years ago, that the commodities that they consume, and the rate at which they are consumed, also have an impact in nature – sometimes in the same protected areas that exclude local people, as countless cases of drilling and logging in national parks show – and that areas close to home can also provide refuge for wildlife. A typical case is that of the treatment of wildlife: bears, cougars or other carnivores that roam too close to urban areas – or that have urban dwellers roaming too close to their home range – risk being “destroyed”, as it is interestingly described by the press, if that contact poses risks to human. This management is not an issue under dispute, for human safety is paramount. However, local communities living with, to pick one example, elephants are condemned when they kill one to protect their crops or their life. This is a difficult issue for conservation agencies, such as the WWF, which have their marketing guns pointed at selling conservation of cute exotic animals to western urban dwellers – as the last contest of the cutest animal in the world, runned by WWF, proves. They face the risk of losing

income and support if they challenge consumer choices too much. Some steps have been taken, as the case of the illegal logging campaign – which tries to inform western consumers about the wood they buy – by the WWF, also proves. Here, again, conservation organizations need to be extremely careful not to destroy the livelihoods of local communities with these types of initiatives. A fine line divides the use of seals for consumption of “sustainable” products, from the destruction of local initiatives, which might not have the power to demonstrate and market the sustainability of their practices to consumers in the north.

Humans' Role in Conservation

As discussed above, there have been several efforts to include native and local populations in the planning of protected areas, whether in buffer zones or by creating new categories of protected areas which are more ‘flexible’ than the strict reserves and national park ones (Beltran 2000). This evolution in the relationship was welcomed, and in some cases encouraged, by Indigenous Peoples (especially those whose rights to their land, or survival, was endangered), and necessary for conservationists. The IUCN revised its categories, and stated that “most of these revised categories explicitly recognize that indigenous and local communities may occupy and/or use such areas.” (Beltran 2000: 4) As ‘generous’ as this recognition might sound, it was the acknowledgement that 86% of Latin American National Parks and 70% of protected areas world-wide are inhabited (Fiallo and Jacobson 1995; Colchester 1995). In Brazil for example, Indigenous Peoples needed to protect themselves from the expropriation of their lands by different actors, and saw an opportunity in joining forces with conservationists who were starting to recognize

the link between Indigenous Peoples, traditional knowledge and biodiversity. (Sant'ana Diegues 1996). There has been much debate lately on whether reserves with people inside, even with small densities, are effective for biodiversity protection.

In the recent new debate on human role in nature conservation, four fundamental integrated topics arise: (1) the supposed failure of integrated conservation and development projects, (2) the impacts of people on biodiversity, no matter the culture or the density, (3) the consequent reemergence of fortress parks, and (4) the resulting effects of alliances between local or indigenous peoples and conservationists (Kramer et al 1997; Brandon et al 1998; Terborgh 1999; Schwartzman et al 2000a; 2000b; Terborgh 2000; Redford and Sanderson 2000; Colchester 2000; Chicchon 2000; Anderson 2001; Peres and Zimmerman 2001; Galetti 2001). Although the discussion is set in the tropics, and particularly the Amazon, conclusions can be drawn that are useful in understanding the dangers of the human-nature dualism, and a return to such dualism as the basis for protected area management. Some authors argue that no matter the density, local people have a significant impact in the integrity of the forest, and they use studies suggesting mainly mammal and vertebrate extinctions near populated areas (Redford and Sanderson 2000; Terborgh 2000; Chicchon 2000). Schwartzman et al (2000a; 2000b) on the other hand, argue that these studies are not conclusive on a broader scale, but do not deny the need for more strictly protected reserves. However, they believe the focus should be placed on populated reserves, both indigenous lands and extractive reserves, which they claim are stopping a broad scale destruction of the Amazon by keeping large industries out of their territories. Redford and Sanderson (2000) agree with the last point, but they believe, together with Terborgh and Chicchon, that local and indigenous peoples should

be kept outside of strict reserves for they degrade the integrity of the ecosystem. Chicchon states that “people-free parks are an essential element of a comprehensive conservation strategy. It is crucial that protected areas without people exist to guarantee the natural function of *pristine ecosystems*.” (2000: 1368, emphasis added) Redford and Stearman believe that extractive reserves might benefit forest-dwelling groups, but they do not protect the forest. They state the same for indigenous lands and believe economic survival has an effect on the forest, and this should be understood “as a natural outcome of human habitation.”

Two main conclusions can be made from this section of the debate. First, one side believes that no matter what they do, if humans inhabit a natural area they are degrading it. Second, and consequential to the first point, areas with human involvement are less valuable, and efforts should be placed on the more “pristine” ones. The other side believes that human habitation does not necessarily lead to degradation and places an important emphasis on the protection of inhabited areas for their own value and for the important role they play in protecting non-inhabited areas from outside dangers, and from the dangers of local inhabitants becoming enemies and not allies. We know that these so called “pristine” areas have been extensively inhabited and managed, with a greater density than today (Stokstad 2003; Heckenberger et al 2003; Willis et al 2004). If we follow the argument of Redford and Sanderson, we must conclude that this forest is either a degraded result of the previous “natural” one, or a resilient entity that has bounced back to natural status. Following the precepts of the new ecology it would be difficult to use the last argument in favor of this particular “pristine” forest over the presently inhabited one, especially considering present density. Moreover, given the migration patterns of

some of the indigenous groups involved, the value of this “pristine” forest becomes a matter of time scale. A forest stand requires strict protection after it has been uninhabited for 100 years, 200 years or 500 years? I believe the argument presented by Schwartzman et al (2000a and 2000b) makes a better case for protecting both low and medium density areas in the tropics. The case for the extreme value of “pristine” stands over “modified” ones is not strong enough to endanger the rest of the forest by losing interest in inhabited areas and starting a confrontation between indigenous and/or local peoples and conservationists. As Colchester notes:

Conservation biologists are right to draw attention to the real pressures on biodiversity from local communities. They are also right to be skeptical of those who promote community-based natural resource management as a panacea. They are wrong, however, to determine conservation policy purely on the basis of faunal population dynamics. Even a cursory study of the political ecology tropical forests should persuade conservationists that they need allies where it really matters – on the ground – and few are better grounded than indigenous peoples.” (2000: 1366)

Moreover:

When local participatory development is untied with environmental conservation under the management guidelines of the new ecology, local inhabitants are, in many cases, most able to identify the spatial and temporal heterogeneities of their biophysical environments and to help plan accordingly. ((Zimmerer 1994: 119)

Some conservationists believe that, due to insufficient resources, asking parks to tackle social problems will help neither parks nor people (Wilshusen et. al. 2002). Therefore they argue for an increased rural to urban migration to reduce the pressure on the country side (Kramer et al 1997) or for the return of the stick (Terborgh 1999). Those arguing for an encouragement of industrial development to drive poor people to the city for more attractive options than subsistence farming have either never visited Latin

American slums or are just trying to slide the dirt under the carpet. Moreover, even in the “best” case scenario of replicating urban areas in the north and not slums in the south, it is just necessary to take a ride in the “less-pressured” countryside of North America, or to understand the impacts of industrial soy production entering the Amazon, to recognize the significance of such a proposal. Under the worldview of these proponents, ecosystem people will always carry the burden of conservation, while biosphere people will not be linked to their impacts in the field – regardless of the fact that we might be left with a few islands in a sea of devastation or the moral question of ecosystem people having an ecological footprint 10, 20, or 40 times lower than that of biosphere people, what matters is the direct impact on natural areas. We also find those who, probably not so confident of the magnetism of Latin American urban areas, advocate neo-fortress parks, even suggesting militarization of parks as an option, not only with national armies but also with international mercenaries (Terborgh 1999). It might be unfair to ask conservation to carry the weight of poverty, and it is true that the conservation movement does not have the resources to tackle social problems, but will it have the resources to wage a war against local people all over the world? It did not work a few decades ago. Why think it will work now? Especially given the political climate, recognition and support that indigenous peoples have in international forums, and the globalization and speed of information. There is enough proof of the disastrous consequences that turning people against parks can have on people and biodiversity, why insist with a politically blind strategy that is doomed to fail, based on double standards, and which is tremendously socially unjust?

As Peres and Zimmerman (2001: 796) state, “allocation of conservation investments should...be seen as context-dependent, and different scales of conservation – ranging from efforts to merely avert deforestation to those aiming to protect the full integrity of forest ecosystems – should be acceptable to both Greeks and Trojans in this exchange and pursued in partnership and in keeping with the realities of different subregions.” The full integrity of the forest however, should not be seen as one denuded of human trace, for that would imply ignoring history and current understandings of ecology. Redford and Sanjayan recently admitted that:

It is hard to argue against the world’s demands, as laid out in the Millennium Development Goals of the United Nations, for more development, less poverty, less diseases, fewer inequalities... Virtually the only place for conservation in these goals is a call for the reduction, not elimination, of the loss rate of biodiversity. And to argue for a stronger role for biodiversity conservation makes us seem to be blocking a populist agenda. (Redford and Sanjayan 2003: 1474)

If such a depressing compromise can be made in light of the Millennium Development Goals, why cannot the impact of indigenous peoples that have lived in those territories for millennia be accepted? For those that have been basing conservation on a human – nature dualism, it is hard to leave it aside, especially when confronted with human nature interaction directly in the field. I would like to close this section with an analogy that will shed some light on the above discussion, and that highlights the importance of it for other types of ecosystems and situations. The analogy is between the Amazon and the Chihuahuan Borderlands in Arizona, New Mexico and west Texas. The Chihuahuan Border lands are used for grazing, which produces an impact on this environment, such as indigenous peoples are accused of producing in the Amazon, even at low densities. The Chihuahuan Borderlands are also suffering another threat, the

expansion of suburbia, which is subdividing grasslands into ranchettes, having an important impact in biodiversity and eliminating the possibility of restoration of natural processes (Curtin et al 2002). In this analogy the suburban expansion represents the advancement of industrial logging and agriculture into the Amazon. It is understood that if ranchers and grazing are encouraged to stay the ranchettes will not take over, just as the alliances with forest dwellers can help stop the advancement of industry. Curtin et al suggest that “advocates of ecosystem conservation must move away from asking how small an area is sufficient to preserve populations of special interest species or their habitats, and instead ask how big an area is needed to preserve the dynamic interaction of natural processes that sustain a functioning ecosystem, including its human inhabitants” (2002: 65). As I stated in Chapter 1, if the choice is between trying to save all species and risking losing too many, or accepting that we might lose a few while we achieve ecosystem health and a new relationship with nature, I choose the latter.

The management of protected areas has undoubtedly gone a long way since its inception. Particularly during the last 40 years there has been a remarkable progress in the recognition of local and indigenous peoples’ rights. Declaration after declaration of these rights were recognized and enhanced by participants to the conferences. At the same time, these same declarations consistently condemn the mistreatment of indigenous and local people, the persistence of relocations, and other signs of conflict between people and parks. This shows the difficulty of integrating local people into protected areas, despite the good intentions presented in conference rooms. If the desire for integration of people and nature in protected areas is real, there is need for change in practices both inside and outside protected areas. Without it, neither nature conservation

nor human rights will benefit from the marriage of “development” and “conservation”. Redford, who remains particularly skeptical about the integration, suggests a “baby step” consistent in “labeling some as “conservation projects with development,” and others ‘development projects with conservation’” (Christensen 2004: 18). Otherwise, he predicts, both the poor and biodiversity will keep suffering. Perhaps this approach will take us closer to the landscape diversity proposal of Chapter 1.

I believe however, that a review of categories I and II is timely and could be a major step for the conservationist community, not because some areas with relatively low human involvement are not necessary for the survival of some sensitive species, they have been in place for centuries and should still be considered if biodiversity conservation is an objective, but because of the wording and significance they have. Leaving aside these categories could provide the opportunity for a fundamental step in the achievement of sustainability: the further involvement of conservationists outside protected areas, in the important space between those spaces. It is crucial in order to achieve alliances with agronomists, foresters and other important sectors that conservationist detach themselves from the human – nature dualism.

The study of Landscape Ecology and Ecosystemic Approaches point out the importance of further involvement of multidisciplinary teams in the spaces between protected areas, and Chapter 1 has shown the importance of such an approach. The ‘Global Biodiversity Strategy’ recognized this approach in 1992, “the success of biodiversity conservation will depend upon how well the *overall* landscape is managed to minimize biodiversity loss. Human needs and activities must be reconciled with the maintenance of biodiversity, and protected areas must be integrated into natural and

modified surroundings” (IUCN et al. 1992). In 2003 the Durban Action Plan recognized that “too often protected areas are not linked into development planning, land use and other resource management decision-making systems beyond their boundaries, and particularly in transboundary situations requiring harmonisation of approaches across political boundaries” (4). Suggestions to improve in this respect can be found in World Parks Congress Recommendation 9, *Integrated Landscape Management to Support Protected Areas*. It is recommended that the “protected area design principles” of biosphere reserves is adopted and promoted in order to “enhance the overall conservation value”. To this follows a recommendation to adopt design principles that “emphasize linkages to surrounding ecosystems and ensure that the surrounding landscapes are managed for biodiversity conservation” (WPC 2003). Perhaps, considering the intention to integrate, “surrounding landscapes managed *with biodiversity conservation in mind*” would have been a more appropriate selection of words. The fact that the biosphere reserves principles are suggested for adoption and promotion in the recommendations of the IUCN organized congress is remarkable, and shows the extent to which the inclusion of local people in the management of protected areas has gained importance. It can also be explained by some success stories of integration emerging from biosphere reserves. These successful cases are not the norm, but they seem to be far more common when the biosphere reserve approach is followed.

Wild and Mutebi (1997) describe the case of Bwindi Impenetrable Forest in Uganda. Here managers of the reserve took the step of allowing beekeeping and limited use of plant resources *inside* core areas (national parks). The discussions for the implementation “began genuine and meaningful community participation in park

management and significantly enhanced park interactions with the communities and administration” (Wild and Mutebi 1997: 38). The decision to allow certain uses in the core areas facilitated the relationship between managers and local people, but it also changed attitudes towards the forest, which is now referred to as “our forest” by local people (Ibid.: 51). Moreover, as Wild and Mutebi note, “there are a number of situations where no use may entail more risks than use” (1997: 50). They refer not only to the improvement of the social and political context around the reserve, but also to the fact that the “ecosystem may have evolved with human use and be dependent on use for the maintenance of key species.” (Ibid: 50, a similar argument is made in Kay 2002 in the case of Yellowstone and Yosemite). Recognizing environmental history, and the fact that the reserve does not occur in a socio-political vacuum is tremendously important for its success (Wild and Mutebi 1997; Hamilton et al 2000).

On the other hand, Redford and Stearman believe that a decrease in the abundance of certain species... [is an inherent] trade-off... in the Man and Biosphere concept. As described above, they base this universal conclusion on a Biosphere Reserve in which between 78 and 93% of the local population had never heard of the reserve (1989: 53). Obviously this is a bad case of biosphere reserve management and implementation of the integration of humans into the reserve that should not be used to condemn the Man and the Biosphere concept entirely.

There are successful and unsuccessful examples of implementation of the Biosphere Reserve concept, just as there are extremes in the implementation of ICDPs and Reserves. However, the Biosphere Reserve concept is based on a different approach to conservation than regular reserves, and as we have seen, this distinction can play a

fundamental role in conservation strategies and results and is one of the pillars of this thesis. In addition, Biosphere Reserves have an advantage when the focus is at the landscape level (Bridgewater and Cresswell 1998; Phillips 1998), another pillar of this thesis.

Biosphere Reserves

The UNESCO's Man and the Biosphere program launched the concept of Biosphere Reserves in 1976 and by mid 2000 it included 368 reserves in 91 countries (UNESCO 2000a). The first 57 Biosphere Reserves designated in 1976 were selected mainly for their role in conservation. Through the years the selection criteria has been changing. One of the first shifts came after the first International Biosphere Reserve Congress held in Minsk, Byelorussia in October of the year 1983. After the congress, a world Action Plan for Biosphere Reserves was presented. The Action Plan created the Scientific Advisory Panel for Biosphere Reserves which after meeting in Bolivia in 1986 presented some changes in the criteria for the future selection of Biosphere Reserves. Biosphere Reserves continued their 'evolution' through the 80s and as stated during the eleventh session of the MAB council in 1990, "...the general interest in biosphere reserves had probably never been greater..." (UNESCO 2000b: 9). In 1991 the Executive Board of UNESCO established an Advisory Committee for Biosphere Reserves to "...evaluate the effectiveness of...the Action Plan, to analyze its implementation and to develop a strategy for biosphere reserves as we move to the 21st century" (UNESCO 2000a: 2). In 1995, called by the Advisory Committee, 387 participants from 102 countries met in Seville, Spain, at the International Conference on Biosphere Reserves.

From this conference "The Vision from Seville for the Twenty-first Century" or the "Seville Strategy" emerged. Finally, in October 2000 the "Seville + 5" International Meeting was held in Pamplona, Spain, with the objective of designing the implementation of the Seville Strategy for Biosphere Reserves. (UNESCO 2000c)

Since its inception, the concept of Biosphere Reserves has had among its objectives the promotion of harmonic relations between humans and nature (Batisse 1997). However, during the first years, Biosphere Reserves played roles that were very similar to those of national parks and other protected areas designed with the main purpose of preserving biodiversity. Many of these Biosphere Reserves were in fact created in areas where national parks already existed (Daniele et al. 1998) or the national park was used as the core area of the Biosphere Reserve, which generally consisted of three concentric rings – the inner one being the core area, the second one a buffer zone and the third one a transition zone. Although through the 80s, and especially after the 1983 Congress in Minsk, Biosphere Reserves went through several changes trying to integrate humans into the reserves, it was not until the Seville congress (1995) that a major transformation took place. As Bower notes, in 1991 there were only a few successful examples of the total concept of Biosphere Reserves due to a lack of national interest (Bower 1991). Wells and Brandon believe that Biosphere Reserves have been unsuccessful because “most biosphere reserves have been superimposed on existing parks and reserves.... As a result, the change of status to a biosphere reserve has usually been in name only, *with little change in the emphasis or management philosophy*” (1992: 159, emphasis added). A survey among Biosphere Reserve managers made by UNESCO found out the degree to which Biosphere Reserves carried their objectives. The

promotion of regional planning, rural development and local participation in land use management ranked low and the conservation of nature or "minimally disturbed ecosystems" ranked high (Gregg 1991: 278). However, the concept of Biosphere Reserves has been evolving and so has its application. The evolution of Biosphere Reserves bears resemblance to what Engel (1985) calls the "three great stages in mankind's relationship to the Earth"

In the first, human evolution was limited to local communities functioning within the constraints of local ecosystems. In the second, the stage we are currently moving through, human evolution is alienated from the rest of nature.... In the third stage... human evolution will achieve a sustainable relationship to each particular ecosystem in the context of a cooperative global relationship to the biosphere as a whole." (Engel quoted in UNESCO 2000b: 31)

This evolution is reflected in the goals stated in the Strategy and in the recommendations of the working groups of Pamplona. As Daniele et al. suggest, changes in the MAB program are reflected in the designation (1998: 18) and these designations will affect the functions and goals of the Biosphere Reserves. The Seville Strategy and the Seville + 5 recommendations marked changes for Biosphere Reserves for the coming century. Strictly related to the topic of this project, the following are among the main concepts behind the theoretical models proposed by UNESCO (UNESCO 2000a; 2000b; 2000d):

- Goal II of the Seville Strategy: "Utilize Biosphere Reserves as *models of land management* and of approaches to sustainable development" (emphasis added)
- Point 7 of Goal II states the following: " Evaluate the natural products and services of the reserve, and use these evaluations to promote environmentally sound and economically sustainable income opportunities for local people"
- Point 5 of objective IV.2 encourages the development of "creative connections and partnerships with other networks of similar

managed areas, and with international governmental and non-governmental organizations..."

- Working group 4 of the Seville + 5 conference "...examined the question of approaches to sustainable development in reference to three objectives of the Goal II of the Seville Strategy and focused on the experience at the site level". One of the recommendations of the group is to "*ensure better harmonization and interaction among the different biosphere reserve zones*" (emphasis added).
- Finally, working group 6 made the following recommendations: 2. The MAB ICC should find ways of reminding that biosphere reserves 'should provide and opportunity to *explore and demonstrate* approaches to sustainable development on a regional scale', this is not well reflected in the Seville Strategy, nor as widespread in action as it might be." (Ibid. emphasis in the original)

The goals and recommendations presented above reflect the intention of UNESCO to continue the 'evolution' of Biosphere Reserves towards a better harmonization of sustainable human activities and conservation efforts and provide the broad framework in which the MAB Urban Group operates.

The Biosphere Reserve Approach to Urban Areas

In November of 2000 the MAB International Co-ordinating Council outlined the objectives of the Urban Group:

- d) Identify contributions that the biosphere reserve concept have made or could make in urban planning and management...
- e) Examine if there is, or should be, a place for urban areas and cities in the World Network of Biosphere Reserves (beyond as transition areas)
- f) Explore alternative ways and means of recognizing selected cities, or parts thereof, as sites that exemplifies the Biosphere Reserve Model

Three scenarios or categories are presented for discussion. In scenario I the city itself would be the biosphere reserve. This is considered unlikely because it would be

difficult to find an urban area that would meet the criteria of the Statutory Framework. Scenario II involves a green belt around the city with a few core areas inside the city itself. Scenario III, which is considered the most plausible, includes core areas inside and outside the city and those would be linked by green corridors, constituting a “regional biosphere reserve blending urban, rural and natural areas” (UNESCO 2000d).

In June 2003 the MAB Urban Group concluded that urban biosphere reserves are compatible with the Statutory Framework and that Biosphere Reserve proposals should not be refused solely because of the inclusion of urban areas (UNESCO 2003A: 9). In this same document they propose a working definition of an Urban Biosphere Reserve (see figure 2.1) and several possible categories of Urban Biosphere Reserves – Urban Green Belt Biosphere Reserve; Urban Green Corridor Biosphere Reserve; Urban Green Area Cluster Biosphere Reserve; Urban Region Biosphere Reserve. (UNESCO 2003A) Category 4, Urban Region Biosphere Reserve (figure 2.1), presents the best fit to the Castillos case study.

The inclusion of Urban Areas in biosphere reserves was a necessary step after the Seville Strategy proposed the use of Biosphere Reserves as models to approach sustainable development. It is impossible to conceive sustainable development without considering cities, especially in an increasingly urbanizing world. Moreover, emphasizing the importance of cities in Biosphere Reserves and the possibility of including selected cities inside core areas of Biosphere Reserves will dissociate them further from the human-nature dualism that has been so pervasive in the conservation movement. It “would be quite difficult to perceive how Biosphere Reserves that do not include urban areas possibly could demonstrate approaches to conservation and

sustainable development on a regional scale.... If it is agreed that sustainable development cannot be achieved without sustainable urban development...it will be difficult to rule out Urban Biosphere Reserves” (UNESCO 2003A: 5). On a final note, recommendation 14 of the World Park Congress held in Durban, recommends that IUCN “incorporate an urban dimension in its activities” (WPC 2003). Once more the leading path of the Man and the Biosphere programme is being followed by international conservation organizations.

Chapter 3

Urbanization and Environment

Urban (or any other) places are not containers of sustainable or unsustainable processes but rather are produced through processes that may or may not be sustainable

NSF 2000: 8

It seems that cities hold the greatest hope for achieving a more sustainable future for our planet.

Beatley 2000

As an ever-growing percentage of the world's population continues concentrating in cities, the issue of urban sustainability is becoming increasingly important. Today, 47% of the human population lives in urban areas and this percentage is expected to grow to 60% by the year 2030 (UNCHS 2001: 271). In industrialized countries and Latin America the percentage is already over 75%. (Ibid: 271-273). As the process of urbanization continues², environmental problems such as species extinction, climate change, fragmentation of ecosystems, and over-consumption of renewable and non-renewable resources place an unprecedented burden on the planet. Some of these environmental problems are more directly related to urbanization than others. Understanding the connections between urbanization and environmental degradation is of utmost importance to achieve sustainability.

² As Mumford pointed out in 1940, "...it is easy to prove that, if the metropolis has increased in population in the past, it will continue to in the future. Those who hold these views regard any other possibility as unthinkable –by which they mean, in reality, that they are incapable of further thought." (389)

The levels of urbanization are extremely varied between North and South and among different continents and countries. Latin America, for example, has countries with an urbanization rate of over 85% (Uruguay, Argentina, Bahamas, Chile and Venezuela) and countries with less than 50% (Costa Rica, Guatemala, Barbados, Haiti and Honduras) (CEPAL 2000) while China, for example, is 30% urbanized but at the same time has two of the world's mega-cities. These disparities make a general analysis of sustainability of urban society a difficult challenge. Moreover, as Leeds (1979) points out, analyses of urbanization have not only been ethnocentric but also temporocentric, with the exception of a few authors from Anthropology, History or Art History. When we fail to address the time component we risk ignoring eight thousand years of urban experiences, particularly those of pre-industrial and non-capitalist societies, a crucial point when analysing whether the causes of unsustainability lie in urban, industrial, capitalist, their combination, or other components. In order to analyse the impact of urban societies in the environment, an effort should be made to distinguish between the consequences of urbanization and those of industrialism, population growth, high-energy consumption, and consumerism, to name just a few.

In this chapter I will review and discuss different elements of urban societies and the environment – urban society, sustainable society, sustainable urban society. I will then analyze these issues and conclude that urban societies are not unsustainable *per se*. This conclusion follows the line of chapters 1 and 2 – the conception of humans as part of nature, and the need for an inclusion of humans in reserves. These are all prerequisites to my assertion that including a city in the core area of a Biosphere Reserve can assist conservation objectives.

Urban Society

Despite the importance of defining what an urban society is, it is common to find the concept loosely defined in the literature (Krekic, 1987; De Mellor, 1977). The reason behind this lack of clear definition might be in the “difficulty in identifying the precise qualitative characteristics which typify urban society” (Cousins and Nagpaul 1970: 12). Despite this difficulty and lack of clarification, the term is constantly used, leaving the reader to operate with his/her own definition of urban society.

Characteristics of Urban Societies and Urbanization

Mumford (1940) points out that after the middle-ages, while the number of cities stopped growing, population growth continued in certain cities. According to Leeds, the patterns of growth changed around the 1800s when “we can detect the explosive increases that were to produce modern urban society” (Leeds, 1985:1). The population of England grew from 9 million in 1800 to 45 million in 1930, Germany from 24 to 66 million and France from 27 to 44 million (Mumford, 1940: 145). This explosive growth “was accompanied by a drawing of the surplus into cities.... Urbanization increased in almost direct proportion to industrialization.” (Ibid.) The invention of the steam engine provided incentive for the concentration of industries that did not exist prior to it. However, the small and medium sized industrial town, which benefited industry owners with tighter control of the entire town, prevailed until the late 19th century when much larger concentrations like Paris, London and Berlin finally came into being (Mumford 1940). Bookchin (1992), however, describes urbanization as a process that took place mainly in

the second half of the last century (20th). For him, urbanization refers to the “historic decline of the city as an authentic arena of political life (that once lived in some balance with the natural world) and, perhaps no less significantly, the decline of the very notion of citizenship”. (1) He asserts that the process of urbanization is engulfing not only rural culture but the city as well, and replacing ties to the land and citizenship with the market and ‘constituents’. Although I agree with Bookchin’s line of thinking, in this section I will use the term “urbanization” to denote the *process*³ by which a society becomes urbanized without any valuation of whether the process is positive or negative for cities or citizens. Moreover, to denote the process that Bookchin describes I will borrow the term ‘urban overload’ from Capello and Camagni (2000).

	Interaction between the economic and physical environments	Interaction between the economic and social environments	Interaction between the social and physical environments
City effect	<ul style="list-style-type: none"> • Efficient energy use • Efficient use of non-renewable resources • Economies of Scale in the use of urban environmental amenities 	<ul style="list-style-type: none"> • Accessibility of: Good housing facilities; skilled jobs; social amenities; social contacts; education facilities; health services 	<ul style="list-style-type: none"> • Green areas for social amenities • Residential facilities in green areas • Accessibility to urban environmental facilities
Urban Overload	<ul style="list-style-type: none"> • Depletion of natural resources • Intensive energy use • Water, air pollution • Depletion of green areas • Traffic congestion noise 	<ul style="list-style-type: none"> • Suburbanization forced by high urban rents • Social friction in the labor market • New poverty 	<ul style="list-style-type: none"> • Urban health problems • Depletion of historical buildings • Loss of cultural heritage
Table 3.1: Characteristics of ‘urban overload’ and ‘city effect’, which are described by Bookchin as ‘urbanization’ and ‘citification’.			
Source: Capello and Camagni 2000: 1485.			

³ The use of the emphasis is justified by the misuse of terms such as urbanism, urbanization and urban in the literature (Eames and Goode 1977: 45). Therefore, urbanization here is the process by which a society becomes urban.

According to Price (1978), urbanization occurs when three sub-processes occur simultaneously: population growth, nucleation and population differentiation. These sub-processes are similar to the conditions required in Wirth's definition of city, "a large, dense, and permanent settlement of socially heterogeneous individuals" (Wirth 1938, in LeGates and Stout 1996: 190). Quijano (1968: 112) in his essay *The urbanization of Latin American Society* points out that urbanization has many dimensions and that there is urbanization of the economic structure, the social structure, the ecologico-demographic (sic) structure, the socio-psychological cultural structure and of the political structure. Moreover, he argues that the process of urbanization takes place *in* society, rather than being a process *of* society, meaning by *in* that the process "takes place in the whole fabric of society." In a similar view, Peil and Sada (1984), in their book "African Urban Society", point out that "[u]rbanization involves change in the society as a whole" (39), but they also show that "changes in the economic system are often the first stage in this transformation" (39). Lampard (1963: 237) indicates that urbanization of society is a phenomenon of "the last century and a half" and regards urbanization as "a process of population concentration that results in an increase in the number and size of cities (points of concentration) and social change as an incremental or arrhythmic alteration in the routines and sequences of everyday life in human communities." (Ibid: 233-234) Although a general agreement exists regarding the issues of urbanization of society as a whole – for example diversification, and concentration – other issues also have been under debate, and the process of urbanization is not a homogenous one across continents. Two of these are of particular importance for the analysis of my case study below: the specialization of society that comes with urbanization, and the rural-urban dichotomy.

The later has been a matter of crucial debate when dealing with the issue of urban sustainability. Tilly (1974: 43) argues that “the greater the mobilization of agricultural surplus, the concentration of resources, *and the specialization of activity*, the greater the stimulus to urbanization”. Leeds argues that all human nucleation has some degree of specialization and distinguishes between different forms of specialization, that of localities that can be due to ecological or/and socio-cultural reasons, and that derived from technology use, which results in differentiation in the structure of labor and that of institutions, which range “from large-scale orders such as government, church, education, etc., to small-scale institutions such as roles” (Leeds 1979: 229). He then defines urban as “the interacting confluence of all three of these specializations” (Ibid, 230). Later, in a move to break the urban-rural dichotomy, which he regards as a consequence of dualism, he explains that all aspects of society become specialized, “hence, insofar as such systems display those properties conventionally designated as ‘urban’ *we are obliged to regard the entire society as urban* and cities merely as concentrations of more or less large ranges and arrays of certain types of specialities” (Ibid: 231, emphasis added). In other words, he sees mining, forestry, fishing *and agriculture* as different specializations within the urban society. A similar process is described by Berry (1990: 103) for the 1700, “[t]he closer to Amsterdam, the greater the degree of cash-crop specialization to support agricultural development.” By doing so, the rural-urban dichotomy cannot hold, for the ‘rural’ society is integrated, with its internal specializations, into the ‘urban’ or whole society. This inclusion of the ‘rural society’ in the urban is explained also in terms of the control that urban areas exert over ‘rural’ ones. Leeds (1975) argues that:

every important transaction, of any society with a group of rural specializations, takes place in the main settlements (independently of who

controls the transactions). These transactions are such as service exchange, legal procedures, administration, acquisition of rights and privileges, acquisition of specialized knowledge (doctors, lawyers, priests and engineers of the Latin American societies of our interest)." (329; my translation)

and later he explains:

"the basic organization of the agricultural sector of society (not rural by definition) is determined by the same factors (ecosystems and institutions) as the settlements. The reason behind this is that the agricultural sector is just one more space-extended ramification of the institutions involved, while the settlements comprehend the space-intensive aspect, that is to say, the sum of specializations of society that are not intrinsically linked to the land or the water extensively..." (332; my translation)

The recognition of the dominion of the city over the 'rural' is also pointed out by other authors (Hawley 1971; Peil and Sada 1984). Peil and Sada argue that as cities expand in size, the different structures of societies become urbanized and fall under urban dominion. Moreover, as "rural areas are increasingly tied to the towns, and populations which are still rural in location become urban in orientation...distinctions between rural and urban become much less meaningful than when the two were more clearly differentiated." (Peil and Sada 1984: 39) However, while there is general agreement on the concept of dominion of the urban over the 'rural', the view of an all-encompassing urban society is not widely shared (Sorokin and Zimmerman 1929; Cousins and Nagpaul 1970), and the dichotomy is still present in much of the literature. Here again, Bookchin raises a different set of concerns.

"My argument runs counter to the conventional wisdom that city and countryside, like society and nature, are necessarily in conflict with each other, a theme that pervades so much of the writing on urbanity in Western Society. Quite to the contrary: whatever may be the ways in which city life marks departure from the more 'natural' forms of human association such as tribal and kinship groups, the city has been more of a gift to social life and the ecological landscape than it has been harmful. To recover a feeling for the participatory civic institutions that

once marked city life and citizenship is to recover those ideals of civic life and civic sensibility that could countervail the massive destruction that urbanization and the nation-state inflict on city and countryside alike" (1992: xxiv).

Although he recognizes the influence of cities over countryside he does not see them in opposition, nor in a dualistic way. The modern city is a result of urbanization and not a necessary trait of all *civitas*. Moreover, he considers the "image of an all-devouring 'city' [not urbanization] that is engulfing a supine and helpless 'country' [as] a sheer myth" (1992: 3). Cities in the past, as Mumford points out several times when referring to medieval cities, had an openness and contact with their hinterland that urbanization, and globalization, has been driving out. Moreover, urban anthropologists working in India suggest that "the rural-urban dichotomy itself may be a Western concept, or only valid in the West" (Eames and Goode 1977: 53). In the same vein, as argued by Lloyd (1973) in his *The Yoruba: An Urban People* the Yoruba towns, which had concentrations of 150 people per square mile and populations of more than 20,000 people, are composed in some cases of 80% adult male farmers.

Although it seems like an unproductive endeavor⁴, it is necessary to find a working definition of urban society. My working definition is closer to Leeds' definition particularly in two respects. First, and unless otherwise specified, I will consider the 'rural' society as one specialized part of the total urban society. As is the case in several industrialized countries, Uruguay, and parts of Argentina, – the pampas – there is *little* differentiation between several of the agricultural sectors of society, which in fact live an

⁴ Eames and Goode (1977: 36) point out that "the twentieth century has seen a frustrating attempt at defining the urban" and they quote Tringham: "One result of the meeting expressed in the papers presented here was that it became clearly impossible to agree on a definition of 'urban'."

‘urban way of life’ and the other specializations that take place in big agglomerations. By doing so I distance myself from authors like Savage and Kong (1993) who argue that “while *agrarian communities follow the rhythms of nature* and remain in relative harmony with nature, urban communities beat to a different rhythm -a rhythm of technology, economics and human activities” (37, emphasis added). While *some* agrarian communities might follow natural pace, modern agrarian communities, I would argue, are not so much driven by the rhythms of nature as they are by those of the markets and economics that are dictated from urban areas. Following this, the second aspect is the recognition of the urban dominion over the ‘rural’ that is manifested in the patterns of production of agricultural areas, in the trading systems, in the location of market decision making, social interaction, etc. However, and although it might sound contradictory, I agree with Bookchin when he states that cities and countryside have been in a closer relation with nature in the past, and, I argue, the creation of cities does not necessarily change this characteristic. Moreover, the so-called city effect, see figure 3.1 (Capello and Camagni 2000), not only generates social participation and interaction among citizens, it can also strengthen the ties of the city with the countryside and the environment – as Bookchin seems to suggest when he uses the term ‘citification’. So there is a need to distinguish between the urban society of urbanization, as defined by Bookchin, and the citizens of the ‘city’. The *urbe* differs from the city not only in size but, most importantly, in its relation to the countryside and in the way citizens are involved in city affairs.

A final clarification is necessary. I follow Leeds’ theory of a whole urban society that encompasses the ‘rural’, and I agree with Bookchin in his description of the relation between cities and countryside, however, I do recognize the existence of rural societies,

but not those defined in opposition to the urban⁵, a dichotomy that closes the door to alternative descriptions of societies that are not defined as urban-or-rural. In summary, an urban society is not necessarily isolated nor 'fenced off' from the 'rural' or agricultural society. Moreover, the links of the urban society with the countryside are not just driven by control and dependency, as in many modern western societies. A general definition cannot be based on the state of urban societies in a particular place and time. As Eames and Goode (1977: 46) note, not only urban definitions have been ethnocentric, but the attempts to define urban values and social structure "have been based upon the knowledge of *modern* urban centers, [and] they consistently confused the effect of industrial production and modern life with the effect of the nature of the city."

The view of Leeds and Bookchin are exemplified by Castillos, which in a certain way also relates to Chisholm's (1979: 48) studies on Mediterranean villages, where "it is common for the peasantry to inhabit villages or agro-towns that reach a size of 10,000 persons and to have to travel daily to work the fields with surround the settlement." To a lesser extent, the population of Castillos has a variety of ties to its hinterland – i.e. the agricultural, grazing, tourist and natural areas. As we shall see below, many cattle ranchers, for example, live in Castillos or have strong ties with Castillos, and Castillenses have links to their surroundings through small holdings of family agriculture production, apiculture production, income from tourism in coastal areas, and are particularly proud and feel identified with their natural surroundings. An urban-rural dichotomy based on the physical limits of the city would ignore the multiple social ties that interlink urban-

⁵ Leeds in fact uses an example of a rural society located in Brazil in the late 19 century that due to the need, mainly, of currency and routes and ports to export their production, was enclosed by the urban and became a specialized sector of it.

rural-natural areas. These links might also differ in the formal and informal sectors. One example closely related to reserves in Uruguay is that of illegal hunting of capybaras in the country side and reserves. This meat is then illegally sold in Castillos. The consumption, and some times also hunting, of this meat exemplifies one type of, informal, relationship between Castillos and the 'rural' area. This aspect will be further examined in Chapter 5.

Urban Sustainability

Very frequently in the literature we find that, when referring to urban sustainability, the concepts of sustainable development or sustainable urban development are brought forward (Breheny 1992; Maclaren 1996: 1; Mannion and Bowlby 1992: ch 17; Martinotti 1997: 4; Hardoy et al 2001: ch 8). Although urban sustainability and sustainable development are in fact related, the analysis of the sustainable development concept should not precede or serve as an introduction to the analysis of urban sustainability. Even though the term sustainable development is extremely vague, the 'development' component imposes a bias that makes it incompatible with the study of urban sustainability. As suggested by Maclaren (1996: 1) sustainability or sustainable "describe a desirable *state* or set of conditions which persist over time. In contrast, the world 'development' in the term 'sustainable urban development' implies a *process* by which sustainability can be attained." (emphasis added). One could argue that it is development that is being pursued, but the contrast still stands. For this work, the working definition of urban sustainability is built without considering the various definitions or understandings of 'sustainable development'. Moreover, to analyze if an

urban society can be sustainable, we do not need to evaluate the concept of sustainable development or sustainable urban development. What we are studying is not a path towards a desired state of things but a past or present situation that may or may not be sustainable. In the same vein, we can consider the path towards a state of urban sustainability without having to refer to concepts of sustainable development or sustainable urban development to do so. How, if not, could we assess the sustainability of cities in the so called developed world? These cities, which are supposed to be already 'developed', can be defined as sustainable or unsustainable without the need to introduce 'sustainable urban development'. Considering all the different conceptions of the sustainable development concept, and the misuse of the terms 'sustainable urban development' and 'urban sustainability', it is easy to understand why there are so many different visions of a 'sustainable city' (Basiago 1996: 136; Basiago 1999; Mittler 1999: 353; Richardson 1996).

According to Martinotti, "the definition of sustainability for cities is to be carefully qualified both by spatial and temporal criteria. In *space* it has to apply to a larger unit than the city itself. In other words to an urban system" (1996: 4). However, and it is important to clarify because there is confusion in the literature, a sustainable city does not need to be self-sustainable or autarkic (NSF 2000). No matter how one defines the boundaries of the city, cities have always consumed resources from outside those boundaries, and this does not necessarily have to be unsustainable. Those who target self-sustainability as a way of achieving sustainability not only forget that fact, they also ignore the possible ecological comparative advantages that certain regions naturally have over others. Due to the fact that cities consume resources from outside their boundaries,

and in order to assess their impact or share of the earth's carrying capacity (CC), the ecological footprint (EF) concept was developed (Rees 1994; 1995; Rees and Wackernagel 1994; Wackernagel and Yount 1998; Bicknell et al. 1998; Folke et al. 1997). However, it is important to emphasize that although cities consume resources from other regions, and their EF is larger than its boundaries, this does not mean that they are unsustainable as could be implied from the following statement by Rees and Wackernagel (1994: 223): "The analysis shows, that as nodes of energy and material consumption, cities are causally linked to accelerating global ecological decline and are not by themselves sustainable." To render a city as unsustainable because its EF is larger than its political boundaries is to imply that the system to be sustainable has to be autarkic. Moreover, as we can see in figure 3.2 below, cities are in fact nodes of energy consumption –a logical result of the concentration of population- but this does not mean that energy consumption per capita is higher in cities, it might in fact be lower (Alexandre and Michelis 1996). Although the EF can help us better understand the magnitude of the links between urban patterns and the natural resource base, it is still difficult for cities to obtain proper feedback from the environment, especially when the resource base is global⁶. This last point is, I agree, one advantage of obtaining resources locally, for it is easier to gain feedback from the local environment. "Indeed a city that depletes its resource base becomes less resilient and therefore more vulnerable to external stress" (Alberti 1996: 384).

⁶ Urban sustainability indicators can provide the necessary information on how to assess the links between urban areas and their resource base. For information on indicators see: Bell and Morse 2001; Atkinson 1996; Dilks 1996 and Alberti 1996.

Sustainable Urban Societies

In 1863 Fustel de Coulanges argued that:

“Civitas, and urbs, either of which we translate by the word city, were not synonymous words among the ancients. Civitas was the religious and political association of families and tribes; urbs was the place of assembly, the dwelling-place, and, above all, the sanctuary of this association.” (1980: 126)

Leeds (1975), in his “La sociedad urbana engloba a la rural”⁷ argues that the urban society encompasses the ‘rural’ society, and to prove so he develops 5 propositions. “Proposition V [he states] requires a distinction between the physical city and the social, or in other words the societal. The first refers to the sum of density of people, the sum of houses.... The last refers to the societal networks of the urban institutions...” (332, my translation). Finally, Eames and Goode assert that “it is absolutely essential... to keep the notion of urban settlements as defined by form and function separate from the alleged behavioral consequences of such settlement; *that is, the urban center is distinct from the urban lifestyle...*” (1977: 44, emphasis added). I think this crucial distinction should also be made when analyzing urban sustainability. On the one hand we have to analyze the ‘sustain-ability’ of society and on the other the sustainable city. However, as we shall see below, these two are inseparable (Bookchin 1992: xiv), a society of a city might intend to be sustainable but the physical components of the city might render it as unsustainable. The opposite can also happen, an unsustainable society with high levels of consumption can be living in a so called ‘green city’. Castillos is a case in point, although its inhabitants have a strong commitment towards the protection of its surrounding natural environment, the physical infrastructure

⁷ Urban society encompasses the rural one

of the city is not adequate to translate this into action. The sewage treatment plant is inadequate, and solid waste management a disaster. However, the inseparability of the social and physical elements of the city also leads us to ask why this is so, why citizens have not changed the reality of waste management in the city?

When defining what constitutes a sustainable society the following points are emphasized by the literature (Brown 1981; Weatherley 1991; Trainer 1995; Santos 1999):

- Simple lifestyle
- Alternatives to economic growth or no growth
- Self sustainability

These are the attributes that, according to several authors, a sustainable city has (Beatley 2000; NSF 2000; UNEP 1995; HABITAT 1996; Ingonuchi et al. 1999; Alberti 1996):

- Reduces the ecological footprint *per capita* of its inhabitants by providing adequate transportation, adequate construction techniques and materials, concentration of housing, and food production
- Develops a closed system for its outputs trying to convert these into resources (recycling, use of biogas, composting)
- Inserts itself in its bioregion, harmonizing its construction, growth, and production to the surrounding ecosystem. In other words, as much as possible, it adapts to the natural conditions rather than adapting the natural conditions to it
- Imports carrying capacity from places that have an ecological surplus or an environmentally sustainable production

- Emphasizes social interaction and political participation for local problem solving

It is clear that for an urban society to be sustainable, the city in which it lives has to have the attributes above mentioned. However, despite the importance of separating the social from the physical *for the analysis of sustainability*, and as the last point starts to show, urban society and urban structures or functions are deeply interrelated. As Bookchin states, “the citizens of a city are of no less concern to me than the city itself, for the city at its best ultimately became an ethical union of people, a moral as well as a socio-economic community – not simply a dense collection of structures designed merely to provide goods and services for its anonymous residents” (1992: 135). This thread leads us to the importance of participation and decentralization in sustainability. Many are the authors who emphasize the role of participation in sustainability (Ling 1999; Miles et al 1998; Drakakis-Smith 1995; Haughton 1999; Wacker et al 1999), however, Bookchin suggests that citizens have become taxpayers that receive services from an “all-powerful state and its elected representatives. How is this related to our question on sustainable urban societies? Bookchin (1992; 1995; Biehl 1997) and Friedmann (2000) point out that the resurgence of citizenship is a crucial step to reach sustainability, and *the city provides the scenario for this to happen*. However, while this ‘citification’ has positive outcomes, they warn about the dangers of ‘urbanization’ –urban overload-, which they see as one of the causes of the disappearance of citizens and the emergence of constituents or taxpayers. So while the analysis of the sustainability of urban societies needs to isolate the social from the physical, or at least try to study them individually, the building of a sustainable society needs citizens that are involved in the production of their *urbs*.

In order to know if present day urban societies, in general, are sustainable or not, we would need to know the carrying capacity of the ecosystems that sustain them. Due to the difficulty in calculating the carrying capacity, plus the difficulty of calculating the ecological footprint of urban societies, we cannot conclude whether they are unsustainable or not. Each city constitutes a part of the total system (earth), so in order to assess whether it is sustainable or not, we need to assess the needs of other cities and other species in the system. Moreover, while in the future we might be able to assess if at a certain moment in time the system is sustainable or not, we need to keep in mind that many of the inhabitants of those cities are not meeting minimum standards of living. In order to do so they will probably increase their ecological footprint. Therefore, in our definition of sustainable city we are evaluating the past or the present, but not the future. If we want to predict whether the same city will continue being sustainable we need to appraise the increased ecological footprint of other systems. So, despite our knowledge of many serious environmental problems, some of them more directly linked to urbanization than others, we cannot yet answer if urban society is overshooting or not. For this reason, I will address the question by assessing whether or not the “urban” component of a society renders it as sustainable or unsustainable per se. I do believe several societies have been sustainable in the past (Martino 2000), therefore I will not analyze societies in general but urban ones. By analyzing the links between urbanization and environmental degradation, the links between industrialism, capitalism, consumerism and urbanism and, finally, urban societies of the past from a sustainability point of view, we should be able to determine if the urban component, and the urban alone, can by itself render a society unsustainable.

Some of the most recurrent topics in the links between urbanization and environmental degradation are the effects on air pollution (Romieu et al 1991; HABITAT 1996: 143-147; Ingonuchi et al 1999), liquid waste disposal (Kaika and Swyngedouw 2000; Goodland and Rockefeller 1996), solid waste production (Jindal et al 1997; Hassan et al 1998), excessive consumption, and impacts on biodiversity (UNEP 1995: 773-776 and 971-974; Morello et al 2000; Lassila 1999). These impacts are a result of human actions that due to urbanization are concentrated, and in particular cases increased on a per capita base. While some of these effects are felt mainly in the urban space, others have global consequences, like greenhouse gases to which private transportation contributes an important part, or are felt far away from the urban centers, like the impact of agriculture on biodiversity. It is common to see urbanization portrayed as the main cause of many of these impacts without analyzing other factors or a scenario with no urbanization⁸. Analyzing the impacts of cities, Gleeson and Low (2000: 1) mention the fact that “world consumption expenditures rose six times between 1950 and 1998”. However, they fail to point out population growth in that same period (three fold increase), number of births per couple in rural vs. urban areas, consumption in urbanized southern countries (Latin America) in comparison to consumption in the urbanized north, etc.

While *urbanization* might make the problem difficult to solve, ‘*citification*’ can actually be part of the solution by providing the economies of scale that are necessary to manage these wastes appropriately. Moreover, while an urban society can increase consumption per capita, as we shall see below, it can also help reduce the ecological

⁸ For a historical analysis of the view of cities as antithetical to environmental sustainability see Young 1997.

footprint of the city as a whole. A city with a population of 100,000 people can have a smaller ecological footprint than two cities with 50,000 people or ten cities with 10,000 people. Capello and Camagni (2000) argue this point comparing the city of Milan, to the rest of the province of Lombardy using the case of electricity and energy consumption. Figure 1 exemplifies the city effect by showing how the city of Milan, which belongs to the province of Lombardy and is the biggest city, consumes, per capita, less energy in public lighting, less domestic electricity and less electricity in total than the rest of the province.

Although Young (1997) already explained the origin of the conception of the city as “unnatural” and non-environmentally friendly, and Harvey (1996) noted how part of

the environmental movement has ignored or denigrated the cities, placing the burden of environmental degradation in the cities is still commonplace. It is as important to identify the impact of cities as it is to analyze the advantages of urban areas. By highlighting the impacts without isolating the urban component, a dangerous mistake is made, one that can place energy and resources in fixing the wrong “problem”. The language used is also problematic. Gleeson and Low point out that “the ‘consuming city’ of the developed world is merely the counterpart of the new ‘producing cities’ of...” the regions to which manufacturing capital has moved to. “Such cities” they continue “are attractive to investment precisely because they offer the least regulatory friction to dirty production” (2000: 24, emphasis added).

However, there is no such thing as a consuming city, it is people living in them that consume, moreover, as we shall see in figure 3.2 below, in the USA, the consumption of resources seems to be higher in so called ‘rural’ areas. In the same vein, cities in the South are not in charge of environmental regulations, the federal or central government is; so why blame cities for the lax regulations? In any case, the country as a whole or the global economic system should be blamed not just southern cities. The following quote from the US National Science Foundation summarizes the point. “Urban (or any other) places are not containers of sustainable or unsustainable processes but rather are produced through processes that may or may not be sustainable” (NSF 2000: 8). Environmental degradation produced by urbanization might be common, but it is definitely not an inevitable outcome (Dahya and Pugh 2000).

Because I am trying to analyze if the urban component *ipso facto* renders a society non-sustainable, I need to “isolate” many of the factors associated with urbanism.

Studies on urban sustainability are recent, and critics of urban areas are usually temporocentric. For these reasons, many of the “faults” attributed to The City could be in fact caused by other factors like industrialism or capitalism. Rees and Wackernagel for example, refer to high income countries which are 75% or more urban. Then they refer to the wealthy quarter of the population which produces 75% of the wastes and they say that the population of wealthy cities are responsible for 60% of current levels of resource depletion and pollution (1996: 236-237). They are relating cities to over-consumption just because people in industrialized countries live in cities. They could link industrialization or capitalism to over-consumption. They are assuming that The City is unsustainable because people in wealthy countries live in them and also consume many resources. However, how much does the average city dweller of an industrial country consumes and how much does the average ‘rural’ dweller of an industrial country consume?

If we take the case of the United States, we find that each rural household uses more electricity and consumes more BTUs per household than city households do⁹. Moreover, the number of motor vehicles per household and the number of households with at least one vehicle is also higher in rural areas than it is in the city (EIA 1997).

So we need to be careful and not link every environmental problem to urbanization without analyzing the other possible reasons for them. On the other hand, one cannot ignore the patterns of *consumerism* present in the city and the fact that it is in cities where consumption becomes more explicit (Miles and Paddison 1998). Although living in a city might create some economies of scale and other “city effects”, it can also increase the demand for consumer ‘wants’ with respect to non-urban areas. The increase in consumption can either be a consequence of living in a city or a result of the income increase that generally comes as a result of living in a city (ICLEI 2000; Habitat 1996). I would add that consumption in urbanizations could also be a consequence of inequalities. According to Miles and Paddison (1998),

consumption is interactive in a social sense, insofar as it provides an arena which distinguishes one social group from another, often through inequalities associated with access to resources, and yet is simultaneously integrative in providing an arena within which consumers can feel that they belong to something. (820)

It could be possible, following this argument, that consumption, in an urban system, is stimulated by the inequalities pointed out by them and other authors (Drakakis-Smith 1996; Gleeson and Low 2000: 14). Consumerism, particularly in Western societies, represents the opportunity, in the consumers’ mind, to bridge the inequalities that are enhanced and more evident in an urban setting. If we add this to an income increase, a

⁹ We must keep in mind that the percentage of one person households in the city is higher than in rural areas (27.9 against 19.1)

desire to consume stimulated by advertising, and a sense of loneliness created by urbanizations (Miles and Paddison 1998: 816) we have a recipe for increased consumption. However, although this process is in part a consequence of living in an urban area, the city per se does not have to be unsustainable and a channel for consumerism. The challenge is to find the point between the “city effect” and the “urban overload” to avoid some of the effects of urbanization that lead to consumerism. The isolation and loneliness pointed out by several authors quoted in Miles and Paddison is not irreversible, the inequalities, which are so flagrant in southern urbanization, are not just a consequence of urbanization. The scale of analysis has to be broadened to understand them. As Gleeson and Low point out:

In the present context of globalization, cities are ‘growth machines’ geared to an ever-expanding consumption of nature.... the urban sustainability discourse is limited by its failure to confront the deeper causes of unsustainability. Most important among these causes are the current growth model of global capitalist economy and its entropic logic of accumulation” (2000: 21).

Some clarification of terms is, once again, necessary before trying to isolate some of the non-urban components associated with urban areas. Moreover, the exercise of “isolation” will be done by analyzing societies that, though urban, did not have the other ‘contaminating’ characteristics. The use of the term ‘pre-industrial city’, for example, is understood in contrast to the ‘industrial city’. And what constitutes an industrial city?

Is it any city in a society where the take-off into industrialization has taken place? But does nineteenth-century Exeter differ significantly from Sjoberg’s pre-industrial city?.... Perhaps an industrial city should be defined as a city dominated by a particular industry, in the way that nineteenth-century Leeds and Manchester were dominated by textiles. However, Florence in the fifteenth-century, Norwich in the seventeenth century and Lyons in the eighteenth century were also textile towns in this sense. In Lyons, 14 percent of the total population, meaning something like half the working adults, were employed in textiles, and most of these

in silk. Is the industrial city a city dominated by large factories? This would certainly exclude Florence and Norwich, but at the price of leaving out nineteenth century Birmingham and Sheffield as well, since they were cities of small workshops. In other words, the 'post-industrial city' (as it may be more convenient to call it) was no more monolithic than the pre-industrial city. (Burke 1975: 16)

We need to be cautious when referring to certain conditions of urban areas and to certain moments in time that typify urban conditions. We need not be ethno or temporocentric when analyzing urban areas in general. Wirth warned in 1938 that despite the link between mass production, capitalism, and cities in the modern world, we can not deny that "cities of earlier epochs may have been...in a pre-industrial and pre-capitalist order...[but] they were, nevertheless, cities" (Ibid: 50). Comparing industrial and pre-industrial, capitalist and pre-capitalist cities, can lead to important conclusions, for as Leeds (1979: 237) argues, "we are in fact continuously living in, experiencing, and looking at *capitalist* forms of urbanization." Later he adds "[g]reat density, large population agglomerations, and increasing population size are necessary symptomatic results but, as diagnostic traits of *the Urban in general*, are of limited value since they describe only the cities, and then chiefly capitalist cities, of urban society and not urban societies as wholes, especially noncapitalist ones" (Ibid: 237, emphasis added). Eames and Goodes (1977: 49) exemplify this fact with the examples of poverty and material consumption (referred to as urban lifestyle) which are often associated with the 'urban' but which are, respectively, a result of the economic systems and "market demands characteristic of capitalist industry rather than residence in the city". Although I agree with Eames and Goodes' argument, we cannot ignore that the social isolation, intensification of advertisement, and patent social differentiation that happens in the city creates an ideal atmosphere for consumerism to flourish. Finally, Eames and Goodes note

that “we must distinguish between a society that is becoming modernized (mass production, mass communication, monetization, bureaucratization) and one that is becoming urbanized (increasing urban form and function) since the two processes are not the same” (Eames and Goodes 1977: 50).

When it comes to the comparison of pre-industrial or pre-capitalist cities with ‘modern’, industrial or post-industrial ones, there are very diverse examples. Sjoberg (1960) in his well-known “The pre-industrial city, past and present” distinguishes between pre-industrial and industrial cities, asserting that the former are not impersonal, secular and great in size as it was assumed in the folk-urban hypothesis (from Redfield). However, Thrupp (1961), in her critique to Sjoberg’s book, states that “the case for extrapolation of antiquity rests on the supposition that all historical change between the rise of cities and industrialization is cultural and therefore irrelevant to the hypothesis” (62). Vance (1971) examines land assignment practices in pre-capitalist, capitalist and post-capitalist cities, concluding that land assignment in cities has already gone “pure capitalist control” (119), traditional practices have been abandoned, and “economic measures still determine most decisions” (120) despite the deference paid to social goals in some countries. Goose (1982) attempts to define “how pre-industrial towns are differentiated from their counterparts in industrial societies” by studying the specialized or unspecialized nature of their economies (24). Storey (1985) analyzes pre-industrial, and particularly pre-Columbian, urban demography. Batten (1998) studies the link between urban growth and transportation in pre-industrial European cities and this has direct links to industrialization. Rapoport (1990) studies inner city transportation and street design in pre-industrial and modern cities. Grillo (2000) compares the pre-

industrial, industrial and post-modern cities from an ethnic and linguistic perspective. He concludes that the pre-industrial city “incorporated populations in blocks, reflecting the pluralism of the societies in which they were embedded” (975), while the industrial city created homogeneous populations and the post-modern one “celebrates diversity, fragmentation, a multiplicity of voices...” (975). Massicotte analyzes Montreal’s transition from pre industrialism to industrialism and its effects in demography, ethnicity, economic structure and public services (1999). Despite the massive and diverse amount on information on pre-industrial, ancient and pre-Columbian cities, there are few, if any, articles regarding *environmental sustainability in pre-industrial urban areas*. However, despite the lack of literature in this particular field, some preliminary conclusions (an extensive study cannot be included here) can be reached by discussing related literature in the fields of Archaeology, History and more recently, Environmental Archaeology.

One of the first contrasts we find between urban pre-industrial societies and industrial or post-industrial (keeping in mind Burke’s point) is the fact that the rural – urban dichotomy is not as clear as it *appears*¹⁰ to be in modern society. The city of Uruk (population of 50,000) for example expanded its walls in 3000-2500 BC and included gardens and cultivation as well as the city inside them (Southhall 1998: 29). The city of Sijilmassa (population of approximately 30,000) had walls not only for the city itself, but for the orchards and cultivated areas which were situated beside the city itself (Lightfoot and Miller 1996). Mumford (1940) makes constant remarks throughout “The Culture of Cities” regarding the unity that existed between the “urban” and the “rural” in the Middle Ages. “The town of the Middle Ages was not merely *in* the country but *of* the country:

¹⁰ The use of italics here is to remind the reader about Leeds conception.

the food was grown within the walls, as well as on the terraces, or in the orchards and fields, outside” (Ibid: 24). However, despite the differences¹¹ that cities in the past might have with contemporary cities, they are, as Wirth (1938) argues, still cities.

Berkes and Folke (2000: 10) define feedback as the result of certain behavior that can reinforce (they call negative feedback) or modify (positive feedback) future behavior. On the other hand, “[a]daptive management deals with the unpredictable interactions between people and ecosystems as they evolve together.... Organizations and institutions can ‘learn’ as individuals do, and hence adaptive management is based on social and institutional learning. Adaptive management differs from the conventional practice of resource management by emphasizing the importance of *feedbacks* from the environment in shaping policy...”

They argue that certain societies adapt to changing environmental conditions better than others. Despite the lack of certainty on the reasons for these differences, they indicate that “appropriate feedback mechanisms” might be the clue to influence decisions that will alter future behavior to “make adaptation possible” (Ibid: 19).

Atkinson (1992), Alberti (1996) and Redman (1999) bring the feedback mechanism topic (without mention of this particular term) to the urban discussion. Atkinson states that “[o]f particular concern with regards to any model of urban sustainability is the way in which the conceptualization, analysis and planning of urban regions has almost entirely lost sight of real resources...” (1992: 334). Alberti notes that “although cities affect and are affected by natural systems beyond their physical

¹¹ Specialization could be another general difference, however, Bookchin (Biehl 1997) and Goose (1982) present different views for modern and pre-industrial cities respectively.

boundaries, the interdependence between urban systems and the regional and global environment is not reflected in urban decision-making" (1996: 381). Redman believes that this separation between decision making and "real resources" and the "regional environment", is due to the increase of organizational structure of urban societies which leads to a separation between higher level decision makers and productive situations (212). So while in 'modern' urban societies the separation is 'institutional' and physical, in the middle ages and ancient cities, as we shall see, the separation was not physical, but might have been, as Redman is arguing, institutional. This, together with other non-environmental factors, might explain why some ancient urban societies survived for millennia while others did not. Nevertheless, it must be stated that being close in space does not mean that decision-makers were more aware. In other words, the physical proximity to the productive land does not guarantee that decision-makers and decision-making institutions were 'close to the land' emotionally, or worked and depended on it enough to be aware of the issues concerning its management. In this context, Bookchin's remarks on the dangers of overspecialization resulting from urbanization (or urban overload) gain importance:

Our small communities should be economically balanced and well rounded, partly so they can make full use of local raw materials and energy resources, partly also to enlarge the agricultural and industrial stimuli to which individuals are exposed.... To separate the engineer from the soil, the thinker from the spade, and the farmer from the industrial plant promotes a degree of vocational overspecialization that leads to a dangerous measure of social control by specialists. What is equally important, professional and vocational specialization prevents society from achieving a vital goal: the humanization of nature by the technician and the naturalization of society by the biologist. (Biehl 1997: 22)

The existence of feedback is also related to scale. Small cities in Uruguay's country side have a stronger set of interactions with rural areas, and this fact is important

for a proper function of the feedback mechanisms. The question of city size will be further developed at the end of Chapter 5.

Ancient Urban Societies

As a final point on the discussion of the sustainability of urban societies, I will contest the assumption that all urban societies are not sustainable by briefly analyzing urban societies of the past and by examining how many of the impacts attributed to urbanization were not necessarily a consequence of urbanization itself. Redman (1999: 127) argues that urban society “introduced a whole new set of human-environment interactions.” He points out 4 major impacts derived from the transformation to an urban society. First, more people require more food. Second, there is a need for more material to construct cities. “A third impact is the territory itself that is given over to settlement, creating urban ecosystems” (Ibid: 127). Fourth, there is a series of new interactions derived from urban societies’ industry, trade, and hierarchical administration.

The first three factors are related to urbanization but not unique to it. Moreover, as Jacobsen and Firor (1992), and Redman himself argue, the concentration of population gave a fertile ground for the spread of some deadly diseases, and this in turn affects population growth. The need for material to construct shelter is not limited to urban areas. Finally the impact in the territory itself as Redman states, is nowadays less than 3% of the land (land alone, not including oceans) (ICLEI 2000: 4), and we can imagine how low that impact might have been in ancient cities. However, as we saw above, the last point is of interest, especially with regards to the “hierarchical administration”, and we shall come back to this particular point in section 7.

Weiskel in "Urbanization: A Doomed Experiment?" argues that "despite six millennia of experience, we have not yet learned as a species to construct urban environments in which we can live on a sustainable basis" (1991: 18). He first argues that since its origins every urban experiment has failed because it destroyed its surrounding and regional environment, but no references are provided. Then he argues that urban people do not get feedback from the environment and, because decision making is in the hands of urban people, then the same unsustainable practices are continued despite the knowledge of rural people. He overlooks that in ancient cities the rural urban dichotomy is not as clear (if it ever is) as it is in modern cities. Agriculture used to be part of the inner mural activities or many of the 'rural' workers lived in the city, as is the case for example with the Yoruba in Africa (Lloyd 1973), and Sardinia or Sicily in Italy (Chisholm 1979). Davis (1973: 17) similarly argues that "the very success of the urban regime might prove ultimately disastrous by virtue of the environmental damages...that it causes. Because the city is the most complex form of settlement, it is also potentially the most destructive." But no link between complexity and tendency to a destruction of the environment is shown. Finally, he states that "often...an attack from the outside was only a contributing cause, a final step, in the process of city death" (Ibid: 17), and again no references are provided. Fall et al (1998: (111)) based on references and palynological analysis of lake cores conclude that localized deforestation occurred during the Neolithic, but regional deforestation occurred with the wake of Bronze Age urbanism in the Near East. However, Waelkens (1995) and Waelkens et al (1999) note that pollen samples show how deforestation happened before the creation of the city of Sagalassos in Asia Minor (from 6000 BC to 3000 BC) and continued at the same pace during the existence

of the city (3000 BC to 700 AD) with some improvement during the last 400 years of existence. However, the worst signs of deforestation, overgrazing and abuse of the land come, according to pollen records, after AD 1050 when Turkmen tribesman arrived from Iran. So the city of Sagalassos survived almost 4000 years and its collapse was not due to environmental degradation. The city of Sijilmassa constitutes one more example of a city that flourished for 650 years and also collapsed due to a war and not because of mismanagement of the environment (Lightfoot and Miller 1996). Monte Alban in the Valley of Oaxaca (population of more than 25,000) survived for several millennia before its collapse that is thought to have happened not due to overuse of resources but because of competition from other societies in the valley and outside, or due to an invasion by these same societies (Balkansky 1998). Finally, and also in Mesoamerica, Teotihuacán, or the city of the gods, with a population of up to 250,000 people, survived more than 600 years and collapsed due to fire or war and not because of environmental degradation (Carlson 1993). These are just a few examples of cities that survived centuries or even millennia without collapsing due to environmental degradation. There surely are cases of ancient cities or pre-urban societies that destroyed their surrounding environment, just as there are cases of non urban societies that were sustainable and cases of non urban societies that collapsed because they destroyed their environment. The point is to show that cities in the past were sustainable. Many factors, like population growth, industrialization or lack of feedback, might be the reasons for unsustainability, but despite the close connection of urbanization to many of them, we cannot describe every urban society as *ipso facto* unsustainable because of it.

Cities in the Landscape: Urban Biosphere Reserves

This extensive analysis of urban sustainability was necessary in light of the perception of cities as unsustainable *per se*, present in much of the literature reviewed above. The goal of the MAB Urban group, as described at the end of Chapter 2, is to include urban areas into the network of Biosphere Reserves because without them, the claim of achieving “sustainable development” in urban societies cannot be made. Before elaborating on the importance of including urban areas in Biosphere Reserves it was essential to demonstrate that urban societies are not unsustainable *per se*, and therefore the potential exists for Biosphere Reserves to include cities without compromising sustainability. Moreover, Biosphere Reserves provide a regional perspective that is crucial for the integration of urban, natural, and agricultural planning.

There are intensive links between rural, urban and natural areas (HABITAT 1996), the city cannot be assumed as “an autonomous entity whose ecological health can be ensured through the regulation of endogenous social processes and the improvement of physical infrastructure” (Gleeson and Low 2000: 9). We need to find ways to integrate the city and its planning into the structure and planning of its surrounding landscape. In order to understand the links between the city and its surroundings we need to analyze the broader context in which the city is situated and its interrelations. Here we need to draw a distinction between different categories of cities. World mega-cities and medium cities in the industrialized world have become dependant on global process, their hinterland cannot be circumscribed to its surroundings any more. In these cases, a regional or an ecosystemic perspective will provide us with only part of the picture. In contrast, small

and medium cities in the south have impacts and connections that tend to be local, despite the fact that these cities are not isolated from the effects of global process. The ecosystem management concept, which can help “ensure that ecological services and biological resources do not erode irreversibly as a result of human activities” (Brussard et al 1998: 10), is close to the regional approach needed, it is related to adaptive management, and recognizes humans as part of ecosystems (Stein et al 1999; Harwell et al 1996; Gibson and Tomalty 1995; Grumbine 1994; Slocombe 1998). Adaptive management “assumes that ecosystems are inherently unpredictable and require policies that are flexible” (Harwell et al 1996: 500). Moreover, “adaptive management is accepted as a legitimate urban strategy...[it] accommodates learning, uncertainties associated with limited knowledge, unexpected outcomes, surprise...” (Marcotullio and Boyle 2003: 18). This relates to the importance of obtaining feedback from the environment, a crucial aspect of urban sustainability (Alberti, M 1996), but is also required if managing under the precepts of the new ecology.

On the one hand, the ecosystem approach to urban areas is still closely associated with the urban ecosystem approach. This view has the advantage of valuing natural areas in the city and the value of the city as ecosystem, it also provides an interesting view to analyze the city. However, it has the problem of centering in the city instead of focusing on the landscape, in which the city is located, but that has elements to which the city is interrelated as well. On the other hand, the ecosystem approach has the clear advantage of bringing a variety of temporal and spatial scale to the analysis of the city in the region. Beatley describes the advantage of taking the regional approach with political decentralization for the case of European cities. In the Netherlands, for example, each

province prepares its own regional plan, this plan is not mandatory but municipalities will follow it because the province will approve municipal proposals based on the guidelines of the regional plan. In this context the focus for decision planning and decision making is not in the city but in the region. A combination of the approach to protected area planning suggested in earlier chapters and this approach to urban planning helps shift the emphasis from the localized, disciplinary focused initiatives to a regional multidisciplinary approach.

Despite the usefulness of the ecosystem management concept, I believe the Biosphere Reserve model, which uses similar tools (Marcotullio and Boyle 2003), accommodates better the scenario described in the last paragraph by providing a better framework for the integration of conservation and urban planning. One of the biggest challenges to design sustainable integrated cities is to overcome the dualism described in Chapter 1. If we manage to do so, we can create cities analogous to nature in which nature not only exists to make the city greener but also to embed the city in its larger natural ecosystem (Beatley 2000); the Biosphere Reserve model was created with the idea of integrating humans and nature at its core. One challenge faced by the regional approach is the global scale of inter-regional dependence. However, this challenge is more a challenge in terms of discovering the cross boundary connections and impacts than a challenge to sustainability itself. Recognizing the importance of regionalism does not mean to advocate for regional self-sustainability. Biosphere Reserves provide the context for both conservation and urban planners to start coordinating their planning on a regional scale. "Conservation of biodiversity has to be planned and managed in such a way as to coordinate protected areas with the total landscape in which they

occur...[including] urban and peri-urban environments” (Heywood 1996: 548) and, I would add, with the total landscape as focus.

Chapter 4

Uruguay: Landscape Description, Conservation History and State of Affairs

I believe they should be denominated as specially protected areas, for that is what they are....It does not matter that they are not called like that in other parts of the world, we are not required to proceed exactly the same.

Mateo Magariños de Mello 1997

A Landscape Description

In this section I will start by providing a description of the “Pampas Bioregion”, in which Uruguay is located. I will then turn to the Uruguayan Savannas eco-region, which is part of the Pampas Bioregion and holds the entire country within its borders, and will end by describing the landscape ecology of Uruguay. I will focus the description on the state of conservation in the bioregion, eco-region and Uruguay, and I will advance the discussion initiated in Chapter 1 regarding biodiversity in terms of relationship to stability/resilience/productivity in grassland ecosystems. In the next section – approaches to conservation – I will analyze historical approaches, the recent discussion of National System of Protected Areas Law and discuss the main points identified in the discussion.

The region

The Pampas Bioregion (Gudynas 2002; see figure 4.1) includes parts of the Brazilian state of Rio Grande do Sul, the entire country of Uruguay, and the provinces of Buenos Aires and Entre Rios, south of Cordoba and Corrientes, part of San Luis, and the northern Pampa in Argentina. It is characterized by open spaces with grassland landscapes, few trees and a strong link to cattle ranching activities. The limited tree

coverage is attributed to the recent formation of the pampas soils (Chebataroff 1960), the dense grass coverage and its extensive roots (Erize et al 1981), or the amount of precipitation combined with natural fires, droughts, floods, toxicity of its soils, presence of herbivores and flat topography. The temperatures in the region fluctuate from an average of 12° to 15° C depending on the area of the bioregion. Precipitation also fluctuates greatly depending on the area of the bioregion, with a maximum of 1000-1500 mm in the northeast, descending gradually to a minimum of 600 mm towards the south west (Chebataroff 1960; Erize et al 1981; Burkat et al 1991; Soriano 1992; Panario 1994; Sala et al 1995; Evia 2000; Gudynas 2002).

Figure 4.1: The Pampas Bioregion. Administrative limits obtained from ESRI 1993. Bioregion limits (Gudynas 2002) were established using a methodology based on a multidisciplinary criteria, which includes social, commercial, and anthropological aspects. (Martino in press)

Human Use

These grasslands have been occupied and managed by humans for at least 11000 years. Several authors have related a series of extinctions in the Americas to the migration of humans on their way to the south. This is a common factor in groups that are new to a region, since it can take generations to develop those cultural traits that allow for a better adaptation of human groups to the environment (Berkes 1999; Callicott 1998; Gomez Pompa and Kaus 1992; Toledo 1996). Despite the existence of mega fauna extinctions by *homo sapiens* in the past, the impact on the Pampas has increased exponentially since the conquest. It is important to note that I do not relate the lesser impact by natives up to the conquest on lack of technology or low numbers. We can state that they were responsible for the extinction of mega fauna and then go on to say that the reason why the impact was not greater was lack of technology (Callicott 1998). Moreover, the use of fire has been present in the area for millennia. Estimation of population numbers, on the other hand, have been steadily growing for the Americas with each new study. It is important to keep in mind native influences in the landscape, especially when planning conservation and restoration objectives. Due to the brutality of the conquest (Wright 1993; Stannard 1992), and to a certain extent lack of adequate funding for archeological studies in the region, there is little information on indigenous management practices.

Buenos Aires was founded in 1536, at that time the Spaniards brought 72 horses to the region. After the destruction of Buenos Aires many of those escaped, and by 1585 the Jesuit traveler Thomas Falkner describes herds that could be seen traveling for 2 hours uninterrupted in the areas surrounding Buenos Aires, the number was estimated in

80,000. Bovine cattle was introduced to the area in 1573 and to Uruguay around 1610 (Soriano 1992). These few animals introduced and abandoned, multiplied quickly, as it can be deduced from records of leather exports, or the existence of “corrales” for more than 20,000 heads of cattle used by the Jesuits in southeastern Uruguay – some of these can still be seen a few kilometers away from Castillos. Darwin reports one million dead cattle during the mid XIX Century droughts and at the same time he describes the use of fire for grassland “improvement” (Soriano 1992). Mac Cann (1853, in Rapoport 1996) talks about landowners with more than 250,000 head of cattle in Entre Rios, and describes the overabundance of sheep of such low quality that they were sold by the dozen at such a cheap price that any worker could buy 70 or 90 with one day’s pay. Despite the existence of native herbivores in the area, the impact of these activities on the landscape were significant, as described by Darwin, who described the native species sharing the grassland with cattle. This impact, it should be reminded, was described at a time in which agriculture practices, which started by the year 1527, were extremely limited in scale - by the year 1890 the agricultural surface in Santa Fe, Buenos Aires, Entre Rios and Cordoba occupied between 3-5% of the region (Leon et al 1984: 203).

The percentage of land under agriculture use has been growing steadily in the past decade, taking land away from grazing areas, and even from mixed farming (agriculture and cattle cycle) areas. Evia (2002) estimates that agriculture covers 30% of the land, grasslands 60% and the rest is covered by forests, plantations and gallery forests. In Uruguay there is a concentration of agriculture in the west, and Argentina has seen a strong expansion of soy plantations in the east and centre of the bioregion. This expansion of soy production is intensifying agriculture, causing the environmental

problems associated with it and is driven by the same factors that drive the penetration of industrial soy production into the Amazon. Ironically, this soy is exported to Europe and China and is used as fodder for cattle that end up competing with beef produced under 'natural' conditions in the same countries that suffer from the environmental consequences of this intensive mono-crop. If as de Haan et al (1997) predict, meat consumption increases from 210 to 275-310 million tons by the year 2020, this tendency toward soy plantations might not be short lived. Moreover, it is expected that the rise in demand will be increasingly covered by industrial meat production. However, an increased production in natural grassland grazing could also occur, increasing the demand on the ecosystems and the risks of new environmental problems.

Conservation Status

Grassland ecosystems cover between 31 and 43% of land surface worldwide, and contain 29% of biologically distinct eco-regions, 19% of the centers of vegetal diversity and 11% of the areas with endemic birds (UNDP et al 2000). However, they have 5% of the world's bird species and 6% of native regional mammals are primarily adapted to grassland ecosystems, many of the species present in grassland ecosystems use other ecosystems as part of their habitat (Sala et al 1995). This highlights the importance of a landscape approach to conservation, which would protect different local ecosystems located in the grassland matrix such as wetlands, forests, etc. Finally, South American grasslands have the highest mammal biodiversity, particularly in terms of endemic species, in South America, including tropical forests (Mares 1992). According to Krapovicas and DiGiacomo (1998), more than 230 species of grasses are present, of

which 190 are native, and 300 bird species, of which 60 are strictly grassland birds, also are part of the biome and particularly of this diverse bioregion.

Due to its particular characteristics – fertile soils, low tree coverage, topography – grassland ecosystems have been the most extensively modified (Henwood 1998). To this aspect we need to add the almost complete lack of protection this ecosystem has under protected areas. According to the UN (1993) and the IUCN (2002), the temperate pastures biome has only 0.69% of its area under protection, and the Argentinean pampa has even less with only 0.08% (Henwood 1998). The IUCN warns about the lack of protection and the tendencies present in this biome. In almost every case of an important degradation of the ecosystems, a related impact on wildlife is present (Henwood 1998). According to a World Bank report (Dinerstein et al 1995), the Pampas eco-region in Argentina is endangered, and the Argentinean Espinal plus the Uruguayan Savannas (part of Brazil, Argentina and all of Uruguay) are vulnerable, and all three eco regions are considered of bioregional importance. Equally alarming are the reports from the WWF about the different eco regions that integrate the Pampa Bioregion (see table 4.1 below).

Eco-region	Present Status and Main Threats	Protection
Uruguayan Savanna	<ul style="list-style-type: none"> • Few untouched patches due to cattle influence. • Artificial pastures up 32% in the 1980-90 period. • Introduction of exotic species. • Increase use of fertilizers in agriculture and pastures. • Soil erosion. 	<ul style="list-style-type: none"> • Very small percentage of territory under protection. • Effective protection almost zero in existent areas.
Argentine Espinal	<ul style="list-style-type: none"> • High degree of modification by agriculture and total destruction of forests. • Fauna displaced due to loss of habitat. • Introduction of exotic species. • The Mar Chiquita lake and the Río Dulce watershed endangered by water use. 	<ul style="list-style-type: none"> • Small percentage of territory under protection. • Effective protection in very few of the existent areas.

Sub-humid Pampa	<ul style="list-style-type: none"> • Important percentage of fauna is threatened or endangered of extinction. • Very few untouched natural patches. • Intense modification of the rest of the ecosystem due to agriculture and cattle. 	<ul style="list-style-type: none"> • Small percentage of territory under protection. • Effective protection almost zero, except for Campos del Tuyu and Otamendi.
Semi-arid Pampa	<ul style="list-style-type: none"> • Fauna in better state than the humid pampa, but endangered by advancing agriculture and introduction of exotics. • Agricultural impacts are important and they include erosion, salinization and desertification. • Intense over-exploitation of Calden forests. 	<ul style="list-style-type: none"> • Very small percentage of territory under protection. • Effective protection almost zero in existent areas.
Flooding Savanna	<ul style="list-style-type: none"> • Important bird presence, many of them endemic. • Dams, highways and other navigation work are the main threats together with agriculture, urban sprawl and bad management of tourism. 	<ul style="list-style-type: none"> • Low percentage under protection. • Effective protection almost zero.
Mesopotamic Savanna	<ul style="list-style-type: none"> • Agriculture and over grazing are the main problems. 	

Table 4.1 Compiled based on the WWF eco regions classification and with information from WWF www.worldwildlife.org/wildworld/profiles/terrestrial and Burkart et al 1991

Figure 4.2 was built with information from Hearn et al (2000) for the eco-regions, the UN list of Protected Areas was used to obtain the coordinates of the protected areas (UNEP-WCMC n/d), and the degree of protection was based on information from several sources (Burkart et al 1991; APN n/d; UNEP-WCMC n/d), and in the case of Uruguay from personal visits to the protected areas, or personal interviews while in the country. A table was built with the coordinates, size, degree of protection, and other information about protected areas in the region. ArcView GIS was used to map the location of each protected area inside the bioregion or in its immediate surroundings. The results show that the Uruguayan savannas have almost no protection under protected areas, and the few existing areas are not well managed. In the bioregion, most of the areas with acceptable protection are those in categories Ib and II, which only cover 11% of the

islands, the region has been modified and biodiversity will be affected by the creation of reserves and by policy options in productive areas. Although the persistence of grazing for the preservation of the grassland matrix is ideal, and preferred to the extension of intensive agriculture, it is important to remember that sudden changes in grazing could also have an impact on wildlife. As stated in Chapter 1, landscape diversity is an important component and some species adapt to the new situation, changing production patterns without proper planning and/or restoration can have devastating effects, even when it is done to return the area to a more “natural” condition. In Chapter 1, I cited cases drawn from the literature in relation to this topic (Stolton et al 2000; Pywell et al 2002), below, in pages 14 and 15, more cases specific to grasslands are presented

Grazing, Grasslands and Biodiversity

Perhaps due to the long history of cattle ranching in the region – prior to the existence of present countries – there is a tendency towards the naturalization of the grazed landscape in the mind of the average citizens and academics, even those related to agricultural-grazing production. According to Schlichter et al (1997) it is not clear why, but in public opinion and in the academic environment there is more attention placed on the loss of forests or fauna than on the loss of native grasses. Using the land for production is obviously necessary for human sustenance, so extensive cattle grazing is, arguably, preferred to other forms of production like eucalyptus or soy plantations in a grassland ecosystem. However, grazing does still have its impacts, which need to be recognized. It is important therefore, to denaturalize grazing in people’s minds, because the naturalization of the low herb stratum maintained by cattle ranching has been an

obstacle to the establishment of a grassland protected area. This is not to be used against this production system, which as stated above is preferred in a grassland matrix, but to plan an appropriate conservation scheme, one that is developed in relation to the surrounding landscape.

Some authors argue that grazing increases biodiversity, therefore making it almost unnecessary to establish protected areas. This could sound appealing, especially when, as argued in Chapter 1, and as we shall see next, biodiversity is related to stability and productivity in grassland ecosystems. It should be noted however, that the authors fail to mention faunal, insect, and soil diversity in their approach, and the areas of exclusion used for the studies are short termed, small, and lack native ungulates.

Tilman and Downing describe and highlight the importance of biodiversity conservation in a grassland ecosystem (Tilman and Downing 1994; Tilman 1996). Diverse communities are more resilient, and recover faster from external disturbances (drought in this case). Preservation of biodiversity is an essential condition for the stabilization and continuance of these ecosystems. Sala (2001) finds a positive correlation between vegetal diversity in the ecosystem and productivity. Other authors affirm the contrary to Rivet's hypothesis, and either do not find a linear correlation between diversity and primary productivity or believe that productivity increases with biodiversity up to a saturation point after which an increase in biodiversity does not increase productivity. Following this line of thinking Sala et al 1995 state that the relation depends on which species are eliminated and in the factors of change.

There are several articles that relate grazing with increased biodiversity (Altesor et al 2002; Facelli et al 1989; Pucheta y Cabido 1992). These studies however, are based

on small size exclusions, do not allow for variations in the density or seasonality of grazing and ignore the fact that plant responses are typically non-linear (Watkinson and Ormerod (2001). To this we must add that a study conducted by Chaneton et al (1995) to analyze the relation between grazing and diversity reached different conclusions due to the regional scale the study took. At the small scale level (1 hectare) grazed areas were richer than excluded areas, however, at the landscape scale the number of species in the exclusions and in grazing areas was similar due to the spatial and temporal variability of exclusion areas. Facelli et al (1989) reach similar conclusions with regards to scale. To this we need to add the fact that exclusions do not have fire disturbances, nor do they represent pre-cattle areas because no native ungulates, low cattle densities or a combination are introduced.

The relation between grazing and an increase in productivity has also been referenced in the grassland literature (Jones 2002; Altesor et al 2002; Sala 2001; Rusch and Oesterheld 1997; Milchunas and Lauenroth 1993). In reference to this, Belsky (1986; 1987) analyzed the literature on grazing and biodiversity and productivity and concluded that only two articles referred to uncultivated species, moreover, he did not find any increase, in vegetative longevity due to grazing nor the existence of plant-herbivore interaction. With regards to the claims of productivity increase the articles that claimed referred to above ground productivity, in a system which has 90% of its standing biomass belowground. Moreover, a study conducted in Uruguay compared species composition and diversity for the same site in 1935 and 1990. Between the two periods there was constant extensive grazing at the site. It was found that a clear degradation of the quality of pastures exists, with the disappearance of many palatable grasses, and the appearance

of new species, most of which are non-palatable. This conclusion shows that even in the case of an increase of biodiversity and/or productivity, which are used by cattle rancher advocates, this increase might not benefit ranchers.

In line with the search for a healthy ecosystem described in Chapter 1, we need to describe what a healthy grassland ecosystems looks like, what our management objectives should be for different parts of the landscape and how to achieve a healthy landscape. The National Research Council relates a healthy landscape to the integrity of soil and ecological processes, and Australia defines it in terms of the potential for grazing. This definition de-emphasizes other factors that should integrate a definition of a healthy ecosystem, like biological diversity (White et al 2004).

With the acceptance of new succession models that do not follow a Clementsian approach, many debates related to the management of grasslands emerged. The Board of Directors of the Society for Range Management underscored the need for a new approach to pasture management that leaves aside climax theory. It proposes that the administrator needs to determine the type of vegetation community based on his/her own ability, objectives, site potential and economic considerations. The desired community should not only assure economic benefits but also the potential to produce vegetation in the long term (Schacht 1993). Several authors who believe that more than a single stable community can result from a disturbance have supported the desired vegetation community approach for a sustainable management of ecosystems of multiple use. (Box 1992; Borman and Pyke 1994; Brizuela 1994). Box states that "the acceptance of new successional models has profound implication for environmental thought and policy. The quest for a return to the pristine becomes folly. Sacred conservation goals are empty. But

new models open new, more realistic, and much more attainable goals. We can focus on ranges that can be grazed by domestic livestock without becoming 'degraded'..." (Box 1992: 331). Caudle correctly points out that "climax plant community is not the ultimate goal of range management. It is the type of vegetation from which ecological range condition is measured" (1993: 244). Caudle then affirms that the use of the desired plant community would mean that there are "no standards for comparison. It would be sort of an 'anything goes' philosophy as long as soil erosion is not a problem," and he fears "we will run the risk of ignoring natural resource concerns." (Ibid.) A recent article by Briske et al suggest that the range and the state and transition models are non-exclusive and recommend a redirection of the debate from dichotomy towards "paradigm integration." (2003: 601)

From this debate regarding ranging models and the objective of management one can clearly uncover that the objective is centered in cattle production, and that sustainability is included in the sense of having a system that sustains this production over time, with no concerns for other elements of the landscape. A few quotes from the literature illustrate the point:

- "The desired plant community should not only meet the short-term production goals of the manager but it must also conserve the long-term potential of the site to produce vegetation. Conservation of the ability of a site to produce vegetation is the key to the concept of sustainability of resource use..." (Schacht 1993: 247, emphasis added)
- "Now the objective becomes that of a sustainable prairie that can produce goods and services that we want for this generation; land managers are finally liberated from trying to reach a mythical past vegetational state" (Brizuela 1994: 225, emphasis added, translated by Diego Martino)
- "Areas that have been studied for a long period of time after disturbance have showed that the succession point did not reach that of non-disturbed areas. This is not necessarily undesirable since these evidence shows that grasslands disturbed for 10 or 20 years can have better conditions for grazing than non disturbed areas." (Brizuela 1994: 226, emphasis added, translated by Diego Martino)

This way of looking at management is not wrong, but the objectives and consequences need to be clearly stated, and the big picture needs to be remembered by those planning with the landscape needs in mind. Landscape diversity becomes important, since biodiversity might suffer from uninformed objectives set up by managers; and incentives could be required to achieve a mixed landscape. As Holling describes, management that tends to produce fixed systems for a long period of time ends in loss of resilience and makes the system more vulnerable to disturbance that could have been absorbed in the past. This is even more important for grasslands since as Sala et al (1995) argue, disturbances are an integral part of grassland ecosystems and the real disturbance is the lack of it.

Management needs to be flexible, and cautious especially in light of Vesk and Westoby's conclusion that "we can only predict species response direction about three-quarters of the time, at a continental scale" (2001: 897), and Vazquez and Simberloff's discovery of the strong impact of cattle on plant-pollinator interactions. (2003). The setting of objectives for a desired community for grazing in certain areas has to be done with caution, biodiversity should be part of the objective in order to achieve stability, and an uninformed management objective or a single desired community should be avoided. Several studies show the importance of diverse landscapes in a grassland matrix. Barnett et al (2004) compared bird diversity and numbers in improved and non-improved grasslands in the UK and concluded that some species were more numerous in one non-improved grasslands while others took advantage of improved grasslands. Robinson et al (2001) demonstrate that the contraction of agricultural areas is having a negative effect

on some granivorous species in the UK. Moreover, there was a stronger association between species diversity and arable habitat when arable habitat was rare in the surrounding area. A recent study by White et al in managed grasslands concludes that “there appears to be few reasons to encourage diverse plant communities in production oriented forage systems... grasslands can be productive in agricultural terms, or diverse in wildlife terms, but not both” (2004: 83). However, they recommend that “as spatial and temporal scale increase so does the need for greater vegetation diversity, particularly when there is considerable variability in soil type, slope, elevation...” (Ibid.) Pywell et al (2002) describe the ecological process that limit the creation of grassland communities in agricultural landscapes and describe the problems that wildlife can have with changes in land use, even when the new land use is a return to the ‘original’ ecosystem. Studies conducted by Di Giulio et al (2001) show that there is ample evidence on how insects benefit from grassland and protected sites in an agricultural landscape. Similar studies conclude that birds also benefit from these patches of restored grassland, although the reason might not be the vegetation diversity but the prairie structure (Fletcher and Koford 2002). In conclusion, management by cattle ranchers must be complemented by a variety of objectives in other areas, with ecosystem health as the primary objective at the landscape level.

Uruguayan Landscapes

It is clear from the map provided above, that as usually happens, the boundaries of the ‘natural’ bioregions do not coincide with the political boundaries. This is also the case for the landscape regions described by Evia and Gudynas (2000) and the internal

Uruguayan political boundaries (*departamentos*). This mismatch can have important consequences in conservation planning, especially when, as until recently, planning was done by national states with little co-ordinated planning between neighbours. Several *departamentos* in Uruguay share the same ecosystems and there is little co-ordination between municipalities towards problem solving or strategic planning (Gudynas 1999b). Uruguay has 180,000 km² of land, which is divided in 19 *departamentos*. Decentralization was one of the achievements of the last constitutional reform and this territorial distribution, although it remained unchanged, is increasingly being questioned, being a matter of debate during electoral periods. Moreover, the financial situation of most *departamentos* is alarming. The ‘unnatural’ boundaries used for the *departamentos* together with the increased financial chaos and willingness to talk about possible changes in the structure of the territorial distribution could open the door to a more ecologically based *departamentos* in Uruguay.

Following bioregionalism principles, new *departamentos* that reflect the landscape and social characteristics could be established, saving financial resources but also bringing a solution to coordination problems in the management of natural resources, and conservation planning. Aberley suggests that “in order to perceive bioregions which will reorient human activity towards dynamic balance in nature, it is necessary to make human occupation of any land area a part of the bioregion definition equation” (1993: 74). Linking institutions -municipalities or *departamentos*- to certain bioregions at a time when decentralization is being pushed forward would “capture the essence of the bioregional ideal: to irrevocably marry human activity into processes of sustainable land, animal, plant and atmospheric interaction” (Ibid.: 75; Sale 1985). Bioregional boundaries

are hard to establish (Hipwell 2001; Sale 1995), especially when social components are added to the equation. However, the increasingly holistic approach taken by landscape ecologists (especially Europeans who are emphatic in advancing the inclusion of social components in the analysis) and the interest the discipline is awakening among conservationists and planners, can facilitate the process (Naveh and Lieberman 1994; Wiens 1999; Farina 1993; di Castri 1997).

Contrary to the mismatch between internal and natural boundaries, Uruguayan main production systems are in relative 'harmony' with general ecosystem characteristics. The analysis of this 'harmonic' relationship between production and ecological systems is of crucial importance when approaching conservation alternatives with a trans-scale perspective. Broadly, land use in Uruguay is distributed as follows (Uruguay 2002):

- Grazing activities 78% (91% natural and 9% improved pastures; Altesor 2002)
- Agriculture 3% (Wheat 20-30%; Rice 25-30%; Barley 16%)
- Plantations 4.9% (Mainly Eucalyptus and Pines)
- Other uses 14.1%

These percentages show that Uruguay has a strong potential, given the fertile soils, to expand agriculture in its territory, which could lead to further pressures on biodiversity. During the last decade the percentage of farmers using fertilizers has increased by 130%. The use of fungicides, pesticides and herbicides has also increased, the latter by six fold in the past 14 years. This increase is partly explained by the expansion of industrial soy plantations, many by foreign investments from Argentina, which despite using no tillage techniques that reduce erosion, has led to an excessive use

of glyphosate, accounting for 53% of total herbicide use (Uruguay 2002: 36). Some problems related to contamination of water courses have recently received attention in the media and they are directly related to soy plantations and herbicide use. Other important problems are soil erosion and compaction, degradation and loss of productivity of natural pastures (OAS 1992), eucalyptus plantations and loss of habitat.

The 'Litoral Sur Oeste' region has been the most intensively exploited one, mainly because of the existence of extremely fertile soils, but also stimulated by socio-economic factors (Evia y Gudynas 2000: 103). In the rest of the country (less modified portion), several landscape regions can be found (9) which share an important characteristic: extensive cattle production. This extensive production has patches of intensive agriculture and, mainly in the south-east, rice production. Monoculture forestry of exotic species (85% eucalyptus and a small percentage of pines) that has been subsidised by 3 consecutive governments is also impacting this area. However, cattle ranching (mainly bovine and ovine production) still remains Uruguay's main historical, social and landscape characteristic, and this has profound effects on the ecology of a country whose natural characteristic landscape matrix is grassland. As we saw above, the "space between spaces" is very important under a macroscale approach, and the ecological characteristics of these grasslands have been broadly maintained under an extensive production system that has been practised in Uruguay for more than 2 centuries. Extensive cattle ranching has been linked by some to the extinction of many native species due to competition for resources (Uruguay 2002: 74).

Extensive habitat modification by cattle grazing has indeed pushed some species to the brink of extinction and maybe could be directly tied to the extinction of a few.

However, many of those species (Giant Anteater, *Myrmecophaga tridactyla*; Cougar, *Puma Concolor*; Chacoan Peccary, *Catagonus Wagneri*; Marsh Deer, *Blacotocerus Dichotomus*) would still be present if it had not been for hunting pressure by landowners and rural workers. According to local oral history in the area of Castillos, the last herd of Marsh Deer was extirpated by the son of a landowner who had returned from war – from an unspecified place I decided not to ask about – with mental instability and was constantly hunting the herd in his father's property. No matter how fictitious the story might sound, although based on other records of marsh deer in the area, I personally believe it is representative of the irrationality with which our local fauna has been treated by rural workers, landowners, and urban hunters who flock to the country side in long weekends and holy week and kill indiscriminately. It is not extensive cattle ranching, or agriculture that *finished* many of our species, it is ignorance and lack of respect for our local biodiversity. As Leopold states, Uruguay is not the only one that followed this path:

It is customary to fudge the record by regarding the depletion of flora and fauna as inevitable, and hence leaving them out of the account. The fertile productive farm is regarded as a success, even though it has lost most of its native plants and animals. Conservation protests such a biased accounting. It was necessary, to be sure, to eliminate a few species, and to change radically the distribution of many. But it remains a fact that the average American township has lost a score of plants and animals through indifference for every one it has lost through necessity. (Leopold 1939 in Flader and Callicott 1991: 255)

Approaches to Conservation in Uruguay

Until recently Uruguay had the dubious honour of being the only country in Latin America not to have legislation on protected areas. It is still the country with the least territory under protection, even if all the areas created but not enforced are taken into account. Moreover, 15 of the 39 sites designed as protected are either extensively

modified or have the protection of non biological elements as objectives, two examples are an eucalyptus plantation in what used to be a swamp and a Spanish fort. This section will analyze how this current state of affairs was reached and suggest alternatives for the future.

Environmentalism

The environment ranks low in the priority list of the majority of Uruguayan politicians and of every political party. However, several polls conducted between 1993 and 1997 show that Uruguayans, despite not having it as their top priority, increasingly consider environmental problems to be very important (Gudynas 1996; 1998). During the current regional economic crisis that is strongly affecting Uruguay, environmental issues remained on the agenda and the front pages, mainly due to infamous environmental problems related to lead contamination that affected families in poor neighborhoods, the construction of a dam that will destroy a well conserved and therefore rare native forest, poor hospital waste management, and recently the installation of a pulp mill in the west, near the border with Argentina. However, the extensive (5 years) discussion of Law 17.234, which created the National System of Protected Areas, a long overdue regulation, was not in the public agenda despite the bitter controversies that it raised among different governmental offices.

Environmental priorities are based on problems that affect people directly, like contamination with lead or NIMBY situations; the relevance of establishing a system of protected areas was not appropriately raised in the public agenda. Up until recently, conservative politicians saw environmentalists as masked leftists, which is curious if one considers how little the Uruguayan left has engaged itself in environmental problems

(Gudynas 1998). This has resulted in citizen movements carrying the weight of the environmental movement, but ultimately – due to insufficient lobbying power – being unable to reverse the absence of integration of environmental themes in private and public planning and analysis (Ibid.). Despite some small steps forward, like the approval of an EIA law (16.466) in 1994, the inclusion of the environment in the Constitution in 1997 (article 47) and the 17.234 law in 2000, progress will not be significant until the government ceases perceiving environmental concerns, and those who advocate for environmental preservation, as a mere obstacle in the development path. An analysis of the EIA law and of article 47 of the constitution cannot be done here (see Magariños de Mello 1997 and Gross Espiell 1997), however it has been noted that both legal instruments are insufficient, timid, and reveal the lack of interest legislators have in the subject (Gudynas 1996; Magariños de Mello 1997).

Several instances in the past few years have proved this point. In 2003 an EIA was conducted on a proposed dam for irrigation of rice and eucalyptus plantations in the north. The project was presented as ‘a necessity’ due to the lack of water in the area. Needless to say that the lack of water in the area is only a problem if one intends to develop 2 crops that are intense water consumers. The technical report recommended the project not to be approved. Despite this, the politician in charge of the Environment Office at the time decided to approve the project. The decision was justified saying that these are political decisions and that the technical experts were there to provide their opinion and inform the appointed Director of the office, but it was on his discretion to make a decision. On other occasions, public consultations have not been properly conducted, either not providing the setting for participation, or giving very limited

notification and organizing the audience in a small town in the country side. This was respectively the case in the two public consultations for the approval of two GMO crops in the country. This topic had received strong public attention thanks to its sensitive matter and to efforts from environmental NGOs. The fact that this level of creativity is needed from the government to approve projects or new crops, is indeed a step forward from the situation until the early 90s, but it demonstrates that there remains a long way to go in terms of environmental consciousness in political ranks, and it might be necessary for environmental NGOs to build new alliances with unions, rural organizations, and grassroots level associations, which have been successful in drawing the attention to environmental problems they suffer.

The number of recorded environmental conflicts per year grew steadily in the 90s, from 3 and 6 in 1990 and 1991 to 16 and 19 in 1996 and 1997 respectively (Santandreu 1999). These are *recorded* conflicts, we can not confirm the number of environmental conflicts, but the fact that the number of recorded ones has risen shows that these conflicts are increasingly in the public agenda. In appendix 2, graphs are included to show the thematic interest of Uruguayan environmental NGO's, number and type of environmental projects, and the main environmentally related topics discussed by legislators. This information is provided in order to, concisely, orient the reader about the main environmental concerns and discussions happening in Uruguay that do not directly relate to conservation, but form the background of what is discussed in this section and cannot be described in detail.

Historical Background on Conservation Initiatives.

Legislation pertaining wildlife protection has been present in Uruguay since its inception at the beginning of the 19th century. There was, however, a complete lack of application and enforcement (Mantero and Cabral 1995). In the 70s several decrees were approved with the intent of protecting particular species by declaring the hunting of those species illegal (Ibid.: 231 provides a complete list). Again, there is no space here to abound in details regarding historical legislation for the protection of Uruguayan fauna. It is sufficient to say that this legislation had little effect in the protection of wildlife (Ximenez 1973; Mantero and Cabral 1995), not so much due to the quality of the law but for the lack of enforcement, which, it could be argued, should had been foreseen by legislators (for a recent inventory of legislation concerning the environment see Sciandro 2000).

Several national parks were created at the beginning of the century. However, the objectives of these first national parks were far from conservationist. Laws number 8.172, 9.718, 9.872, 11.854 and 12.106 from 1927, 1937, 1939, 1952 and 1954 respectively created 5 different national parks. The first two parks host two Spanish forts that were restored by the Arredondo, who had extensive experience traveling to parks around the world. The first one was Santa Teresa, which had little biological conservation value, exotic trees needed to be planted in order to stop the moving dunes from completely covering the fort. Exotic species were also brought to the area, including zebras and even kangaroos, the former died infested by a local fly and the kangaroos, after surviving 5 consecutive years and even reproducing, died during a cold winter (Arredondo 1962). Arredondo acknowledges that for the next park – San Miguel – he was already

“acquainted of the fact that native fauna and flora should be the aim of conservation in the parks” (Arredondo 1962: 6). He justifies the use of the term national park in parks that were not really following the international definition of national park on the fact that they were trying to distinguish them from municipal ones. One final point about this pioneer of conservation in Uruguay concerns the management inside the park after he became aware of the international objectives of parks. He describes an area in the San Miguel park that had several quarries with huge holes in the sierras. In order to cover them from the eye – he was very attentive to the experience of park visitors – he decided to plant trees around them and eliminate filtrations in order to form small lagoons. The interesting point is how he justifies the action, in light of the use of exotics and creation of the lagoons in the park, stating that “after all they create diversity of elements and beauty and they provide waterholes for animals and birds” (Arredondo 1962). Between the first national park – Santa Teresa – and the second – San Miguel – the objective had moved from Disney to Yellowstone, to use an example of a theme park and a preservation park with concealed management: somewhere in the middle we find this creation of diversity of elements. When we discard the black and white options of the wilderness discourse, we might find that this type of management could fall somewhere in the grayscales supported by the precepts of the new ecology.

The rest of the above mentioned laws also established national parks in areas historically significant (a complete description of every designated protected area can be found in CIPFE et. al. 1993). There were indeed different laws and decrees designated to protect vegetation, i.e. certain palm tree species that were being overexploited, or native forests that were suffering from over-harvesting. These different laws were to a certain

extent successful since they prevented extreme destruction of native forests and slowed down the destruction of palm trees. However, in the long run the palm tree forests were being affected because the protection was designed for individual trees, not for the ecosystem, and therefore, not preventing the destruction of sprouts by cattle. This serves as an example of the importance that outside-boundary protection should have in Uruguay, even if protected areas are one day established.

The “First Meeting about Fauna and its Habitat” was in Montevideo in the year 1973. As a result of that meeting a proposal was extended to the government. This proposal recommended the insertion of fauna in the context of the economic and cultural life of the country. Later they state that “the fauna issue cannot be approached without taking into account policies like the agricultural, forestry, grazing and any others that refer to partial sectors of the ecosystem or whose activities have a secondary effect on it” (Comision de Flora y Fauna 1973). Later, in the extended description of the proposed regulation, they state what seems to be the first of a long era of conflicts over jurisdiction that emerges from the intention of trying to manage the country with a macroscale perspective.

It is absolutely necessary to have a strict coordination between all the organizations and activities that can affect the ecosystem. This coordination has to be directed, with supervision powers, by the organization in charge of looking after the health of that ecosystem, because it is the only one that due to its very nature and competency can have a vision that is global, general, not partial and narrow. To allow an organization that has economic or technical objectives of any kind, by definition partial and unilateral, to determine the type of actions to develop to reach those ends without considering the effects on the global ecosystem is simple shameful.... In order to achieve coordination with those managing economic aspects the organization in charge should be one with ecological competency, which implies by definition a global vision. (Comision de Flora y Fauna 1973: n/p)

This conflict over management competency of different portions of the territory continues today, with a particularly bitter period during the discussion of law 17.234, which will be analyzed below. A final detail should be pointed out with regards to this first meeting. This is related to the way protected areas are introduced into the discussion. The wording shows how conscious they were about the dangers of the boundary effect when proposing this kind of conservation alternatives: “In addition to the actions needed for the *conservation of the general habitat*, with proper utilization that creates the minimal impact necessary for the efficient use of it by man (sic) on the ecosystems, it is necessary to set aside certain areas representative of the different ecosystems *to be protected in a special way*” (Comision de Flora y Fauna 1973: s/n, emphasis added). Extreme care is put in presenting protected areas as places of *special* care, emphasizing the fact that all the territory should be cared for, regardless of the recognized need for production systems. However, the establishment of protected areas and ‘conservation’ strategies were to remain in separate paths for a few years more, until February 2000 when a “National System of Natural Protected Areas” was established by law. Before entering in the discussion around this particular law, I will analyze the current theoretical discussion and proposed alternatives for conservation that were happening in Uruguay prior to the establishment of the law.

Uruguay represents a unique case in Latin America. Its territory has been almost entirely modified by humans, and conservationists, politicians and regular citizens *are aware of this*. It is important to highlight this point for two reasons. First, every ecosystem in Latin America has been affected by humans, but many conservationists are still committed to the idea of wilderness areas, which in turn need to be protected from

human impact. Second, the recognition that Uruguay is an anthropic territory leads to the discussion of 'alternative' conservation strategies and also to a lack of appreciation for our flora and fauna and to a false perception of Uruguay as a low biodiversity country (CIPFE et al 1993). This lack of appreciation is partly explained, or at least illustrated, by the fact that up until recently our school text books would teach about exotic animals, with little or no mention of our native fauna. Another crucial aspect is land tenancy. Almost the entire country is under private ownership, and more than 85% of the territory is under some kind of exploitation –mainly extensive cattle ranching (Caldevilla and Quintallan 1996: 25). Finally there is a strong conflict of interests between different government institutions that consider the environment and protected areas to be part of their area of expertise.

There is a general agreement among 'conservationists' in Uruguay that the IUCN categories do not fit in the country's situation (Gudynas 1994; CIPFE et al 1993; Caldevilla and Quintallan 1996; Cespedes and Gonzales 1997; Caldevilla 1995). However, almost every proposal has its base in a slight modification of the IUCN categories. The reasons given are diverse, some argue that an international harmonization is needed, others argue that past utilization of the categories has led to such a confusion that clear specifications of what is allowed in each area is needed. It cannot be denied that the IUCN categories provide a wide spectrum of management options. However, the space between spaces is not sufficiently considered and the dichotomy is perpetuated, if not in the conservationists minds, in the minds of land owners who perceive the limits of protected areas as the limit between preservation and complete lack of environmental

controls. These limitations carried out by the IUCN categories are what make them less attractive in the Uruguayan case.

Almost every single Uruguayan author highlights the importance of integrating or harmonizing productive and conservation planning. This point is of outmost importance, not only because it can break through the human – nature dichotomy but also because it is the only way to reach sustainability in Uruguay. Despite this, the different bills discussed still emphasize the role of protected areas in a national conservation strategy. However, Cespedes and Gonzalez (1997) suggest that the entire country should be a protected area, meaning by this that the approach for conservation should be holistic and regional. Moreover, they (and Gudynas) do not discard protected areas as a conservation tool but emphasize that they should be adapted to the Uruguayan reality (Cespedes and Gonzalez 1997; Gudynas 1994). Caldevilla suggests a National System of Protected Areas, but considers that these areas should be part of a strategy for sustainable and rational use of natural resources. Despite this, in most of the approaches the categories proposed are either in line or reflect the categories proposed by the IUCN. It is interesting, and we will refer to this later, that while some suggest a more “natural resource management” or ‘Pinchotesque’ view of conservation, the IUCN categories are still followed even when the IUCN suggests flexibility:

“It is to be emphasized that these categories must in no way be considered as a ‘driving’ mechanism for governments or organizations in deciding the purposes of potential protected areas. Protected areas should be established to meet objectives consistent with national, local, or private goals and needs (or a mixture of these) and only then be labelled within a IUCN category according to the management objectives developed herein. These categories have been developed to facilitate communication and information, not to drive the system” (IUCN 1994: 4)

It is clear that Uruguayan conservationists and politicians have not been seduced by international conservation strategies. The former ones do not consider them applicable to the Uruguayan context, and politicians have not shown enough interest in the environment to be attracted to "wilderness" areas that need to be held outside production systems and therefore will be considered "wasteland". Uruguay is not an important destination for international funding for conservation, this might be another reason why international trends have not been imposed in Uruguay. Only one project has received important funding from GEF and the European Union, the Banados del Este Biosphere reserve. Despite being a Biosphere Reserve, the categories used in this project are the IUCN ones and very detailed plans have been established that follow these categories. However, it is yet to be seen how these plans will be performed in the field, a highly unlikely project due to the costs of expropriating the lands suggested in their proposal (detailed information of the project can be found in PROBIDES 1999).

Uruguayan conservationist are in general open to the idea of harmonizing environmental, social and economic concerns, and while they do not see protected areas as the solution to biodiversity problems, they do not disregard them as tools to be used in the future. What is fundamental for them, more than the use of protected areas, is the management around the areas with high biodiversity or endangered ecosystems. They are aware that biodiversity cannot survive in islands and therefore are open to discuss possible arrangements with private landowners. A crucial step, even before the establishment of a national system of protected areas (if ever needed) is the establishment of a national conservation strategy. This will define not only the areas where special management is needed – which are known already – but also the type and location of

production systems that can be harmonized with the surrounding environment. Agro-ecology experiments are already taking place successfully in some parts of the country, extensive cattle ranching has drastically altered the structure of these semi-natural grasslands, but can still coexist with the remaining native species, and rice production does not necessarily need to be detrimental to the wetlands. A national conservation strategy needs engagement from local community actors, who know and live in the area, to the highest level of government, which can provide a framework and enforcement of the strategy as well as support with incentives i.e. new markets for labeled products, tax exemptions.

Uruguay still does not have in place a national conservation strategy or a functioning system of protected areas designed for conservation purposes, but since February 2000 it has, as stated above, a “National System of Natural Protected Areas” or at least a law (17.234) that establishes the creation of such a system. An analysis of the process and discussion that lead to the approval of this law complements the above description and sheds some light on the nature of the country’s internal conservation related conflicts.

Law 17.234: Hasty Delivery of a Five Year Pregnancy

The National System of Protected Areas law (17.234) was approved in a extraordinary session celebrated in the last moments of the previous legislature. After more than 4 years of discussion, the Senate passed the law and sent it to the lower chamber. The transcripts of the environmental Commission of the lower and upper chambers and of meetings with relevant stakeholders or experts show that one of the

preoccupations existent among many of these was the fact that if too many changes were made to the proposed law, there would not be enough time for the senate to review them and approve it. So in many instances the expressed preference was to have this law passed, even if it was considered far from ideal, because it would provide a framework to conduct work on the subject. The analysis of this law from conception to delivery, provides the opportunity to explore the different opinions existent among governmental and non governmental organizations regarding conservation and the approaches to it. This analysis is based on the transcripts of the meetings of the environmental Commission members, the meetings with guests invited to explain their position to the Commission, the parliamentary discussion on the text and implications of the law, the text of the law, and some reactions to it after approval. Environmental Commission and parliamentary discussion transcripts analyzed are from both the lower and upper chamber (Camara de Senadores 1994; Comision de Medio Ambiente 1996a; Comision de Medio Ambiente 1996b; Comision de Vivienda Territorio y Medio Ambiente 1998a; 1998b; Diario de la Camara de Senadores 1997a; 1997b; 1997c; 1997d; 1997e; 2000).

Four issues emerge from the analysis of the above mentioned documents. (1) The conflict between the MGAP and MVOTMA regarding competency on the matter, which in my opinion is intensified by a deeper controversy based on approaches to conservation. (2) The trans-scale approach to conservation, which is generally endorsed. (3) The issue of adjacent areas introduced in Article 8. (4) The legal problems from expropriation, which was a particularly controversial issue in the Senate discussions. This last topic is not important to understand approaches to conservation, so it will not be considered here. In contrast, the analysis of the discussion on the other three is quite revealing.

Protected areas in Uruguay were historically managed by the MGAP, although a few national parks were managed by the army because they had restored and very well conserved historical buildings inside their boundaries – two Spanish forts built to determine and defend the borders with Portugal, established in the 1494 bagel-like division of the world in Tordesillas. The MGAP Minister in his presentation to the Senate environment Commission states:

we have a ministry that approaches the topic in a comprehensive way. Issues and faculties related to natural protected areas are very close to the operations of the Ministry of Grazing, Agriculture and Fisheries (MGAP). Proof of which is the office of renewable natural resources, held in our ministry, which has very capable personnel that study a variety of very important topics related to this law. (Comision de Medio Ambiente 1996: 1-2)

The MGAP did not want to lose its control over the management of protected areas. Constant references were made to their expertise on the subject. This argument was also used by those related to the MGAP or to the Association of Agricultural Engineers (AIA) during the interviews conducted with key stakeholders. Agricultural engineers claim to be the *only* experts on the subject because – they argue – their careers, unlike others in the country, prepare them for the subject. Needless to say, this view is not shared by many in the conservation movement. Due to the disputes I decided to take a closer look at the curriculum of agricultural engineers and the profile of a graduate from that program. The graduate profile is mostly oriented to production schemes and does not draw much attention to conservation issues, moreover, the courses offered for postgraduate studies are far from related to conservation or even sustainable management of natural resources. Many graduates have indeed specialized in the subject, but nothing suggests that the average agricultural engineer is more competent for the management of protected areas

than a biology or geography graduate. Moreover an analysis of the 1973 First National Meeting on Fauna and Habitat reveals one agricultural engineer among its main organizers, but only 17% of the presenters were agricultural engineers. The issue behind this conflict of interests between institutions and professionals is not only one of competency and particular interests, there also appears to be a different approach to conservation, which could very much be illustrated as a Pinchot-Muir conflict.

The case of native forest conservation, and a brief analysis of the transcripts present good examples. Native forests are managed by the MGAP, whose staff believes has done a good conservation job. Conservationists disagree and they use as arguments the fact that wood from these forests is commonly seen in barbeque restaurants and household. To this they respond that the actual forest coverage has not decreased, which proves it has been well managed. However, no areas have been established to effectively protect this forest, which is what environmentalists would like to see *added* to the current management that rationalizes its use and has indeed worked well. A passage of my interview with an agricultural engineer involved in the AIA and critic of the law helps clarify the point:

- AUTHOR: What has experience of 15 years of management of native forests left?
- INTERV25: There is a lot of misinformation about the law, and the state does not have enough resources to control, but I believe it has been a positive experience. I believe that banning the cut of native forest today would not be a good idea, we should have good management plans, considering that it is a renewable natural resource, and thinking that no management makes the landowner forget the forest and exotic species invade. I believe, and I am convinced that more than banning logging we should use that forest, not clear-cut, but make use of the forest.
- AUTHOR: What was the reason for this invasion of exotic species?
- INTERV25: Well... ash is very invasive in the south, due to birds, people that camp, it depends.
- AUTHOR: And you believe this invasion happens after the ban?

- INTERV25: I do not know.
- AUTHOR: OK, I just thought you had said it was after the ban.
- INTERV25: Those were my observations, I do not know what was happening before
- AUTHOR: And regarding the misinformation about the law because people complain logging is still happening.
- INTERV25: It is lack of information, people say that they can still see native wood in the barbeques¹² and wood depots. In order to log the landowner needs to obtain a permit and a technical report approved by the forest office, which sends staff to the area and only allows cuts in certain areas.

The objective of conservation is clearly focused on managing the forest, and there is an apparent prejudice in favor of active intervention to address an invasion of exotics that was perceived as occurring after a ban was placed. This type of management is supported by conservationists outside the reserve, I did not encounter any conservationist completely opposed to a rational use of the forest. However, the issue of establishing a forest protected area *in addition* to this management was not considered by the interviewee, and this is one of the dividing points. This same actor does not see strict protected areas as useful for Uruguay because it is a small country with no topographic barriers. For these reasons, it is important that a definition of natural area was attempted in the senate, for it could be use for clarification of the law in the future.

The definition of 'natural' was also discussed in some of the Commission meetings. Gudynas in his presentation to the Lower Chamber Commission stated that it should be clarified what is considered natural, where the limit is. In the Senate deposition during the review of the law the chair of the Commission states that "The concept of natural was included in an ecological sense, but flexible due to the diversity of habitats, of biomass and of ecosystems, as well as due to its sensitivity to human perturbation and

¹² It should be pointed out that by barbeques people usually refer to homes and restaurants that cook with wood and grill, which is very common in Uruguay and were the customer can see the fire and grill, and therefore the wood.

influence. Virgin areas in the world are presently so few that we should expand the concept of natural area to include regions that have been impacted by humans” (Diario de la Camara de Senadores 1997a: 29). The first part of the clarification does little in way of illumination, the second part however, clearly states that areas with human impact are included. This is important for the fact that all of Uruguay is a modified territory, and this has an argument used to advocate the exclusion of strict protected areas.

Two quotes from the Commission transcripts will further illustrate the points discussed above. The first corresponds to Eduardo Gudynas who represents environmental NGOs, and the second to staff from the MGAP:

- “It is true, many sites are modified, even the most natural ones have some degree of modification. However, one of the tasks of natural area conservation is to take modified environments and return them *to their original state*.” (Comision de Vivienda Territorio y Medio Ambiente 1998a: 5, emphasis added)
- “We define a strict natural reserve as one in which there should be *a very restrictive management of natural resources*” (MGAP staff in Comision de Medio Ambiente 1996: 6, emphasis added)

While conservationists intend to use strict reserves for restoration and total protection from human influence, the prevalent opinion in the MGAP is that of restricting to its maximum the use of natural resources. This is not an insignificant difference in the approach to protected areas. Moreover, according to one of the interviewees (environmental NGO), during the past 2 decades there has been a distinction in the MGAP between what is expressed at meetings with environmentalists and what is latter written, and an abyss between that and practice, and this separates these two views even further.

Finally, the view of human nature of the MGAP is exemplified by comments from the president of the Uruguayan Rural Association. He states that formulas from other

countries should not be applied in ours because almost all the land is used for productive purposes, and is on private hands. He then describes the areas of those other countries as areas that “are isolated due to natural barriers or *cannot be incorporated to production*” (Comision de Vivienda, Territorio y Medio Ambiente 1998b: 1, emphasis added). Only land that cannot be used for production can reasonably be incorporated into a protected area. This view of land without patent production use as “waste land” is common, particularly among many rural producers. When a new protected area was established in Rocha, cattle were removed in an effort to “restore” the area. This situation created conflicts with neighboring land owners and some locals who did not understand why that land was being “wasted” with no cattle in it, and they were appalled by the useless stuff that was growing in the area. This attitude is also manifested in the burning of road verges close to farm entrances. As a local told me, they needed to “burn all that rubbish that grows there.” This particular view distinguishes the conservation debate in Uruguay from that happening in other areas.

Going back to the discussion in chapters 1 and 2, the position presented by conservationists in Uruguay should not be defended as a matter of defending a return to a pristine state, but as a question of providing the opportunity for a different type of management, one that does not necessarily have production as its main or only objective. Moreover, the prejudice shown towards “wasted” areas is not based on the need for the management of that area in a countryside sparsely populated, but on the fact that a land not under some kind of production cannot be conceived. This highlights the importance of a trans-scale and holistic approach that not only integrates production and conservation units in the planning, but that also stresses the importance of the conservation units in the

overall landscape. The persistence of an important variety of palatable grasses is one example that could help cattle ranchers understand the potential benefits of this type of management.

The competency issue was exacerbated by the inclusion of a particular clause in Article 8. Everyone seems to agree that protected areas cannot function if protection ends at its limits, but the clause in chapter 8 that allows the Ministry in charge to affect land management in *adjacent* areas was the most controversial issue.

The MGAP Minister voices his preoccupation with the article:

Article 8 mentions Natural Protected Areas and *adjacent* zones... How do we determine the adjacent zone?...For example, if we have a protected area north of a river and there are rice fields in the south, in a zone that is later regarded as adjacent, then we would be intervening in an agricultural area. We go back of the issue of our competency, which is our concern. However, if we do not want have vague areas we should delete this topic or indicate up to where intervention can be done" (Comision de Medio Ambiente 1996: 10-11)

The president of the Commission responds:

"We all agree that protected areas do not end at the fence, and that the strictly adjacent zone affects what happens inside. During previous discussion in this Commission we agreed to find a framework that would allow us not to include the criteria to define the adjacent zone, but to establish an obligation to the manager of the reserves to define what this zone is in each case." (Senator Faingold, in Comision de Medio Ambiente 1996: 12-13)

A later statement, by the MGAP Minister, perhaps driven by frustration as one can imply from the transcript, makes it clear that the MGAP is not so worried because the adjacent zones are proposed and the criteria not clearly identified, but because they are not the ones that will be proposing what kind of management will be done in the adjacent area.

"I think that one of the difficulties with this topic is that the competencies of the MGAP are very broad, especially in relation to the use of herbicides, exploitation and use of waters, irrigation, etc. The best adjacent

management is done by our Ministry. The problem then is who will be the administration in this matter. (MGAP Minister, in Comision de Medio Ambiente 1996: 17-18)

Article 8 is very specific on that matter, it states that the Ministry of Housing, Land Planning and Environment (MVTOMA) will be the administrator. This was also resisted by the Uruguayan Rural Association, which specifically requested that the MGAP remain in charge of these areas, perhaps in coordination with the MVTOMA. The issue of adjacent areas was also intensively debated in the upper chamber; although the focus there was on the problem of expropriation the issue remained conflictive. This conflict reveals that despite the rhetoric of support for a system of protected areas that encompasses the entire country, there is still fear that conservation driven politics will limit management alternatives. This seems to be accepted if those restrictions are limited to protected areas, these have been extremely limited in the country, or if the entity in charge of setting those restrictions is a familiar one. This fear, which is strongly related to a dualistic approach to management as will be discussed below, is not unreasonable. The President of the ARU states that some kind of tax exoneration should be considered in the law for those whose lands will be affected by restrictions. The environmental NGO representative points out that "there are no innovative mechanisms that would allow an implementation for the protection of natural areas with agricultural-grazing uses, which would be vital to Uruguay given the importance of this sector" (Gudynas in Comision de Vivienda Territorio y Medio Ambiente 1998: 7).

Conservationists were still celebrating the approval of the National System of Protected Areas System when the first objections were voiced. The Association of Agricultural Engineers (AIA) distributed a communiqué in which they strongly opposed

the terms of the law. The communiqué is very broad and it does not specify the problems the law has, however, it is still interesting to analyze it, and the debates that followed, which might provide a look into the future. The main concern expressed in the AIA communiqué regards the limits imposed over land use. The AIA considered the law to be imposing limits and not proposing compensation for the establishment of such limits. Moreover, and this is the most interesting point, they state that those limits in combination with the lack of clear delimitations on where limits could be imposed are detrimental to the activities of the members of the AIA. Basically they are concerned that limitations in land use in areas adjacent to parks could be extended with no limits and without compensation for the land-owners, and that the professionals managing those lands might not be Agricultural Engineers.

This position demonstrates that land-owners still see conservation, or expect conservation to use protected areas as the main tool. In this way they can have a clear idea of where they have some established limits and they can count on the rest of the land at their disposal. This point was very clear in a discussion I witnessed between foresters and conservationists who were asking for restraint in the location of exotic species plantations. The response from foresters was very clear, they do care about the environment and they want clear laws that establish where the protected areas are so they will not alter them. The boundary effect is patent. Tell us where you want protection and let us take care of the rest. The MGAP, which claims to approach conservation from an encompassing perspective, also falls into the boundary effect and the production-protection dichotomy.

“In the RAMSAR area we have been using the following criteria. On the one hand we have drawn the limits of those wetland areas that have not

been modified and we have called them core areas. On the other we have determined 3 transition areas bearing in mind the potential for soil use.... This way landowners can use their soil with the necessary restrictions so as not to affect the core area, *which after all is what we are interested in preserving*" (MGAP staff, in Comisión de Medio Ambiente 1996: 17)

Unfortunately the voice from one of the first environmentalists in the country, Mateo Magariños de Mello, who offered the following comments to the Commission has not been heard:

"when we talk of protected areas we are implicitly accepting the philosophy that the rest is not protected. If this is protected what is besides is not....I was not even able to incorporate my proposal into the language of NGOs, I believe they should be denominated as specially protected areas, for that is what they are, specially protected areas....It does not matter that they are not called like that in other parts of the world, we are not required to proceed exactly the same, moreover, we have been leaders in many aspects." Magariños de Mello in Comisión de Vivienda Territorio y Medio Ambiente 1998a: 10-11)

Magariños de Mello was an important actor in the first conference on fauna and its habitat (reviewed above), in which an encompassing approach to conservation, and a precise wording of the role of protected areas was used in order to break the reserve-non reserve dichotomy.

Chapter 5

Bañados del Este Biosphere Reserve, Castillos and its Area of Influence.

Area of Influence and Biosphere Reserve

This Chapter will provide a description of the Biosphere Reserve¹³ with emphasis on the city of Castillos and its area of influence (figure 5.1). Castillos, and its area of influence, present an ideal scenario for the implementation of alternative approaches to nature conservation in Uruguay. As discussed above, new approaches need to be implemented if Uruguay wants to see nature conservation initiatives crystallize in its territory. The distinct approach that Rocha has taken in relation to natural resource exploitation and development alternatives, and the particular perception that Castellenses hold with respect to protected areas also make the city of Castillos a good case study for Urban Biosphere Reserves. For two consecutive years the departmental government has been promoting a development path that they consider different from that which occurred in the rest of the Uruguayan coast. The Departamento of Maldonado has achieved relative wealth based on massive tourism during the summer months, mainly from Argentinean and Brazilian tourists, but also from overseas since the opening of 5 star hotels and Casinos during the past decade. Rocha authorities say that Punta del Este (the main summer resort in Maldonado) cannot be replicated and that an alternative type of tourism should be developed in their *departamento*. This tourism, they add, should be based on

¹³ An in-depth description of the geographic characteristics of the reserve can be obtained in the 'Plan Director' (Probides 1999)

sustainable and more nature connected approaches, eco-tourism, country side and ranching tourism as well as a less massive beach tourism in the coastal areas.

Alternative conservation strategies and the inclusion of a small city in the planning and management of reserves are evaluated. It is argued that the coordination of urban planning and conservation planning in the Castillos' area of influence would benefit nature conservation objectives by demonstrating the positive effects of conservation to the citizens and forging new alliances that are needed by the conservation community in Uruguay.

Castillos is governed of the *Junta Local de Castillos* (JLC), a local government composed by 5 representatives elected every 5 years in the general elections. Castillos

administrative boundaries include coastal towns and communities, however, coastal areas in Rocha incorporate a different set of concerns, which are not the main focus of this case study, but that will be considered when directly related to it. Castillos' area of influence is defined with permeable and fuzzy borders shaped by administrative boundaries, social and economic networks between the city and its hinterland, and environmental characteristics.

Rocha has almost 85% of its territory under some kind of production. 76% corresponds to extensive cattle ranching. However, only 18% of the Economically Active Population (EAP) is related to agricultural or cattle ranching activities. Services (mainly government and tourism) are the main sectors with more than 40% of the EAP. Castillos' links with extensive agricultural and cattle ranching activities in the area are diminishing, but it still has an important sector of the population dependent on small holdings and/or other activities like beekeeping. Tourism is an important source of revenue for Castillenses that travel to coastal areas in the summer months, but has yet to take the important role that agriculture and cattle grazing had a few decades ago.

The 'Plan Director' (Master Plan) for Bañados del Este Biosphere Reserve, its proposed zoning and the present state of conservation in Castillos' area of influence.

The criteria used for the delimitation of the biosphere reserve were based on the importance of wetland conservation in the area. A regional conservation strategy based on the concept of watersheds for the conservation of ecosystems, biological processes and landscapes was favoured. Therefore, according to the Plan Director (PROBIDES

Inside these various areas there should be approximately 20 Natural Wilderness Areas (Ibid.: 77). Of these *proposed* protected areas, five of the projected Natural Wilderness Areas and two of the national parks are partially in the area of influence of Castillos.

Presently there are several protected areas in the area of influence whose conservation effectiveness is extremely limited due to the serious limitations they face. However, and despite the limitations described in table 5.1, these areas play a very important educational role among the citizens of Castillos, grant legal support for the ruling and enforcement measures erratically applied in the areas, and provide the foundation for a more effective system of protected areas in the area of influence.

Protected Area	Limitations
Santa Teresa National Park	<ul style="list-style-type: none"> • Not designed for biodiversity conservation
Potreriillo Flora and Fauna Reserve	<ul style="list-style-type: none"> • Lack of clear objective • Limited Infrastructure
Fauna Reserve Laguna de Castillos	<ul style="list-style-type: none"> • Lack of clear objective • Very limited infrastructure • Limited extension
Forest Reserve Cabo Polonio y Aguas Dulces	<ul style="list-style-type: none"> • Exotic tree species reserve - Nevertheless it contains abundant native wildlife that is valued by local population and has adapted to the ecosystem conditions.
Dunas de Cabo Polonio Natural Monument and Atlantic Coast Natural Monument	<ul style="list-style-type: none"> • Lack of enforcement. • Conflicts between local people and conservation authorities.
Potrero Grande	<ul style="list-style-type: none"> • Not managed as protected area, used by private cattle ranches for grazing.
Don Bosco (Private Reserve)	<ul style="list-style-type: none"> • Objective not clear
Table 5.1: Protected areas in the area of influence and their limitations.	

The situation of the biosphere reserve is even more problematic than that of individual protected areas located in the proposed boundaries of the reserve. PROBIDES has no funding and it is functioning with minimum personnel. The situation could have

been worse, but the government decided to pay the salaries of the rangers in charge of the protected area managed by PROBIDES (Potrerillo). The future of PROBIDES is uncertain, and the boundaries of the biosphere reserve are being re-examined, but it is unlikely that the 4,000,000 ha proposed in the Master Plan will be taken into consideration.

As discussed in Chapter 2, conservation projects have a better chance of success if they can include the perceptions, voices, concerns, and participation of local populations from the beginning of the planning process. As described in the introduction, the survey I conducted during fieldwork in Castillos included a map in which the respondents were asked to draw a line around what they considered should be areas of conservation priority. The areas selected by Castillos' citizens as priority conservation areas have an important overlap with existent and proposed protected areas for the region (see figures 5.2 and 5.3). This could be interpreted as a result of good knowledge of these proposals by the local population, but data collected during the same period of time by a colleague in Aguas Dulces, which many rightly define as a neighbourhood of Castillos, shows what I perceived during my field work, that in the region there is lack of information regarding PROBIDES' activities and proposals for the area (Andrea Schunk, personal communication, September 2003).

The positive outcome of this overlap is that local population will probably not be in disagreement with the location for conservation areas based on conservation biology criteria.

However, and this point will be further analysed below, an analysis of the respondents' responses to other questions was co-related to the response to the map and the results suggest that the selection criteria is not solely related to conservation, *therefore the type of protection established becomes the key element*. The respondents were asked to respond the first thing that came to mind in order to answer the following questions (questions 23 to 26 of the survey).

- Which is the most natural place in Rocha?
- Which is the most useful place in Rocha?
- Which is the ugliest place in Rocha?

- Which is the most beautiful place in Rocha?

The areas of preference were then classified depending on the respondents' response to each one of the questions. The example from the Palmares will clarify this point and the topic will be further developed below.

The “Palmares”

The *Palmares*, *Butia capitata* woodlands, a landscape in which Castillos is embedded, and with which its population feel a very strong bond, deserve especial attention precisely because of the strong connection Castellenses feel with the palmares and because of its critical condition. The *Palmares* habitat in South-eastern Uruguay has

a density and dimension that makes it unique in the world. The *Butia capitata* in itself is not endangered, however, this particular woodlands, and its associated flora and fauna, are at imminent risk of disappearing due to the senescence of the palm trees and lack of recruitment.

The absence of recruitment is a consequence of cattle ranching, which started in the area almost 300 years ago. Along with the general concern of local residents, the critical environmental situation and relevant features were recognized by several international organizations but nothing has been done to preserve this magnificent landscape. It is common to observe fallen palm trees everywhere in the palm tree woodland. Studies conducted in the region by the Botanical Garden of Montevideo concluded that 2.5% of the population dies every 5 years. To date no action has been taken to ensure the preservation of the magnificent landscape of palm trees that covers almost 70.000 hectares.

Figures 5.5 and 5.6 show a landscape and ground view of the palmares. The old palm trees (approximately 200-300 years old) that still survive can be found with a very low herb stratum and complete absence of recruitment. Photographs: Diego Martino 2002.

Only one piece of regulation exists to protect the individual palm trees (Law 9872). This law passed in 1939 prohibits the cutting of *Butia capitata* palm trees – or ‘palma butia’ as it is called locally. However, this law does not protect the palmar, and there are no protected areas designed to protect the palm tree ecosystem¹⁴. This magnificent and unique landscape is in great danger of disappearing if action is not taken in the near future.

The lack of a protected area designed for the palmar ecosystem is even more surprising when one considers the close relationship local people have with the palmar. The palma butia is part of their identity and also provides the fruit, which is used in several food products such as honey, liquor, jams, etc. This production is locally commercialized, mainly during the summer months when most tourists visit the region, thereby providing an important source of income for local residents. Moreover, local production is beginning to be commercialized in the capital city, and incipient agro and eco tourism establishments are selling these typical regional products. The cultural importance of the palmar in the region has resulted in several initiatives and proposals to protect the ecosystem by local communities in the past. However, due to lack of support from the national government, there are, as yet, no protected areas designated for palmar habitat protection, nor do there seem to be any projected in the near future. The palmar ecosystem is no exception to average land tenancy in Uruguay, almost 100% of the land

¹⁴ Some butia palms are growing in “el Potrerillo” and in Don Bosco. However, el potrerillo is not an ideal area for the preservation of this ecosystem and Don Bosco only provides partial exclusion of cattle (lower density) and has neither clear objective nor infrastructure for the preservation of *Butia capitata*.

is private and devoted to cattle rising and/or rice cultivation¹⁵. In the conclusion and discussion chapter, a landscape conservation proposal, tailored for Uruguay's particular case, is suggested for the woodlands. This approach involves the use of temporary and mobile protected areas and demonstrates the need for alternative conservation strategies and their potential.

The City of Castillos and its People

San Vicente de Castillos, today almost 8000 people, was founded on April 19th 1866¹⁶ partly by request of 47 'vecinos'. According to local historian Jesus Perdomo (1998), there were 4¹⁷ main reasons for the foundation:

1. A "town mentality" had emerged due to the 'excessive' land division into small holdings of the land given to local people (mainly Guaraní Natives) a few years before.
2. After the Portuguese invasion an important cultural influence was persisting inside the borders of what became Uruguay in 1830. In order to consolidate the language and the culture, it was considered of strategic importance to erect new towns near the border with Brazil.

¹⁵ In the past rice was cultivated in the area of influence, but today rice cultivation inside palmar ecosystems is more common in the palmares located near San Luis.

¹⁶ One author suggests June the 16th, but oral tradition recorded in 1900 clearly indicates April the 19th as the foundation date.

¹⁷ When the missionaries left what is now Paraguay, many Guaraní Indians looked for refuge from Portuguese slave traders in this area but went back a few decades later.

3. The 47 'vecinos' who requested the creation of the new town argued that it was necessary in order to provide adequate education for the youth and to attain "the benefits of living together".
4. There was an urgent need for a chapel in the area. The free wombs law ('free born' in North America) was in effect since 1825, therefore the sons and daughters of slaves were born free. However, Brazil still had slaves and this motivated some of the landowners who owned slaves to take the newborns to a chapel in Brazil and baptize them in order to keep them as slaves with a false nationality.

Figure 5.7 illustrates the locations into which Castillos has been growing during the past 25 years. The growth is not extremely significant, but regulation is needed, mainly close to the many streams that flow around and through Castillos.

Castillos growth between the two last censuses was not significantly large. It had had a previous trend of decreasing population but it had a small increase in population between 1986 and 1996. In terms of city growth, figure 5.5 shows the variation in Castillos extension between 1967 and 1998. Not a significant change, but it stills needs

regulation from the local government that should determine and regulate the areas for future development making special consideration of creeks and wastewater treatment.

In terms of local food production, there are several small agricultural producers in the area and they supply part of Castillos' food. Even in the winter there is a relatively good supply from local greenhouses. Production is not organic for there is no market for it in the city. However, a local project recently received international funding to establish urban agriculture activities connected to some other social aspects of the project. This project just recently started (September 2003) and is expected to create a positive impact in Castillos' population, and is an invaluable opportunity to increase local food production, enhance environmental education, and create a tendency towards the reduction of agrochemicals in surrounding lands.

Since its inception, Castillos had been closely associated with its agricultural and grazing hinterland. Moreover, the strategic location of the town in the crossroads of the routes that the army used to travel between Montevideo and Chuy (in the border with Brazil) is still an important part of Castillos identity. Castillos enjoys a prime location equidistant from two beautiful lagoons and the coast, in the middle of an exceptional ecological landscape of palm trees, unique forests, sierras and wetlands, it has an extraordinary potential to collect the benefits from a sustainable use of its surroundings through the development of eco-tourism and other related strategies.

This potential was the driving force behind the declaration of Environmental Capital in 1992. At the moment of the declaration there were several environmentally related conflicts happening in Rocha. On one side the management of the wetlands was a source of antagonism, on the other the central government was applying pressure for the

construction of the a bridge connecting Maldonado and Rocha over Laguna Garzon. The local government was trying to consolidate an alternative vision of tourism development for the region, a vision based on the conservation and wise use of its natural resources.

Castillenses Perceptions of their Surrounding Environment.

This section will describe the evolution of Castillos citizens' perceptions of nature and the analysis will be continued in next section with a study of how this perception has affected Castillenses' relation with nature. The information used in this section was obtained during archival research in the local public library. Three local newspapers were entirely reviewed, the oldest of which (La Accion) covers the 1928-1967 period. The other two (Ecos and El Palmareno) were reviewed from 1990 to the present. Archival research was also conducted in Montevideo where a few issues from La Accion, that were lost at the local library, were found, and regional information from national newspapers was obtained. The views extracted from the local newspapers obviously do not represent the entire Castillos' population, however, almost all the articles and editorials are written by local citizens and therefore constitute an important source of information for the study of local perceptions of nature that I am carrying out. These secondary sources are complemented with the survey conducted in Castillos, which included the use of photographs to evaluate citizens' perceptions towards local landscapes.¹⁸

An interesting and persistent contradiction can be found in the analysis of the first years of La Accion. Devotion to certain natural characteristics contrasted with the desire

¹⁸ The methodology was described in the introduction, complete results of the ranking exercise are included in appendix 4.

to dominate and conquer others. There is an unrelenting campaign in favour of tree planting in the area of influence that illustrates the contradiction. This lobbying for tree plantation only decreases in the late 1950's, it is observed again during the early 1960's, and it does not appear in the 1990's and 2000's. Some main features are the following:

- Tree planting is seen as a necessity for progress and economic well being.
- Trees are promoted to be used to stop the advance of sand dunes into productive lands and should be planted in coastal areas.
- Trees should be planted because Uruguay has comparatively little forest coverage.

This insistence on the importance of tree planting led to the free distribution of seeds in 1940. Among the several editorials in favour of planting, one (1942) speaks about "the need for a *crusade* in favour of tree planting" (La Accion) and describes tree planting as an obligation. A subsequent editorial (La Accion 1943) portrays the dunes and wetlands as unproductive lands and encourages the government to continue fomenting artificial forests. Despite the fact that the trees being planted were all exotic and in the coastal area, the planting of trees is seen as a connection with nature. In an article (1931) about Mr Jose Rubio (a local landowner that planted several hectares of pines and eucalyptus) he is admired for his labour and love of trees, however the title of the article is "The struggle of man against nature". Another remarkable example of this contradiction can be found in an article from 1943 in which the natural beauties of a local resort and its dunes, beaches and palms are depicted. The absence of noticeable human impact is highlighted and the natural forces are described as free to manifest.

Nature is suggestive but hostile to humans. Intelligent intervention is necessary to create the appropriate and comfortable space that man searches for in vacation resorts. The administration of California resort

intends to create this appropriate environment for rest and recreation, but without hiding the native landscape that surrounds it. In order to do so its experts are studying the plantation of the 574 hectares corresponding to the land where the resort will be established.... Using plantations to fix and use the moving sands of the coast is a patriotic endeavour.” (La Accion, October 13 1943: 575; author’s translation)

As stated, a strong connection with nature permeates many of the editorials and articles of La Accion, however, when it comes to natural characteristics “not favourable to humans” nature is perceived as hostile and in its domination lies the key for progress in the area. Wetlands can also be used to exemplify this behaviour. Many projects are supported and celebrated through the editorials and articles of La Accion from 1931 to 1967 and international missions from the International Bank for Reconstruction and Credit are invited by the president in 1956 to study the possibility of conceding a huge loan for desiccation. Wetlands are considered unproductive lands and its desiccation is perceived as an urgent and national matter. Only one editorial underscores the importance of wetlands and highlights the significant revenues obtained from otter skin exports.

This vilification or adoration of nature, depending on whether it provides a *direct* benefit to humans or not, is seen in editorials and articles from an era in which the connectedness intrinsic to nature’s functioning was not yet appreciated, and an engineering view of human’s relation to nature was prevalent. However, at the same time an impressive vision of the future is demonstrated when they insist on the importance of nature conservation and the creation of protected areas as a means for the promotion of tourism in the area. This nature tourism promotion is still persistent in articles examined from the 90s to the present decade. It might also affect the perception of conservation priorities of local population as the analysis of the landscape perception study suggests.

Areas of Preference Classified by Response to Q23-26

Beach

Most Beautiful

- 1 - 5
- 6 - 9
- 10 - 14
- 15 - 18
- 19 - 23

Most Useful

- 3 - 9
- 10 - 16
- 17 - 23
- 24 - 30
- 31 - 37
- 38 - 44
- 45 - 51
- 52 - 58
- 59 - 65
- No Data

Most Natural

- 1 - 4
- 5 - 8
- 9 - 11
- 12 - 15
- 16 - 19

Areas of Preference Classified by Response to Q23-26

Polonio

Most Beautiful

- 1 - 6
- 7 - 11
- 12 - 16
- 17 - 21
- 22 - 26

Most useful

- 1 - 3
- 4 - 5
- 6 - 7
- 8 - 9
- 10 - 12

Most Natural

- 1 - 4
- 5 - 8
- 9 - 12
- 13 - 16
- 17 - 20

Areas of Preference Classified by Response to Q23-26

Most Beautiful

- 1 - 2
- 3 - 4
- 5
- 6 - 7
- 8 - 9

Most Useful

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10

Most Natural

- 1 - 6
- 7 - 11
- 12 - 16
- 17 - 21
- 22 - 26

Lagoons

Most Beautiful

Most Useful

Most Natural

Figure 5.8 illustrates the connection between the respondents reply to the questions described above and their areas of preference for conservation. It is clear from the beach and the Polonio graph, and to a certain extent from the lagoons graph as well, that the respondents that consider the areas "most useful" have a higher tendency to select these areas for conservation than those who consider this areas as "most beautiful" or even "more natural", the later a crucial component in the selection of areas for conservation.

As suggested above, the selection criteria for priority conservation areas might not be solely related to conservation. The methodology described (above) for the palmares is applied again in figure 5.6, which illustrates the views of the respondents who categorized the beach, the lagoons or the Cabo Polonio as most beautiful, useful, or natural place in Rocha.

When asked if they believe protected areas are very good, good, bad or very bad for Rocha, 96% state they are good (40%) or very good (56%), and only 4.1% responded bad or very bad. The results presented below in figures 5.9, 5.10 and 5.11 also speak about the conception of conservation prevailing among Castillos' citizens and their expectations. Although they don't disregard the importance of protected areas whose only purpose is the conservation of nature (figure 5.9) the support substantially decreases when this is the case. Moreover, only 20% believe that agriculture-grazing (*agropecuaria*) activities are bad for the environment in Rocha. In addition, they have certain expectations regarding the impact of protected areas in the development of the Castillos area of influence (figures 5.10 and 5.11).

Table 5.2 Cross-tab infancy location question 5			PA only for Nature protection				Total
			Totally disagree	Partially disagree	Totally agree	No opinion	
Infancy location	Rural area	% within Inf. Location.	7.5%	16.1%	61.3%	15.1%	100.0%
	Urban area	% within Inf. Location.	11.9%	26.0%	50.7%	11.4%	100.0%
	Coast	% within Inf. Location.	5.6%	5.6%	72.2%	16.7%	100.0%
	Montevideo or Rocha City	% within Inf. Location.	31.6%	10.5%	36.8%	21.1%	100.0%
Total		% within Inf. Location.	11.5%	21.5%	53.9%	13.2%	100.0%

Chi-Square Test for table 3	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.412	9	.016
Likelihood Ratio	19.512	9	.021
Linear-by-Linear Association	2.110	1	.146
N of Valid Cases	349		

The chi-square test shows a significant association between the question presented in figure 5.9 and question number one: “Where did you spend your infancy: Rural area; urban area; coast; Montevideo or Rocha city?” The chi-square test shows a significant level of association at 0.05. The respondents who spent their infancies in Montevideo and Rocha city are the ones who agree less to the proposition of question 5. This result underscores Castellenses particular attitudes towards protected areas.

The results of the survey show an important environmental consciousness and support for protected areas and development alternatives. However, care has to be taken with regards to the selection of categories, the will to engage into these kind of development alternatives has yet to be consolidated in the Castillos area, and the reality of Castillos, which will be described below, is far from that of a green city. The distinction between *civitas* and *urbs* considered in Chapter 3 should be remembered here.

Having environmentally consciousness citizens is not enough if the city does not provide the necessary infrastructure to reduce the ecological footprint of its citizens. However, the information provided in Chapter 3 also suggests that both *urbs* and *civitas* have work to do in order to turn Castillos into a green city or the factual “environmental capital of Uruguay”.

The use of landscape perception methodology provides further insights into Castillenses’ environmental perception of nature. Two sets, of 5 photographs each, were shown to the survey participants who were then asked to rank them from 1 to 5 (lowest to highest) according to its usefulness, fragility, and naturalness. Photographs correspond to the following local characteristic landscapes:

Set A	Wetland	Set B	Palmar
	Wetland with capybaras		Native forest
	Wetland with cattle		Wetland
	Rice plantation		Grassland
	Grassland with cattle		Eucalyptus plantation
Table 5.3 Photograph sets			

Both sets show a strong association between perception of naturalness and perception of fragility. The resulted ranking of fragility is similar to the ranking on naturalness. This result, as well as the landscapes suggested as most natural, comes as no surprise, with the sole exception of the perception of grassland landscapes. These landscapes ranked low in terms of fragility and naturalness. Moreover, in set B grasslands do not have cattle but are still regarded as the least natural landscape. This is interesting considering the discussion in chapters 1 and 4. To the fact that landowners perceived non-grazed areas as land wasted we have to add the perception of the country’s matrix as non-natural. Despite the changes in the grassland structure, it is still an important

ecosystem for conservation purposes, and contrary to local perception, one considered vulnerable (Dinerstein et al 1995), and underrepresented by protected areas in this region. Processes of erosion due to overgrazing are not yet significant in the area despite more than 300 centuries of cattle grazing, but this trend is no guarantee for the future.

Some results and conclusions from Set A	
Usefulness	Castillenses perceive their grasslands with cattle as the most useful landscape of the set, followed by rice plantations.
	An interesting result is that wetlands with cattle and wetlands with capybaras rank very close in terms of usefulness of landscape.
Fragility	Wetlands are perceived as the most fragile, and among them, wetlands with capybara landscape is by far considered the most fragile.
	The rice plantations and the grasslands with cattle are perceived as the least fragile, an interesting result when combined with what was observed in Set B.
Naturalness	Wetland with capybaras landscape is considered the most natural followed by the wetlands one.
	Both grassland with cattle, and wetland with cattle, rank very similarly in terms of naturalness.
Some results and conclusions from Set B	
Usefulness	Eucalyptus plantations are perceived as the most useful landscape followed by grasslands
	Wetlands are seen as the least useful
Fragility	The Palmar and the native forest landscapes rank very close in first place
	Significantly enough grasslands are again perceived as the least fragile
Naturalness	The palmar and the native forests are identified as the most natural landscapes in that order.
	Surprisingly, grasslands rank very close to eucalyptus as the least natural landscapes.
Table 5.4 Results and discussion of photograph ranking exercise	

The results of the landscape perception analysis suggest that support for a protected area with such an objective could be hard to obtain. However, just as the inclusion of capybaras in the wetland landscapes increases the perception of naturalness and fragility of the landscape, the inclusion of native grazers like the endangered “venado de campo” (*Ozotoceros bezoarticus*), or “ñandu” (*Rhea americana*) could help overturn

the situation. Moreover, as will be discussed in the conclusion, the reintroduction and exploitation of native species could be part of alternative conservation strategies in Uruguay.

A final comment regarding landscape perception is related to the eucalyptus plantation landscape, which ranked the lowest in terms of naturalness. This result contrasts with the perception I found in the editorials written early in the century.

Examining the results of the survey, the landscape perception analysis, and the last 15 years of two newspapers ("El Palmareño" and "Ecos") the author found an astounding contrast with the opinions expressed in *La Accion* from the early 30s until the late 60s, and with the management of the ecosystems that prevailed during that time – exotic plantations to dominate nature, wetland desiccation, etc. In recent newspapers an up to date view of nature, ecosystems, and conservation appears in editorials and articles. The persistence of these editorial views, together with the efforts of many key actors in environmental education, might explain the strong support protected areas have in Castillos. Many influential actors in Castillos are located in key institutions. The Headmaster of the local College (UTU), several high school and primary school teachers, members of the local government, all respected individuals with a strong involvement in environmental education and participation. Castillos' efforts in environmental education have a long history, and although much remains to be done in order to find palpable results in the urban ecosystem, participation in events like the earth day celebrations and the results of the survey show a high level of environmental consciousness. Perhaps what is lacking is a project that both engages the entire community and has enough external support to be set in motion. The denomination of environmental capital and the

possibility of becoming part of a protected area combine factors and opportunities that could be seized by local citizens if appropriate conditions are set in place.

Castillos and its Interrelation with its Area of Influence.

Castillos, as many other small and medium cities in Uruguay, had a strong interrelation with its rural surroundings. Up until the 1960's Castillos enjoyed a relative prosperity associated to the well being of the local small and large landowners, which in many cases lived in, or had a very close relationship with the city. This prosperity is still remembered by Castillenses when they describe the Castillos of 5 banks, 2 cinemas, 'big' businesses, a slaughterhouse, a wool cooperative, and other long gone operations (Arocena et al 1993; and personal interviews). Today the city has one branch of the "Banco Republica", the cinema operates a few times per year, the slaughterhouse remains closed, and Castillos has lessened its dependence on its *rural* hinterland. A very important percentage of Castillos' population works in the services sector (Ibid.), and during the summer months many Castillenses benefit directly or indirectly from tourism generated in coastal areas. The importance of this revenue from tourism has been acknowledged by Castillenses for almost a century. Editorials of local newspapers I studied constantly underscore the importance of tourism promotion for the well being of Castillos and the potential revenues from tourism activities.

Despite a diminished dependence of Castillos on its neighbouring agricultural productions, the city maintains a strong identification with its natural surroundings. Moreover, the informal sector relationship with the surroundings is also significant. Hunting of capybaras has been a source of income and/or meat for some people in the area, particularly during the present years of financial crisis in the region; collection of

butiaes, the fruit of the Butia palms, to produce liquor, ice cream and marmalade that is sold at the side of the highway mainly during the summer season is culturally and financially significant; fishing communities in the area of influence also form an important part of the informal sector; many of those who have a property in the coastal area informally rent it during the summer months to tourists coming from the capital city or from Argentina and Brazil. Castillos is far from its potential as a provider of tourism services for the visitors of its neighbouring natural areas and is yet trying to find alternatives to its bygone dependence on agricultural activities, especially large scale ones.

The relation between Castillos and its hinterland can be better understood under the light of our earlier discussion in Chapter 3. The citification or city effect produced by Castillos from its foundation never distanced its citizens from nature. The butia palm is part of the city's coat of arms and has an extraordinary presence in Castillos' society, probably everyone in Castillos has at least once consumed a product derived from the palm. Almost 80% of the population has recently been to the adjacent lagoons and more than 2/3 have at least once visited the local protected areas. This shows an intense link and interaction of the Castillenses with their natural resources. However, the city has not made a transition to a tourism oriented one. Regardless of much talk and some plans for eco-tourism in the area, Castillos revenues from tourism are still almost 100% related to the coastal areas. Some landowners organized themselves and coordinated the promotion of their family based tourism enterprises, but the benefits of such businesses are restricted to the 'estancias' (large landholdings), a few of which provide facilities for tourists to

stay overnight. In these family businesses very few people are employed and Castillos does not serve as a link or provider of services.

According to some actors, the establishment of a 5 star hotel in the vicinity could provide the much needed employment opportunities, but this has been a source of debate for a number of years. A project was finally approved by the national executive, but it is still too early to know the impact that such kind of business will have in Castillos and in the development of the tourism industry in the area. Some see big tourism businesses as a source for an increase number of tourists in the low season, a kind of tourism that would not depend solely on the coastal areas and that would look into the countryside for eco-tourism and agro-tourism locations. Others believe that 5 star hotels will only destroy the means of survival of many families that depend on the summer months to make enough revenue for the rest of the year. As described above, many families in the coastal areas rent their houses during the summer months, others (not exclusively coastal area residents) sell handcrafts or work in the service industries. Those who oppose the establishment of mega-hotels see in this kind of survival strategies an explanation to the relative well being of people in Castillos during an economic and financial crisis like the one that has been established in the country and especially in Rocha for the past 3 years.

The present municipal government has had a clear position on this topic. Rocha is located eastwards from Maldonado, a municipality containing a developed and mass tourism resort called Punta del Este. This resort has an area of influence that is restricted to Maldonado due to the lack of direct transportation connection into the Municipality of Rocha. There is a lagoon in the coastal border between these municipalities and the Rocha authorities have opposed the construction of a bridge for a number of years. Their

perspective is based on the intention to consolidate an alternative development strategy for Rocha. Authorities sustain that only one Punta del Este is possible in the Uruguayan Atlantic coast and that Rocha attracts many tourists due to its contrast with Maldonado's development. This policy is becoming more flexible due to the local financial crisis and the urgent need for sources of employment, but the Municipality continues to search for an alternative tourism development based on small businesses, and in their outcome lays Castillos' situation in relation to nature related tourism and its hinterland.

Contrary to what much of the international literature describes (see Chapter 3), the rural areas surrounding Castillos have little dependence on it, but could certainly benefit if a re-structuring of Castillos can attract new tourism developments or re-invigorate industrial activities that are not exclusively located in the coastal areas. This case study exemplifies the relationship between city and countryside described by Bookchin as open and opposite to the destructive and dominant produced by the *urbe* or big urbanization. Castillos financial dependency on Rocha City (the departmental capital) was a reason for growing concern raised by local politicians during my fieldwork¹⁹.

Castillos shows the benefits that citification brings to civic life. Part of my secondary research was conducted in the local public library, located in the '*Junta Local*', where local government meetings took place a few times a week. I was a witness and participant at several meetings in which local issues were discussed and where local

¹⁹ The city obtained financial autonomy for almost a year, but due to the financial crisis it was taken away by the central governments and the Juntas Locales (local governments) were being criticised by the *intendente* for their internal management of public funds. However, attending other meetings the author noticed that these concerns were not directed towards the *Junta Local* de Castillos, a local government that the *intendente* has in great esteem.

citizens had open access to express their problems directly to the local authorities. This level of participation was welcomed by local authorities, which in turn felt frustrated by the lack of funds remitted by the municipal government due to the financial crisis. These situations are behind the petition of the *Junta Local* for a stronger autonomy that should include the possibility of managing taxes collected in the Castillos area to be used in the area. The initiative was being analysed by other Juntas Locales, and although Castillos certainly has the support from the *Intendente* in such an endeavour, the other Juntas have a different political relationship with the governing party, and decentralization cannot be established in a case-by-case basis²⁰. Castillos also benefits from having two important summer resorts under its political boundaries, for they represent an important source of revenue during the summer months. This has been a mixed blessing when one considers that Castillos *Junta Local* is still partly responsible for public works in the resorts but sends the revenues to Rocha city.

Despite the internal cooperation, the lack of funds mentioned above has forced the city to limit its public duties to a bare minimum. At one point during my visit to the area the idea of going back to the old horse and cart for garbage recollection was being considered due to lack of funds to buy gas for the garbage trucks. This would have symbolized a return to 1957, year in which an editorial from *La Accion* denounced the fact that there was only one cart and two horses for garbage collection. The same editorial states that in the 10s they had a better cart and a few years later they had had a truck. The

²⁰ It is important to emphasize that the *Junta Local* of Castillos does not have a majority from the governing party, however, its members have agreed to leave partisan affairs behind and work together as neighbours and citizens instead of doing it as mere representatives of their parties. Without this kind of conduct the political battles of the Municipal capital would have transpired and affected city affairs seriously.

example shows how serious the economic situation was in the municipality during my field work, but also exemplifies the resilience of the local government, which is capable of maintaining a relative level of efficiency under extreme circumstances. However, lack of funds has been an important limitation to the many ideas and initiatives the *Junta Local* has had in relation to Castillos' environmental performance and its strategic relationship with its area of influence.

Castillos' environmental impact is not extremely significant in the region due to the lack of industries and polluting activities in the city. However, the two major discharges of the city (solid and liquid waste) are having a direct negative impact in the area of influence. The creeks are a major presence in Castillos. Five different creeks surround the city and flow through it. A study by the Municipality (Olazabal et al. n/d) described the issues with the creeks as twofold, on the one hand the problems caused by flooding, which affects many legal and illegal houses situated close to the creeks, and on the other the water quality. The study determined the following to be the main sources of Castillos' creeks contamination:

- The local dump is situated in the watershed of two creeks (see figure 5.12) and description of dump below
- Garbage in the streets (see figures 5.13 and 5.14)
- Garbage being directly disposed of in the creeks
- Wastewater treatment plant small and out of date (see figure 5.15)
- Households discharging wastewater directly to the creeks

The following series of figures is provided to illustrate the situation of the local dump and of Castillos' creeks, which according to the survey Castillenses consider the most severe environmental problems in Castillos (see table 5.5)

Which is the main environmental problem in Castillos?		Frequency	Valid Percent
Valid	Plastics	30	9.9
	Other	37	12.3
	Local Dump	111	36.8
	Creeks Contamination	124	41.1
	Total	302	100.0

Table 5.5

Figure 5.12 shows part of the watershed of La Tapera creek, this creek flows into Castillos and into El Soba creek which flows through the entire extension of the city – La Tapera connects to El Soba at the edge of the city. Appendix F includes more pictures related to the dump and its associated problems with the creeks. Photograph: Diego Martino 2002.

The dump is located in the upper left corner of figure 5.12. When garbage is pushed into the dump to make room for the trucks to get in, garbage falls off into the watershed and is carried down during rainy days, like the one when the picture was taken, or by the wind. After this stage, this creek, and others, flow through the city where they

collect more garbage that has been improperly disposed of, or directly discharged into the creeks (see figures 5.13 and 5.14 below).

Figures 5.13 and 5.14 show some of the problems with garbage disposal. Dogs are a major nuisance when it comes to dispose garbage in the city, but facilities created by the municipality to solve the problem are not located or used properly. Moreover, 74% of the survey participants say that more garbage cans for household disposal are needed. The one showed here is only a few meters from the creek. Part of the garbage seen in each picture will end up in the creeks. Photographs: Diego Martino 2002.

The creeks that run peripheral to or through Castillos then join into El Soba creek where the wastewater treatment plant is located. The treatment plant consists of three 50 year old Imhoff tanks, only one of which is presently operational (see figure 5.15), for sludge stabilization. I could not obtain information related to desludging procedures and disposal, or related to biological treatment. Water samples were not obtained, but a visual examination of the disposal point reveals that the treatment is not enough to adequately treat the wastewater that is disposed to the creek, and this same opinion is shared in the study of the creeks performed by Olazabal et al. (n/d).

Figure 5.15 shows the only Imhoff tank being used for the treatment of Castillos' wastewater, which is managed by a central government agency. Despite the age of the tanks, they could be restored and used in combination with modern alternatives to improve the treatment of wastewater. Photograph: Diego Martino 2002

The El Soba creek then flows towards a wetland located adjacent to Laguna Castillos, a protected area. The wetland *probably* completes the “treatment” of the wastewater before it reaches the lagoon, however this situation is less than ideal, affects a national protected area, could be solved with little investment, and has other problems associated as figures 5.16 and 5.17 illustrate. What is seen in figures 5.16 and 5.17 above is one result of garbage not properly disposed by Castillenses in the city and by the municipality in the dump. A local NGO cleaned a section of one of the creeks in 1998 and in only 700 meters found 2775 plastic bags, 387 plastic bottles, 217 cans, 200 glass bottles, 366 non plastic bags and 812 pieces of garbage classified as various (Calimares 1998 in Ecos). All these garbage contributes to the flooding of the bridge downstream, which ironically has kept some ecotourism groups from entering the estancia to visit some of the most breathtaking scenes in Castillos' area of influence.

Figure 5.16 and 5.17 were taken a few kilometers south of Castillos, in a bridge that leads to a nature tourism resort and “estancia” located in the coast of Laguna Castillos. The bridge is sometimes flooded because garbage keeps water from flowing underneath. Photographs: Diego Martino 2002.

The dark side of the interconnection between the city and its surroundings is cruelly demonstrated here. However, the negative impact in the protected area creates an opportunity to test a new approach to conservation in the Castillos area of influence. In transforming the dualism of the protected area into an ‘encompassment approach’ that will include the city we might be creating the necessary conditions for a better relationship between the city and its surrounding environment. The city problems will not

be resolved by the sole fact of including it in a protected area, but the artificial boundary of the protected area will not keep away the problems originated in the city.

The Importance of Scale and Castillos

In his essay titled "An optimum size for cities" Shindman asked a crucial question regarding optimum size of cities. "Optimum for what?" (1959: 257). The response to this question will vary depending on the context and situation being considered. The optimum or ideal size for health provision or other services in economic terms might be different from the optimum size for social life. Capello and Camagni conclude that the issue is not optimal size but efficient size and in a similar view they point out that this depends on the "functional characteristics of the city" (2000: 1479). I will not attempt to find an optimal size for cities from an environmental perspective. However, the question of size is important when dealing with urban planning, and many of the physical and political functions of cities are strongly related to their size. The question of scale is also important when dealing with urban sustainability. Global market relations, the vertical and horizontal inter-urban exchanges, the increase competition among cities²¹ and the intra-city level have to be included in the analysis of sustainability (Ling 1999; Brenner 2000: 366; Gleeson and Low 2000). The optimal or ideal size of a city from an environmental perspective will depend not only on its functional characteristics but also, and more fundamentally, on its surrounding environment and on the interdependence between localities and of localities with their hinterland (NSF 2000), which can be the whole

²¹ A disturbing example of this competition is highlighted by the following Filipino advertisement in Fortune magazine: "to attract companies like yours...we have felled mountains, razed jungles, filled swamps, moved rivers, relocated towns and in their place built power plants, dams and roads." (Drakakis-Smith 1995: 668).

planet. In Uruguay medium and especially small cities in the country side have a stronger set of ties with the countryside, and Castillos is no exception to this rule, although its ties are not mainly related to the agricultural countryside but with the natural areas located nearby as well.

Until recently, especially in the south (Valladares and Prates Coelho 1995), the study and projects on urban sustainability focused on big urban areas (HABITAT 1996), giving little importance to medium and small size cities. Examples of this are the field projects and studies developed by the UNESCO MAB program and the UNEP, which include cities like Barcelona, Hong Kong, Moscow, Rome, Tokyo, Toronto, Buenos Aires and Mexico among other big urbanizations (UNESCO 2000a). Many of these studies highlight the importance of big urbanizations due to the constant migration from rural to urban areas. However, two thirds of the world's population live in settlements of less than 1 million people (Drakakis-Smith 1996) and it is urban areas and not only big urban areas that attract migrants (ICLEI 2000).

Focusing mainly on big urban areas not only leaves aside the majority of the population, but also makes it impossible for researchers to consult with the population involved to obtain a good level of participation. In order to make cities more sustainable there is a need for change in the ways cities relate to their surrounding environment, and for this change to be possible it is crucial to involve the population of these cities in the planning and implementation of the projects (Miles et al. 1998; Heywood 1996; Gleeson and Low 2000). This process of consultation, as well as an increased popular involvement in the projects, is obviously much easier in small and medium size cities than it is in mega-urbanizations. Small and medium cities can play a very important role

in “promoting rural/regional development, and in particular in arresting the acceleration of direct rural migration to large cities” (Drakakis-Smith 1996: 677), but most importantly, they constitute an easier scale for researchers to understand, and for project managers to increase citizens’ participation.

As pointed out by Bookchin (1995), the questions of size and scale are interrelated in urban studies. “The concept of *human scale*, by far the more preferable expression for a truly ecological policy, is meant to make it possible for people to completely grasp their political environment, not to parochially bury themselves in it to the exclusion of cultural stimuli from outside their community’s boundaries” (Bookchin 1995: 237). The human scale question is related to the ideal size of cities in terms of political participation. Moreover, political participation by ‘citizens’ must go beyond its actual form of protest and resistance (Friedmann 2000) and become a crucial part of urban planning for sustainability (Miles et al. 1998; Ling 1999). Medium size cities appear to be the optimal place for social contacts while big urbanizations tend to create social friction and fewer interactions (Capello and Camagni 2000).

The importance of participation for the success of development and conservation projects has been documented extensively. In the urban context, experience suggests that citizens play a crucial role in managing urban activities (Ling 1999; Miles et al. 1998) and “...small scale communities within the city may well have an important role to play in providing public utilities to a wider group of urban residents” (Drakakis-Smith 1995: 673). However, after centuries of centralization of power by the state, achieving proper participation is not an easy task. In this respect, urbanizations produce an extra complication to the proper achievement of participation. As Bookchin (1995) points out,

Cities differ from Urbanization in a human scale sense. The *agora*, described by Finley as a “gathering place” and exemplified by the “town square”, which served the purpose of engaging citizens into political discussions regarding the city’s affairs does not exist, particularly in big urbanizations (Bookchin 1995)²². The opposite is true in Castillos where every holiday, Sunday or special event draws people to the town square where everyone interacts. Moreover, Bookchin suggests, citizens have become constituents or taxpayers, “passive recipients of the goods and services provided to us by an all-powerful state and our elected representatives”. In the same vein, he argues that politics has become statecraft. With it came centralization, and “despite recent rhetoric to the contrary, nothing has seemed more challenging to the state than demands for local self-management and civic liberty” (Ibid.). Regarding decentralization, Drakakis-Smith states:

“...the current climate, created largely by the World Bank with its immense financial clout, is for a neo-liberal approach in which the state is to play an (sic) limited role in the provision of basic services. *This is, of course, not a full retreat by the state as is often assumed.... In effect, what has occurred is a retreat of the local state*, and urban management for many of the largest cities is essentially undertaken by central government.... What has emerged, therefore, is a broad and widening gap between urban management and urban populations that needs to be bridged.” (1995: 673, emphasis added).

While Drakakis-Smith (1995) and Ling (1999) propose NGOs to bridge the gap, Bookchin (1995) and Friedmann (2000) suggest that a resurgence of the ‘citizen’ is necessary to reclaim the power that belongs to the people in order to exercise their freedom of choice to decide over their collective or common concerns, which can be different from the sum of individual ones. This last point is crucial, for participation in

²² However, Bookchin clarifies that “no city need be considered so large that popular assemblies cannot start at least of all one that has definable neighborhoods that might interlink with each other on ever-broader confederations. The real difficulty is largely administrative: how to provide for the material amenities of city life...” (1995: 224).

polls, or individuals deciding over urban affairs by voting 'from the comfort of his/her house', does not constitute 'citizenship'. "True citizenship and politics entail the ongoing formation...and growing sense of public responsibility and commitment that render communizing and an active body politic meaningful..." (Bookchin 1995: 227). In other words, a search for the common good. In this respect, Friedmann articulates the following:

"Against all of these intellectually dismissive critics [pluralists, Marxists, post-modern critics], I would argue for the necessity of continuing to search for the 'common good' of a city if only because, without such a conception, there can be neither a sense of local identity nor a political community.... In a putative democracy, the city is ultimately 'the people', and the cliché notwithstanding, it is the people who must find a way among themselves to define, time after time, in what specific action agendas the 'common good' of the city may be found." (Friedmann 2000: 465)

In order to search for the 'common good', localities or cities need decentralization to regain power and be relatively free from supervision and control by the state (Ibid.). However, as stated by Bookchin (1995: 237) "...it is now clear that any attempt to tailor a human community to a natural "ecosystem" in which it is located cuts completely against the grain of centralized power, be it state or corporate." The political ambience just described is an indispensable background to achieve the "insertion" of cities in their ecosystems.

In Castillos, the gap created by inappropriate decentralization is being filled by both the citizen and the NGOs. NGOs and citizens work hand in hand in Castillos, and access to local government officials is completely unrestricted. However, as stated above, the process of decentralization occurred at the management level, but did not occur at the economic one, therefore local governments received the burden of carrying out projects

without appropriate financing. This increases the pressure on local government members who increasingly listen to demands they cannot resolve for lack of resources. Despite this, Castillos' case constitutes an ideal scale for the analysis proposed here. In the Uruguayan context, results cannot be disregarded due to the small size of the city, and the city is not so big to have the same problem of the biosphere reserve, where plans are interesting but in reality no one feels the difference between living inside or outside the reserve. The size is ideal for a participatory process to be developed and can be conducted without a substantial economic cost. Moreover, the particularly high level of political participation in the city is likely to make the process easier and very productive.

Discussion and Conclusions

Discussion: Uruguay and future conservation alternatives.

Very important and pragmatic questions were asked by Evia in the 2002 National Congress of Protected areas in Montevideo: "What opportunities do we have to establish protected areas to assure conservation in our country? In our context and circumstances, is it possible to design, establish and manage a national system of protected areas with enough resources and coverage?" (Evia 2002: 18). If discussion continues to be centered on protected areas, on the fit or lack of fit between specific categories of conservation, and on the competency of individuals and management institutions, Uruguay will have neither protected areas nor conservation oriented management in the rest of the territory. The cost of expropriating land is economically unbearable for the state. Expropriation is also a source of conflict, given the continuation of expropriation trials in Uruguay that have been unresolved for more than 50 years.

Several alternatives have been applied in other countries, (including the USA and Australia) These involve creating tax concessions, conservation easements, and private parks. Tax breaks and public-private conservation partnerships have been used in Australia (Hall 1998; Rosen 1995; Thackway and Olsson 1999). Statutory covenants are common practice in New Zealand (Edwards and Sharp 1990). Rational use of wildlife has been a successful option in Venezuela (Hodgsteijn and Chapman 1997) and Zimbabwe (Adams and McShane 1996; Furze et al 1996). Economic incentives (Clark and Downes 1996) and conservation easements are widely used in the United States (Baldwin 1997;

Dunkiel 1995; Sayen 1996; Luster 2002). Finally, private parks are increasingly being used in places such as Costa Rica, Brazil and the United States (Harris 1994; Langholz et al 2000a; b; Wiedmann 1998). Many of these options require money from the state, either in the form of tax breaks, as incentives for private parks, or as spending on research and infrastructure. They are not, however, as expensive as expropriations. In addition, many other alternatives could be created around the world that could be applied to Uruguay, where the potential also exists for the creation of locally designed and constructed alternatives.

The use of temporary protected areas (Martino 2003) for the conservation of a palm tree woodland landscape is one example of a local solution to the unique circumstances of Uruguay, and it is given in some detail here to make clear the discussion of the need for local approaches. Temporary or mobile protected areas could provide enough protection for young palm trees to become established. Research conducted by the Botanical Garden of Montevideo in two exclusion zones (with no cattle) shows that there is a potential for 11,100 sprouts per hectare per year. Given such a large number, protection of individuals by fences would be unfeasible. However, the report also concludes that a certain level of management intervention is likely to be needed to assure successful survival of a good percentage of these sprouts. During visits to two different areas, one with total exclusion of cattle and another one with lower cattle density, I observed the regeneration of sprouts, which were competing with grass but growing healthily nonetheless. Small enclosures were unintentionally created when a new highway was built and small parcels (approximately 1 hectare) were left between the old and new highways; in these, palm trees have been successfully growing for more than

two decades. I argue (Martino in progress) that highway verges should receive conservation priority in the area, for they are the only established remnants of succession in the palmares. Highways are generally, and rightly so, seen as an obstacle for conservation: in this case, however, they hold important clues for the management of other exclusions in the future. The importance of these verges represents another example of the need for local approaches to conservation. It should also be noted that the highway was left out of the proposed protected areas boundaries (see figures I.2 and I.3).

Returning to the case of the temporary reserves, evidence from the highways suggests that a temporary protected area could be established on a piece of land for a period of 12–15 years, after which the palm can survive the reintroduction of cattle. After that period, land could be returned to grazing and another piece of land, preferably adjacent, could be used to initiate a new cycle of 12–15 years. This mobile component allows, in the long run, the protection of a larger area with a limited budget and without using land expropriation. It has the disadvantage of not preserving or restoring habitat permanently, but several species could benefit from a strategy of short-term exclusion, especially if the cycle is continued in adjacent areas. Further, highways and their associated vegetated strips could be used as ecological corridors connecting different areas. Moreover, some commercial uses of the palm tree fruit could be allowed without placing the area under total exclusion. By moving the protected area from one place to another a larger area can be preserved for the same resources that would be required to protect a small one for a prolonged period of time.

Microreserves represent another type of alternative (Gonzalez 2002; Oertli et al 2002; Baz and Garcia-Boyer 1996; Lomolino 1994; Quinn and Hastings 1987;

Simberloff and Abele 1982). Using this approach, protection of a very small percentage of each *potrero* could be a logistic nightmare, but having different types of exclusions – restoration, less cattle, total exclusion – could be considered, and would benefit the understanding of regeneration in the country if appropriate research is conducted, and would not mean a significant lost of profit for landowners.

Reintroduction of native species for exploitation should be considered, especially if they can coexist with cattle. All of these alternatives should not be seen in isolation, but it must be recognized that alternatives need to be created that are related to local realities. This does not mean ignoring conservation biology concepts – i.e. minimum viable population size, reserve size, importance of corridors, landscape permeability, etc – but rather adapting to the current situation of Uruguay and trying to make the best of it. Different approaches can serve different species, which brings us back to Proctor's argument. Micro-mammals, for example, can be conserved very effectively in small connected reserves (Gonzalez 2002), butterflies could benefit from small reserves more than from a large one (Baz and Garcia-Boyero 1996), and large herbivores can coexist with cattle. However, in order to coordinate these approaches, a national conservation strategy needs to be in place to set the objectives.

The conservationists' community in Uruguay is – and has been for some time – ready to embark in a participatory process with other stakeholders, including private owners, in order to develop an appropriate conservation strategy. Uruguay has one advantage despite the lack of public lands: extensive cattle ranching. A country whose main landscape consists of grasslands and its main products are beef and leather, provides excellent grounds for the establishment of new forms of conservation. This is not to

disregard the profound impact cattle ranching has had in the grassland structure and composition, nor to deny the need for a grassland protected area. However a national conservation strategy should include alternatives to the protected area “tool”, as well as making use of it, but not at the core of the strategy. Links between conservationists and producers can lead to important partnerships at a time when, for example, European consumers are demanding more ‘natural’ foods. One possibility, which in principle is related to Callicott’s (1991) proposition to reintroduce Buffalo in the North American prairies, is the re-introduction of the endangered pampas deer (*Ozotocerus bezoarticus*). This species is endangered and has been reduced to two populations currently existing in the country. I had the opportunity to visit one of those populations in Rocha, witnessing how they co-exist with cattle in the same *potrero*, although the number of cattle might be lower here than in other areas. Moreover, when that piece of land was used for rice a few years ago many thought it was the end of this population, but they went to a different area and then returned to the same *potrero*²³. This species has been successfully reproduced in a small refuge for fauna. As suggested by Gambarota in the 2002 National Congress of Protected Areas, cattle ranchers should be allowed to use some of those individuals to introduce them in their lands (Gambarota 2002). The introduction in grazed areas might be even more effective than in an area without cattle, where pampas deer had enormous problems in adapting. I believe this problem could be related to the density and structure of accumulated grass in ungrazed areas, which, given their teeth structure, might make grazing difficult for the deer.

²³ Land division in grazing ranches of large or medium size.

The introduction of pampas deer could be one example of diversification of the landscape, the use of native species for production that could bring economic benefits to ranchers. This approach has been proven in Venezuela with the capybara, which due to their feeding habits do not compete with cattle, and represent an extra source of income for landowners that continue having cattle but also 'harvest' capybara on their land (Quintana et al 1994; Quintana and Rabinovich 1993; Ojasti 1991; Gonzalez-Jimenez 1977). Rocha has ideal conditions for the exploitation of capybaras and cattle in the same area, but this type of research has not received enough attention or funding from the state and from many conservationists. The establishment of these alternative exploitation strategies is crucial for the promotion of landscape diversity advocated in Chapter 1, and Proctor's 'contested terrains' (Coates 1998) are represented here by those species that better adapt to short grasses, those that adapt better to low-grazing pressure and those that depend on total exclusion on a temporary or long term basis.

The use, or potential use in Uruguay, of protected areas as the main tool for conservation is the focus of conservation initiatives. Two of the questions asked in the semi-structured interviews were: (1) what interviewees believed was the objective and/or role of protected areas generally speaking and (2) if they thought a different approach should be considered for Uruguay. All but one respondent considered that such areas should not have a different role in Uruguay. This might respond to the necessity of complying with the global conservation discourse, and the need for external funding (Sant'ana Diegues 1996). Also, this thinking is in line with that of Callicott (1999) and Cronon (1996) when they justify and support wilderness reserves even while criticizing the concept of wilderness and supporting the integration of human production with nature

conservation. The Uruguayan case study shows that protected areas have little pragmatic potential here, but the conservation discourse relies heavily on reserves, and this in turn hinders the discussion, let alone implementation, of alternatives.

Even those who do not foresee a promising future for protected areas in Uruguay insist on focusing conservation strategies on them. The last question asked of all interviewees was “what do you expect protected areas in Uruguay to look like in 100 years?”. Interviewees were given the option of being both realistic and optimistic in order to examine their expectations and their perceptions of the functioning protected areas. The following two responses are representative of those of almost all interviewees: (1) “Complete uncertainty”; (2) “It would be significant if they exist”. Among the NGO ranks there is little faith in what government agencies can do with regards to the establishment of protected areas in the country. On the government side, lack of resources is presented as the main reason for the absence of reserves. However, the delay in implementing the protected areas law approved by the parliament in 2000 can not be blamed on not having enough resources but rather on the lack of consensus among government agencies, and the lack of political will among all political parties in the country.

The implications of the insistence on using protected areas in Uruguay, and the inadequacy of such an approach relates to the discussion elaborated in Chapter 1 with regard to the use of strict reserves in the tropics. Schwartzman et al (2000a) argue that in order to protect the rainforests at a larger scale, the focus should be on the populated reserves, which are preventing the destruction of the Amazon. Redford and Sanderson (2000) and Terborgh (2000) argue in favour of the use of protected areas without humans

to protect the integrity of those reserves. As Curtin et al (2002) suggest, conservation should move (in particular situations) to the preservation of functioning ecosystems, including humans. Even though all the interviewees concur that category I (strict reserve) should only be used in very restrictive and specific situations in Uruguay, insisting on a focus on protected areas could mean that no protection is offered for the territory outside those *potential* reserves. Schwartzman et al's (2000a) argument that the use of strict reserves would endanger the non-reserved Amazon (i.e. vast majority of the Amazon region) is supported by the Uruguayan case study. The insistence on trying to implement one particular tool, even though it is an adaptable one, is in fact endangering the rest of the unprotected territory in Uruguay that is currently under increased stress due to the expansion of forestation with eucalyptus and the expansion of soy plantations in the region. Native forests in Uruguay represent an appropriate example. There are currently no reserves dedicated to the protection of Uruguay's native forests. However, a permit needs to be obtained to cut these forests, and the percentage of *native* forest coverage has been kept stable during the last decade. It could be simply a consequence of eucalyptus plantations providing cheaper wood for fuel, but the fact is that native forests coverage has been stabilized and many relate it to this regulation, which, it is argued, has worked and the forests in general are being conserved. This does not mean that a protected area would not be necessary, but it could be implemented now, that is *after* regulations for the protection of the forest in general are in place and people respect them.

This approach is different from that described in Chapter 4, where one of the defenders of the law suggests that protected areas might even have negative implications for the forest. Keeping in mind the discussion in chapters 1 and 2, I would not advocate a

return to a “pristine forest”, but reserves could provide diversity in terms of different stages of succession, and the importance of this diversity has been argued in Chapter 1 already. Moreover, this is not a renewal of the Pinchot-Muir debate of sustainable use versus preservation. Ecosystem health – maintaining functional forests in place – is just as important an objective as conservation of parts of the forest in reserves, but as stated in chapters 1 and 2, if the option comes down to trying to preserve forest integrity and risking losing the entire forest in the process, or preserving ecosystem health with the potential of having reserves in the future, I will choose the latter. This approach has certainly worked with native forests in Uruguay. As described in Chapter 5, support for protected areas is strong among Castellenses, but it significantly decreases when protected areas are strict reserves – categories Ia and Ib.

Despite not having protected areas, the boundary mentality (McNeely 1990) is already an issue for conservation planning in Uruguay. In many countries the boundary mentality means that due to the existence of reserves, areas outside the reserve are considered, by those exploiting the land, as places where anything goes. In Uruguay this already happens with *potential* protected areas. The conflicts originating from a dualistic approach are manifesting before the use of the tool of protected areas designation, for fear of, or as some conservationists interviewed stated, due to “misinformation” about protected areas. Protected areas should not be discarded as mechanisms for biodiversity conservation, but the Uruguayan case study suggests that a national conservation strategy should be much broader than a system of protected areas. Conservationists should consider the conservation of the ecosystem functions as their primary objective, and be aware that some uses (or potential uses) of reserves might endanger this objective. In

such cases, protected areas status should be considered, but just as one more mechanism that can be used in the national conservation strategy. Moreover, its impacts should be carefully assessed before proposing a national system of protected areas that could endanger a national conservation strategy.

Getting local stakeholders involved in conservation planning is vital for the successful implementation of reserves and/or a conservation plan (Bachert 1991; Brandon and Wells 1992; Gomez-Pompa and Kaus 1992; Kemf 1993). Understanding the perceptions these stakeholders have of nature and conservation is vital to achieving positive results from the consultation process – as is illustrated by the Castillos case study. The Uruguayan case study shows that understanding decision makers' perceptions of nature and reserves is also crucial for the implementation of a national conservation strategy. International conservation organizations need to put as much emphasis on decision makers' perceptions as on those of local stakeholders. Protected areas have been evolving during the recent decades and new categories have been established, the main reason being the increasing importance given to local participation and local rights. However, in order to achieve successful biodiversity conservation strategies, new approaches might be necessary for an understanding of, and adaptation to, particular views of nature, conservation and nature resource use.

Castillos and Alternative Conservation

Why Castillos?

The social and political situation documented by my field work and described in Chapter 5 makes Castillos an ideal location to study the possible consequences of

including a city inside the core area of a biosphere reserve. Moreover, its location shows that little would be gained from leaving the city outside its borders. The fear of introducing a city into the park, or in this case more precisely, of extending the limits of the potential parks to include the city, is not derived from the possible impacts of the city. Rather, it flows from the importance placed on following a set of objectives associated with protected areas in general, and with the persistent perception of protected areas as wilderness areas.

Some interviewees accept the inclusion of productive activities inside the borders of the park but emphatically oppose the inclusion of any city. However, many of these same interviewees see the impact of productive activities as greater than that of the small local cities. Perhaps productive activities are tolerated because they pervade almost the entire territory and the possibility of expropriation is very limited. In addition, international forums have discussed the use of protected areas for some productive activities for more than two decades, lending legitimacy to this idea. These two factors might explain why some interviewees are still reticent to accept the extension of park borders to include a small city but would discuss the inclusion of productive activities. One of the interviewees argued that protected areas were not the appropriate instrument to tackle changes in development policies – which he believes is the problem behind the impacts of cities and land management. Development policies, it can be argued, are also the problem behind impacts of agriculture on the environment. However, as discussed above, there is more openness to the idea of including certain land uses in protected areas. The environment is one issue among others that should be considered in development policies. Ignoring urban areas when dealing with the environment in

protected areas will not bring solutions; however, planning with protected areas in mind, or, from the perspective of reserve managers, with urban areas in mind, can bring benefits to the environmental aspects of development policies. As discussed in chapters 1 and 2, protected areas can benefit by including certain human uses in protected areas. Moreover, as described in Chapter 3, the integration of humans and nature for sustainability proposed by the Seville strategy, and on which the UNESCO Man and the Biosphere program is based, cannot exclude cities. As argued in Chapter 5, medium and small size cities constitute the best starting point to achieve the goal of integrating urban and conservation planning. Finally, as argued in Chapter 4 and in this chapter, Uruguay is in need of new and innovative conservation strategies. When we add to this the fact that Castillos is located in the middle of the most diverse landscape in the country, and that the survey and field work revealed a strong connection to its hinterland, we have a good argument for using Castillos as a case study in order to examine the potential benefits to conservation of including selected cities within selected protected areas.

Some lessons from the Castillos Case Study

Castillos runs counter to the view of urban dominion over the 'rural', and supports Bookchin's (1992) assertion that city and countryside are not necessarily in conflict with each other. The formation of Castillos has not alienated its citizens from their surroundings. The survey shows important interconnections between Castillos and its hinterland, and the city has increased social interaction but not resulted in significant impacts in the environment. The interrelations with its surroundings are both formal and informal. Small holdings are used for agricultural production, apiculture is significant,

and many landowners with large holdings live in the city or routinely go to the city for one reason or another. Hunting, fishing, collection of butia fruits and/or many medicinal herbs, and renting houses to tourists in coastal areas are some examples of informal sector connections with the hinterland. The city has helped increase social interaction and its citizens did not decrease their connection and identification with the area of influence. These results of “citification”, as it would be described by Bookchin, are also in line with Capello and Camagni’s (2000) description of the city effect analyzed in Chapter 3. Although on a regional scale it could be argued that Montevideo has dominion over the ‘rural’ areas, this is not true in the more local case of Castillos and its area of influence.

City size is an important factor when considering Urban Biosphere Reserves. Castillos case shows many of the benefits of small cities, which might suggest that the optimal size of cities (Shindman 1959) for the integration of conservation and urban planning – particularly in the case of Urban Region Biosphere Reserves – rests on the side of relatively small cities. Consultation is a crucial aspect of both conservation and urban planning (Miles et al. 1998; Heywood 1996; Gleeson and Low 2000) and the process is easier in small cities. Moreover, Bookchin’s concept of human scale and Capello and Camagni’s suggestion of small and medium sized cities as optimal for social contacts is sustained in Castillos, where consultation is accessible and citizens’ grasp of the political environment and understanding of its surroundings is significant. Survey results show not only a particular support for environmental issues among Castillenses, but also dependence on the area of influence – perfectly exemplified by the informal sectors described above – and intensive links with it. During the year before the interview, 80% of the population had visited the local lagoons and 70% had visited at

least one of the local protected areas, none of which are extremely accesible. Results also show a relationship between visits to these areas and sensitivity toward protecting them. Given these results, and that the approach taken by UNESCO with regards to Urban Biosphere Reserves has been focused on big cities like Buenos Aires, Rome or Barcelona, I recommend flexibility and the use of different categories of Urban Biosphere Reserves in order to incorporate relatively small and medium size cities. This point is further explored below.

Castillos' case study underscores the importance of keeping in mind – for analytical purposes – the distinction between *civitas* and *urbs*, described by Fustel de Coulanges (1863) (Chapter 3) and emphasized by Leeds (1972) and Eames and Goode (1977). It also shows that in reality these two are inseparable, as Bookchin (1992) argues. Castillos *civitas* has an outstanding environmental consciousness, however, the *urbs* is impacting its surroundings at levels that could be easily avoided. Maintaining the distinction for the analysis opens the door to identifying the problem. One of the interviewees from a national environmental NGO located in Montevideo described rural cities as centers for expanding waves of pressure on the environment, and this view is shared by one of the reserve managers. However, they recognize that the *urbs* of these small rural cities do not heavily impact on their surroundings. The two levels are clearly identified by the interviewees, and this enriches the analysis of urban impacts. However, after this analysis one more step needs to be taken by recognizing the inseparability of *civitas* and *urbs*. As Bookchin and Friedmann argue, the city provides the social framework for citizens to take steps towards sustainability. In Castillos case this is exemplified by the positive response respondents had to the questions regarding change

of habits to incorporate recycling into waste management in the city. Urban problems are unlikely to be solved without integrating social and physical aspects of the city, and this research shows that the local government will be supported by citizens if it implements better environmental strategies.

Urban Region Biosphere Reserve

Protected areas in the region need to be carefully planned with participation from the local population. Despite this being the country's most researched region, many actors believe more information is necessary before embarking on any decision making involving protected areas. Certainties are hard to reach when dealing with nature, especially when nature has already been altered by humans in more ways it could be possibly understood. Therefore, the region represents an ideal case to practice adaptive management. Objectives need to be clearly established, but flexibility should be a key characteristic of the management strategy. Moreover, conservation objectives should be very clearly *stated*, something that has not been done yet.

Experimentation needs to be taken to a management scale, and conservation management should become more opportunistic – we might need to work with protected areas located not necessarily according to preference, but on opportunities for access to the land, the presence of cooperative landowners and other factors not directly tied to conservation biology. Information on where to locate protected areas based in conservation biology is already provided by PROBIDES. Information on the areas of preference of Castellenses is included here, now the efforts have to focus on pragmatic approaches to biodiversity conservation. Doing so may mean that conservation efforts in

Uruguay can take advantage of the opportunities, and for once go beyond paper parks, so people will be able to see tangible results. According to the rangers of two local protected areas, such results would both surprise and engage visitors, and this would increase support among the population for protected areas.

Table C.1 Cross tabulation of questions: “How many times have you visited a protected area?” and “should humans and agriculture be part of a protected area?”			Humans and agriculture should be part of a protected area				Total
			Always	Sometimes	Exceptionally and with restrictions	Never	
Number of Visits to Protected Areas	Never	Count	36	42	15	13	106
		%	34%	39.6%	14.2%	12.3%	100%
	Once	Count	30	51	21	6	108
		%	27.8%	47.2%	19.4%	5.6%	100%
	2 or more	Count	25	33	50	10	118
		%	21.2%	28.0%	42.4%	8.5%	100%
	Total	Count	91	126	86	29	332
		%	27.4%	38.0%	25.9%	8.7%	100%
chi-square test							
		Value	Df				
Pearson chi-square		31.475	6				
Likelihood Ratio		30.932	6				

As table C.1 shows, there is a strong correlation (at the 0.001 significance level) between the number of visits to protected areas and the support for areas with little human involvement. This result is encouraging for environmental educators and demonstrates the importance of bringing protected areas to people, even when those do not have the highest value in conservation biology terms, in order to raise awareness of the conservation situation in Uruguay and support for protected areas.

Creating an Urban Region Biosphere Reserve in Castillos' area of influence would provide much needed support for conservation initiatives in the most ecosystem diverse region in Uruguay. For Castillos to become part of an urban biosphere reserve would represent the continuance of what was started in 1992 when it was declared the

Environmental Capital of Uruguay. For regional conservation efforts it would mean the establishment of a new alliance and a new approach to conservation. Castillos' location also makes it the ideal venue for research and conservation oriented operations. This has had excellent results for Casa Ambiental, an environmental NGO working in Castillos' area of influence. My perception after spending time in the area of study and in Castillos, is that Casa Ambiental, unlike PROBIDES, is respected and well known in Castillos and its rural surroundings. By having their offices in the city they were able to establish direct contacts with its citizens, many of which have engaged in some of the NGO's ongoing projects. Any conservation effort in the region would benefit widely from having its workplace in Castillos, as this would settle the project in the area, and increase people's interest and involvement. A vast majority of Castillenses believe Rochenses and local experts should be in charge of managing protected areas in the region – 60% believe Rochenses should be in charge and 34% believe local experts should be in charge. Location in Castillos would also help decentralise power from Montevideo and Rocha City, and provide a sense of a more regionally based proposal.

Having the city as the centre of the proposal will transform the city into what I define as *social core areas* for the Urban Region Biosphere Reserve. Biodiversity core areas are designed to protect certain territory, at the same time it is expected that this territory will then have a positive impact that will spread and benefit its less protected natural surroundings – e.g. species colonizing outside core area. A 'social core area' around Castillos could have a similar effect. It will help transform Castillos into a greener city as we stated above, but it would also spread its benefits to areas outside the social core area. Castillos has an important local culture to be conserved, and whatever is done

inside the city in terms of improving environmental education will not remain in the city but will spread around the area of influence. By placing special emphasis on both biodiversity core areas and social core areas, the human-nature dualism present in certain conservation strategies will hopefully vanish and the Urban Region Biosphere Reserve could be the stage for a real integration of humans and nature.

Despite all the benefits of Urban Region Biosphere Reserves outlined here, there could be associated complications. The precautions outlined by the Advisory Committee for Biosphere Reserves in 1998 (UNESCO 1998) are shared by some of the interviewees, especially those whose view of protected areas is strictly conservationist. One of the specific arguments expressed by the Committee is shared by an interviewee who warns about the confusion that would emerge regarding the objectives of protected areas if cities are included. This is so if one believes that (a) protected areas should be designed following established international precepts; (b) protected areas are there for the sole purpose of preserving nature; and (c) the best way to protect nature is by excluding humans. However, if protected areas are seen within a different framework, like in the Seville Strategy (UNESCO 1995) for example, this “confusion” might not occur, and integrating selected cities into selected protected areas for the creation of Urban Region Biosphere Reserves might in fact be informative about the objectives of protected areas, and bring shared benefits to the citizens and the natural areas. This new perception of protected areas in the Castillos’ area of influence, and particularly in Uruguay, could facilitate new alliances and will help overcome the boundary mentality that has prevailed, which is perhaps the main reason for the 2003 World Parks Congress’ topic: “Benefits Beyond Boundaries”.

One clear example of the potential of bringing benefits to both citizens and protected areas is the case of Castillos' creeks. Table 5.5 showed that 35.4% of the population believes contamination of the creeks is the main environmental problem. As described in Chapter 5, this problem also affects a protected area and an ecotourism farm located in the area. Moreover, figure 5.3 showed that Castillenses consider it important to preserve the city itself. Improving garbage disposal within the city – and in the dump as well – and restoring the creek, will bring benefits to both citizens and the protected area, and most importantly, the benefits of having restored creeks would be associated with the protected area status. Including a city creates “confusion” only if one believes that the goals of conservation exclude humans by definition. The benefits outlined above would not be achieved under a dualistic perspective of conservation objectives and management.

Another complication associated with the integration of cities and protected areas that a few interviewees mentioned is related to the management of the protected area. Four important points raised during the interviews are highlighted here.

- Castillos can become “green” without being included in a protected area. Why does Castillos need to be included in a protected area?
- It is harder to manage conflicts generated by conservation strategies when the managers have to deal with the many actors present in the city
- The administrators of the protected area will focus on urban concerns and leave conservation issues in second place
- The managers of protected areas will not have enough political power to influence decision making related to urban areas

Some of the opposing voices affirm that the city can become green without any need for it to be in the protected area. While this could be the case, greening the city in association with a conservation effort will reflect positively in conservation and will have an important environmental education component in local and regional citizens, and this in turn will affect citizens' behaviour in relation to local protected areas. So if the city is going to be "greened", why not help protected area managers while doing so? Moreover, the city can become green without being inside the protected area, but given the influence that Castillos has on its surrounding, can the protected area achieve its objectives without a positive interrelation with the city? Given the current lack of support from central government and the limited resources existent for protected area management, I conclude that protected areas in Castillos' area of influence will be much better off building local partnerships than depending on the national government to protect its limits. This is supported by the interest demonstrated by local political leaders in environmental issues, which surpasses that of national political actors, and by the attitudes Castillenses show towards environmental issues.

Management of the protected area might be easier without the inclusion of urban elements. However, in Castillos' area of influence, land is almost entirely held in private hands – "around here if you step and you do not sink, it is private land", said one of the interviewees, graphically describing land tenancy in the area. With a central government in financial crisis and not engaged in conservation, this means that there are not too many areas to be managed under traditional conservation approaches. In the two small reserves management has certainly not been easy. Of course one cannot discard one option if it has not been implemented yet, but under the current state of affairs in Uruguay, protected

area management will become more successful if it addresses both the benefits and problems of urban areas.

Linking conservation in the region with the greening and improvement of quality of life in Castillos might engage local landowners. Needless to say, these landowners will not donate their land for conservation, but if they perceive a different approach to conservation, the momentum for a more collaborative search for alternatives could arise. As stated above for the case of the palmar, conversations, discussions and brainstorming opportunities need to be created in order to get citizens and landowners engaged in the topic. This is clearly a monumental task, but only by working, networking, lobbying and getting truly involved in the regional social fabric will a manager be successful in overturning what has been the reality of conservation in the Castillos' area of influence. This is also the way to search for the new localized alternatives to conservation suggested in Chapter 4. Finally, even if consensus is achieved among local stakeholders, the administrative levels of the central government will present another difficult challenge.

During the interviews I asked interviewees which were the actors most likely to support or oppose protected areas. Interestingly, local producers were not identified as the main opponents, except for the case of large landowners and rice producers, which are large agribusinesses. Local medium landowners and NGOs, the local government (*intendencia*, or provincial), and many local private businesses were identified as actors that would support the creation of protected areas in the region. Much of the support from some of these actors is related to the expectations of ecotourism as a source of income generation and increase in the number of tourists attracted to the area. This perception is confirmed by the results of the survey presented above, which showed that associated

with the support for protected areas was the expectation of reserves being positive for development and job creation in the area. Another interesting response with regards to political dynamics is that the central government is not seen as one of the supporting actors, neither it is seen as an opposing one, but it is rather regarded as one who, due to its lack of interest in the topic, is negatively influencing the establishment of conservation policies. Again, the case of the palmar serves as an example. Conservation easements were suggested by the local government as an alternative for palmar conservation, but taxes are collected by the central government. An opportunity for this initiative to be practiced on private lands was shattered by bureaucracy – landowners could not overcome the colossal amount of paper work, walking from one public office to the other, misinformation, lack of support, etc – even though there was legislation in place that recognized this approach.

The final point related to the concerns showed by the interviewees relates to the political power that protected area managers will have to influence urban decisions. The composition of the management board of an Urban Region Biosphere Reserve is something that will need to be considered by local stakeholders. When designing the structure of the board every aspect related to the Urban Region Biosphere Reserve should be considered. This concern seems to contradict the preoccupation showed by other interviewees regarding urban concerns taking precedence over biological ones. If the objectives of the Castillos Urban Region Biosphere Reserve are clearly stated and the management board is adequately designed for the objectives, the political power to influence decisions in the urban area should be as important as the political power to influence decisions in the rest of the region. Moreover, support for this initiative is

stronger among local and municipal officials than among conservationists. Conservationists fears of a lack of influence on urban decisions are not compatible with the preoccupation of having too much emphasis on the city.

Castillos is a relatively small city, which makes its management easier to handle. However, the approach taken by UNESCO has been to focus on big urbanizations. Medium and small size cities are much more numerous and are important for regional development and conservation strategies (Drakakis-Smith 1995). At the same time, they constitute a manageable size for participatory approaches to planning. This case study suggests that more emphasis should be placed on small and medium size cities in the planning and implementation of Urban Biosphere Reserves. These cities provide a human scale in which citizens can still understand their political environment, their relation with surrounding areas and participate actively in urban and regional affairs (Bookchin 1995). While other urban biosphere reserve options could be applicable to mega-cities, the Urban Region Biosphere Reserve is ideal for small or medium sized cities in which the relation between city and countryside is not one of dominance and opposition but an open one.

Some of the concerns about Urban Biosphere Reserves raised by country representatives in the MAB Bureau Discussion (UNESCO 2003b) are easier to address if the focus is placed on small cities. The French representative stated that mega-cities are independent from the ecosystems in their immediate surroundings. This is not the case with many small cities in the south that still have important formal and informal interactions with their surroundings. The Czech representative stated that "we should be able to give a clear reply to them (citizens) what, what (sic) the concept, or what the

project of an Urban Demonstration Area will bring to them..." And the Japanese representative states: "if I consider the people in New York or other people in Tokyo, if they have any idea to get a merit from this designation of the Biosphere reserves in that areas?" Again, the scale of small cities makes participation, a crucial aspect in conservation and urban planning, less difficult, and communicating the goals and potential of Urban Biosphere Reserves would be much easier. Which takes me to the comment made by the chair with regards to the "cite" and the city. In small cities, the process of "citification" that enhances social communication has not yet been destroyed by that of "urbanization" (to use Bookchin's terms), therefore the social aspects that could improve communication and implementation of the Urban Biosphere Reserves project are one more advantage that small and medium size cities present.

Another important conclusion relates to current discussions in UNESCO's forums where it is suggested that Urban Biosphere Reserves should be considered as separate from Biosphere Reserves. Although urban areas can bring forward different issues, the Castillos case study suggests that relating Urban Biosphere Reserves to Biosphere Reserves can aid the objectives of Biosphere Reserves by modifying attitudes towards them. I am not advocating that this should be the case for every city to be considered as an Urban Biosphere Reserve. Flexibility should be retained and classification of different types of Biosphere Reserves is the key for flexibility, but in the case of an Urban Region Biosphere Reserves the argument for keeping them related to Biosphere Reserves is strong. The design of Urban Region Biosphere Reserves (see Chapter 2 and figure 2.1) places special emphasis on the connection of the urban area with its hinterland, as

discussed in the previous chapter, this would not be an appropriate category for megacities, which are detached from their local surroundings, but could work with small cities.

A proposal for the creation of a Castillos Urban Region Biosphere Reserve would have strong support in Castillos and Rocha. National, regional and local government officials see the proposal of including a city in a protected area as either positive or feasible. The major opposition will come from part of the conservation community that believes the inclusion of the city will have a negative impact on the management of the protected area involved. However, even some of those who opposed inclusion for these reasons believe that the proposal would have a positive educational impact. The environmental status of Castillos (presented above) constitutes at the same time a problem and an opportunity. The situation is serious in its relatively small scale, but solutions are quite straightforward. The opportunity lies in the possibility of producing relatively rapid change in the situation and influencing existing attitudes and perspectives towards conservation of biodiversity in the area. One crucial factor for the successful outcome of creating an Urban Region Biosphere Reserve lies in the ability of its managers to create an immediate and powerful impact in the city and the region. This is necessary to overcome the apathy existent in parts of the society due to the characteristics of past conservation initiatives. While little benefit would be obtained from excluding Castillos from the park borders, the construction of an Urban Region Biosphere Reserve in cooperation with Castillos shows significant potential for enhancing conservation initiatives in the area.

Conclusions

Most of the current literature no longer embraces the wilderness approach to conservation. However, conservation is still based on a dualistic view of the world, and the integration of humans into reserves is still discouraged by part of the literature (Rolston III 1991; Redford and Sanderson 2000; Terborgh 2000; Chicchon 2000). This thesis has shown that the integration of humans into protected areas sometimes can represent an important advantage for nature conservation, supporting the arguments of those who believe that particular communities can benefit nature conservation and that the protection of particular reserves should not endanger the health of entire ecosystems (Schwartzman et al 2000a; 2000b; Colchester 2000). Moreover, the Uruguayan case study shows that the application of protected areas in the country is highly unlikely, and that due to the persistence of a conservation discourse based on protected areas, the emergence of alternatives has been hindered.

Conservation policies without a focus on nature reserves should be seriously considered by the international conservation community. In addition, opportunities should be given to alternative approaches to conservation. The understanding of local circumstances is recognized as essential by conservationists, the conservation community should also embrace the fostering of locally designed initiatives for biodiversity conservation. Local perceptions of nature management or conservation might not always aid biodiversity conservation objectives set by conservationists, but finding points in common is essential in order to obtain good results in the field, particularly in those cases where the state does not have the resources to pursue conservation approaches based on boundaries and fences.

The incorporation of local perceptions of nature has been acknowledged by the conservationist community, mainly through the recognition of the importance of traditional ecological knowledge among indigenous peoples and to a certain extent local people. However, perceptions of nature, and particularly of reserves, held by government officials are usually in line with those of the international conservation community, by which they are informed. In this thesis I present evidence to suggest that perceptions of nature and reserves among decision makers in the central government agencies are far from homogeneous and that understanding these differences can hold the key to a successful approach to conservation. International conservation organizations should give the understanding of these perceptions appropriate priority in order to search for pragmatic conservation strategies that are in tune with local realities. Moreover, local community voices should continue being heard, but appropriate means for their ideas to be shared need to be provided. In order to receive attention and resources, local voices have had to adapt their discourse to the dominant one of international conservation organizations. It is important to provide new channels for local alternatives to be presented and assessed in order to find solutions to particular situations that do not fit the international conservation model.

In this thesis I take the integration of humans into protected areas a step further by suggesting that the inclusion of a city inside the core area of a biosphere reserve, or an urban region biosphere reserve, will aid conservation objectives. The common interest in Castillos' case study could be the restoration of the creeks. These are considered a priority by Castillenses, they are extremely important for urban ecology and they affect nearby protected areas. The literature dealing with the interface of conservation and

urban areas has usually focused on large urbanizations. I conclude that that changing the focus to small and medium size urban areas will ease many of the anxieties that large urbanizations stir on some conservationists. Urban areas, particularly small and medium size urban areas in the South, can retain connections to their surroundings that justify their inclusion in protected area planning. They also represent a more manageable starting point, and practical palpable examples of the value of integrating urban and conservation planning can be achieved and in turn experienced by urban citizens. This suggests that cities should at least be considered during the planning and establishment of protected areas.

Urban areas are unique in their concentration of population, and in many cases small cities have increased social interaction, but urban residents in small country side cities still retain strong connections to the local environment. Therefore, if all stakeholders are to be included in the planning process, national and international conservation organizations should understand urban residents' perceptions of nature and relationship with it, and include these cities in the planning and management of protected areas.

In terms of methodology, the combination of individual areas of preference maps and questions regarding respondents' conceptions of different landscapes provided valuable information regarding the perception of what needs to be protected, and most importantly, *why*.

Further research

A comparative analysis between Castillos and other cities of similar size in Uruguay could not be done for lack of resources. Other cities in Uruguay share many of the characteristics of Castillos, but it is not clear if they share the same interest in environmental issues and in the protection of their surroundings. Such an analysis could be important in the search for the origin of Castillos' distinctiveness in terms of its relationship with its surroundings, and would make a useful topic for future work. In addition, and in light of the results of the previous suggestion, comparative analysis of these cities and larger cities in Uruguay could provide important conclusions regarding the importance of scale for Urban Biosphere Reserves.

Focusing the analysis of nature perception on particular sectors of society could help understand the reasons behind the preferences for the protection of certain landscapes over others. Larger samples were needed for those whose infancies were spent on Coastal areas, and surveys could be conducted in Castillos surroundings in order to include people from Aguas Dulces – virtually a neighborhood of Castillos in the coastal area – and rural population. This analysis would also permit a comparative analysis between urban and rural populations in the Castillos area of influence, which could have important implications regarding the Urban Biosphere Reserves concept.

Further inter-relating the use of maps – as in the survey – with photo *rating* exercises may provide important clues regarding the use of these tools to research local understanding of their surroundings, and could be used to refine the methodology developed here.

The relation between urban centers, rural country sides, and protected areas will continue to demand the attention of those concerned with sustainability, and it will likely continue increasing its volume in the urban, conservation and rural literature. The Uruguayan and Castillos case studies may offer unique insights in this discussion.

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Appendix 1

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Appendix 2

Uruguay and the Environment

The objective of this appendix is to provide a glimpse of the main environmental topics discussed at the legislature level in Uruguay and the general areas of interest with regards to the environment and placing particular attention to protected areas.

Environmental Projects in Uruguay 1992

Figure A2.2: Shows the environmental related projects carried out in 1992 with international funding and/or by national and international organizations or NGOs. Built with information from: Instituto de Comunicacion y Desarrollo 1993.

Verbal depositions in both chambers

Figure A2.3: This graph shows verbal discussions related to the environment in both chambers in the 1990-1995 period.

Built with information from: Gudynas and Santandreu 1999

Topics Discussed in Environment Commissions of Both Chambers

Figure A2.4:

Each chamber has a Commission on the environment. This table shows the topics discussed in both Commissions during the 1990-1995 period:

Built with information from:
Gudynas and Santandreu 1999

Appendix 3

Complete Results of the Landscape Perception Ranking

This appendix includes all the results of the Landscape Perception Ranking. This study was part of the survey conducted in Castillos and included approximately 350 respondents. The respondents were shown two sets of landscapes and asked to rank them according to usefulness, naturalness, and fragility. By using photographs in the analysis of landscape perception the author wanted to obtain information on how Castellenses relate to the different ecosystems existent in the surroundings. This information could be valuable when planning and presenting proposals for future protected areas in Castillos' area of influence. The methodology and justification for this type of study is included in appendix D.

Most Fragile Side A

Sorted by Photograph number

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Wetland	40	123	163	70	34	104	11.4	35.1	46.5	21	9.7	29.7
2	Wetl. & Cavy	199	52	251	17	22	39	569	149	718	49	63	112
3	Wetl. & Cat	16	60	76	34	89	123	46	17.1	21.7	9.7	25.4	35.1
4	Rice Plant.	33	51	84	105	79	184	9.4	146	24	30	226	526
5	Grassl. & Cat	30	31	61	90	93	183	86	89	175	25.7	266	523

Sorted for Rank1

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
2	Wetl. & Cavy	199	52	251	17	22	39	569	149	718	49	63	112
1	Wetland	40	123	163	70	34	104	11.4	35.1	46.5	21	9.7	29.7
4	Rice Plant.	33	51	84	105	79	184	9.4	146	24	30	226	526
5	Grassl. & Cat	30	31	61	90	93	183	86	89	175	25.7	266	523
3	Wetl. & Cat	16	60	76	34	89	123	46	17.1	21.7	9.7	25.4	35.1

Sorted for Rank1+2

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
2	Wetl. & Cavy	199	52	251	17	22	39	569	149	718	49	63	112
1	Wetland	40	123	163	70	34	104	11.4	35.1	46.5	21	9.7	29.7
4	Rice Plant.	33	51	84	105	79	184	9.4	146	24	30	226	526
3	Wetl. & Cat	16	60	76	34	89	123	46	17.1	21.7	9.7	25.4	35.1
5	Grassl. & Cat	30	31	61	90	93	183	86	89	175	25.7	266	523

Sorted for Rank5

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
4	Rice Plant.	33	51	84	105	79	184	9.4	146	24	30	226	526
5	Grassl. & Cat	30	31	61	90	93	183	86	89	175	25.7	266	523
1	Wetland	40	123	163	70	34	104	11.4	35.1	46.5	21	9.7	29.7
3	Wetl. & Cat	16	60	76	34	89	123	46	17.1	21.7	9.7	25.4	35.1
2	Wetl. & Cavy	199	52	251	17	22	39	569	149	718	49	63	112

Sorted for Rank5+4

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
4	Rice Plant.	33	51	84	105	79	184	9.4	146	24	30	226	526
5	Grassl. & Cat	30	31	61	90	93	183	86	89	175	25.7	266	523
3	Wetl. & Cat	16	60	76	34	89	123	46	17.1	21.7	9.7	25.4	35.1
1	Wetland	40	123	163	70	34	104	11.4	35.1	46.5	21	9.7	29.7
2	Wetl. & Cavy	199	52	251	17	22	39	569	149	718	49	63	112

Most Useful Side B

Sorted by Photograph number

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Wetland	66	131	197	42	29	71	189	37.4	563	12	83	203
2	Wet. & Capy	177	81	258	9	24	33	506	23.1	737	26	69	95
3	Wet. & Cat	23	41	63	23	87	110	66	11.4	18	83	249	332
4	Rice Plant.	19	35	54	177	55	232	5.4	10	15.4	506	157	663
5	Grassl. & Cat	30	28	58	58	121	178	86	8	166	166	343	509

Sorted pr Rank1

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
2	Wet. & Capy	177	81	258	9	24	33	506	23.1	737	26	69	95
1	Wetland	66	131	197	42	29	71	189	37.4	563	12	83	203
5	Grassl. & Cat	30	28	58	58	121	178	86	8	166	166	343	509
3	Wet. & Cat	23	41	63	23	87	110	66	11.4	18	83	249	332
4	Rice Plant.	19	35	54	177	55	232	5.4	10	15.4	506	157	663

Sorted pr Rank1+2

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
2	Wet. & Capy	177	81	258	9	24	33	506	23.1	737	26	69	95
1	Wetland	66	131	197	42	29	71	189	37.4	563	12	83	203
3	Wet. & Cat	23	41	63	23	87	110	66	11.4	18	83	249	332
5	Grassl. & Cat	30	28	58	58	121	178	86	8	166	166	343	509
4	Rice Plant.	19	35	54	177	55	232	5.4	10	15.4	506	157	663

Sorted pr Rank5

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
4	Rice Plant.	19	35	54	177	55	232	5.4	10	15.4	506	157	663
5	Grassl. & Cat	30	28	58	58	121	178	86	8	166	166	343	509
1	Wetland	66	131	197	42	29	71	189	37.4	563	12	83	203
3	Wet. & Cat	23	41	63	23	87	110	66	11.4	18	83	249	332
2	Wet. & Capy	177	81	258	9	24	33	506	23.1	737	26	69	95

Sorted pr Rank5+4

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
4	Rice Plant.	19	35	54	177	55	232	5.4	10	15.4	506	157	663
5	Grassl. & Cat	30	28	58	58	121	178	86	8	166	166	343	509
3	Wet. & Cat	23	41	63	23	87	110	66	11.4	18	83	249	332
1	Wetland	66	131	197	42	29	71	189	37.4	563	12	83	203
2	Wet. & Capy	177	81	258	9	24	33	506	23.1	737	26	69	95

Most Useful Sub-A

Sorted by Photograph number

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Wetland	21	18	38	20	5	25	57	51	108	57	143	714
2	Wet. & Copy	47	40	87	32	123	160	134	114	248	91	369	123
3	Wet. & Cat	32	69	101	24	61	85	91	197	288	69	174	243
4	Rice Plant.	99	89	188	33	39	72	283	254	537	94	111	205
5	Grass. & Cat	121	101	221	28	38	66	343	289	632	8	109	189

Sorted for Rank1

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Grass. & Cat	121	101	221	28	38	66	343	289	632	8	109	189
4	Rice Plant.	99	89	188	33	39	72	283	254	537	94	111	205
2	Wet. & Copy	47	40	87	32	123	160	134	114	248	91	369	123
3	Wet. & Cat	32	69	101	24	61	85	91	197	288	69	174	243
1	Wetland	21	18	38	20	5	25	57	51	108	57	143	714

Sorted for Rank1+2

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Grass. & Cat	121	101	221	28	38	66	343	289	632	8	109	189
4	Rice Plant.	99	89	188	33	39	72	283	254	537	94	111	205
3	Wet. & Cat	32	69	101	24	61	85	91	197	288	69	174	243
2	Wet. & Copy	47	40	87	32	123	160	134	114	248	91	369	123
1	Wetland	21	18	38	20	5	25	57	51	108	57	143	714

Sorted for Rank5

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Wetland	21	18	38	20	5	25	57	51	108	57	143	714
4	Rice Plant.	99	89	188	33	39	72	283	254	537	94	111	205
2	Wet. & Copy	47	40	87	32	123	160	134	114	248	91	369	123
5	Grass. & Cat	121	101	221	28	38	66	343	289	632	8	109	189
3	Wet. & Cat	32	69	101	24	61	85	91	197	288	69	174	243

Sorted for Rank5+4

Nb	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Wetland	21	18	38	20	5	25	57	51	108	57	143	714
2	Wet. & Copy	47	40	87	32	123	160	134	114	248	91	369	123
3	Wet. & Cat	32	69	101	24	61	85	91	197	288	69	174	243
4	Rice Plant.	99	89	188	33	39	72	283	254	537	94	111	205
5	Grass. & Cat	121	101	221	28	38	66	343	289	632	8	109	189

Mist Hagle Side B

Sorted by Photograph number

Nº	Hcture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Palmar	115	75	190	35	33	68	329	214	543	10	94	194
2	Native Forc	84	111	195	30	35	65	24	317	557	86	10	186
3	Wetland	52	62	114	40	62	102	149	177	326	114	177	291
4	Grassland	21	26	46	105	121	226	57	74	131	30	346	646
5	Eucalyptus	48	44	92	108	67	175	137	126	263	309	191	50

Sorted por Rank1

Nº	Hcture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Palmar	115	75	190	35	33	68	329	214	543	10	94	194
2	Native Forc	84	111	195	30	35	65	24	317	557	86	10	186
3	Wetland	52	62	114	40	62	102	149	177	326	114	177	291
5	Palmar	48	44	92	108	67	175	137	126	263	309	191	50
4	Eucalyptus	21	26	46	105	121	226	57	74	131	30	346	646

Sorted por Rank1+2

Nº	Hcture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
2	Native Forc	84	111	195	30	35	65	24	317	557	86	10	186
1	Palmar	115	75	190	35	33	68	329	214	543	10	94	194
3	Wetland	52	62	114	40	62	102	149	177	326	114	177	291
5	Eucalyptus	48	44	92	108	67	175	137	126	263	309	191	50
4	Radaba	21	26	46	105	121	226	57	74	131	30	346	646

Sorted por Rank5

Nº	Hcture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Eucalyptus	48	44	92	108	67	175	137	126	263	309	191	50
4	Radaba	21	26	46	105	121	226	57	74	131	30	346	646
3	Wetland	52	62	114	40	62	102	149	177	326	114	177	291
1	Palmar	115	75	190	35	33	68	329	214	543	10	94	194
2	Native Forc	84	111	195	30	35	65	24	317	557	86	10	186

Sorted por Rank5+4

Nº	Hcture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
4	Radaba	21	26	46	105	121	226	57	74	131	30	346	646
5	Eucalyptus	48	44	92	108	67	175	137	126	263	309	191	50
3	Wetland	52	62	114	40	62	102	149	177	326	114	177	291
1	Palmar	115	75	190	35	33	68	329	214	543	10	94	194
2	Native Forc	84	111	195	30	35	65	24	317	557	86	10	186

Mst Nazal Side B

Sorted by Photograph number

No	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Palmar	13	101	24	10	16	21	397	289	686	29	46	75
2	Native Forc.	106	116	222	19	21	41	303	331	634	54	6	114
3	Wetland	48	51	98	33	42	75	137	143	28	94	12	214
4	Grassland	13	17	31	61	186	246	37	49	86	171	531	702
5	Eucalyptus	13	34	47	196	53	249	37	97	134	56	151	711

Sorted per Rank1

No	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Palmar	13	101	24	10	16	21	397	289	686	29	46	75
2	Native Forc.	106	116	222	19	21	41	303	331	634	54	6	114
3	Wetland	48	51	98	33	42	75	137	143	28	94	12	214
4	Grassland	13	17	31	61	186	246	37	49	86	171	531	702
5	Eucalyptus	13	34	47	196	53	249	37	97	134	56	151	711

Sorted per Rank1+2

No	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Palmar	13	101	24	10	16	21	397	289	686	29	46	75
2	Native Forc.	106	116	222	19	21	41	303	331	634	54	6	114
3	Wetland	48	51	98	33	42	75	137	143	28	94	12	214
5	Eucalyptus	13	34	47	196	53	249	37	97	134	56	151	711
4	Grassland	13	17	31	61	186	246	37	49	86	171	531	702

Sorted per Rank5

No	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Eucalyptus	13	34	47	196	53	249	37	97	134	56	151	711
4	Grassland	13	17	31	61	186	246	37	49	86	171	531	702
3	Wetland	48	51	98	33	42	75	137	143	28	94	12	214
2	Native Forc.	106	116	222	19	21	41	303	331	634	54	6	114
1	Palmar	13	101	24	10	16	21	397	289	686	29	46	75

Sorted per Rank5+4

No	Picture	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Eucalyptus	13	34	47	196	53	249	37	97	134	56	151	711
4	Grassland	13	17	31	61	186	246	37	49	86	171	531	702
3	Wetland	48	51	98	33	42	75	137	143	28	94	12	214
2	Native Forc.	106	116	222	19	21	41	303	331	634	54	6	114
1	Palmar	13	101	24	10	16	21	397	289	686	29	46	75

Most Useful Sub-B

Sorted by Photograph number

No	Hctue	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
1	Palmar	57	45	102	48	92	140	163	129	292	137	263	40
2	Native Foxe	26	62	88	31	81	110	74	178	252	86	229	31.5
3	Wetland	15	31	46	100	61	221	43	86	129	457	171	628
4	Grassland	76	98	169	37	62	99	217	266	483	106	177	283
5	Eucalyptus	144	86	230	42	23	65	411	246	657	12	66	186

Sorted for Rank1

No	Hctue	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Eucalyptus	144	86	230	42	23	65	411	246	657	12	66	186
4	Grassland	76	98	169	37	62	99	217	266	483	106	177	283
1	Palmar	57	45	102	48	92	140	163	129	292	137	263	40
2	Native Foxe	26	62	88	31	81	110	74	178	252	86	229	31.5
3	Wetland	15	31	46	100	61	221	43	86	129	457	171	628

Sorted for Rank1+2

No	Hctue	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
5	Eucalyptus	144	86	230	42	23	65	411	246	657	12	66	186
4	Grassland	76	98	169	37	62	99	217	266	483	106	177	283
1	Palmar	57	45	102	48	92	140	163	129	292	137	263	40
2	Native Foxe	26	62	88	31	81	110	74	178	252	86	229	31.5
3	Wetland	15	31	46	100	61	221	43	86	129	457	171	628

Sorted for Rank5

No	Hctue	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
3	Wetland	15	31	46	100	61	221	43	86	129	457	171	628
1	Palmar	57	45	102	48	92	140	163	129	292	137	263	40
5	Eucalyptus	144	86	230	42	23	65	411	246	657	12	66	186
4	Grassland	76	98	169	37	62	99	217	266	483	106	177	283
2	Native Foxe	26	62	88	31	81	110	74	178	252	86	229	31.5

Sorted for Rank5+4

No	Hctue	Count						Percentage					
		Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4	Rank1	Rank2	Rank1+2	Rank5	Rank4	Rank5+4
3	Wetland	15	31	46	100	61	221	43	86	129	457	171	628
1	Palmar	57	45	102	48	92	140	163	129	292	137	263	40
2	Native Foxe	26	62	88	31	81	110	74	178	252	86	229	31.5
4	Grassland	76	98	169	37	62	99	217	266	483	106	177	283
5	Eucalyptus	144	86	230	42	23	65	411	246	657	12	66	186

Appendix 4

Survey

A copy of the survey is included in its original language in this section. Appendix 5 shows the results for each question – translated to English. The survey was conducted during the month of August 2003 in the City of Castillos with help from the Grupo de Jovenes de Casa Ambiental, the youth group of a local NGO.

Encuestador:_____ Zona:_____

Manzana No _____ Numero de encuesta:_____

Edad:_____ Sexo:_____

Número de integrantes de su hogar _____

Entrada mensual aproximada para el grupo familiar _____

Ocupación: _____

Educación: A) Primaria B) Secundaria C) Terciaria

1) Dónde paso su infancia?

- A. Medio Rural
- B. Urbano
- C. Costa
- D. Montevideo o Capital Departamental

2) En los últimos años vivió/vive en el medio rural?

- A. No
- B. 1 año
- C. Entre 1 año y 7 años
- D. Mas de 7 años

3) Las áreas protegidas son áreas destinadas a la protección de la naturaleza. En estas áreas por lo general no se permiten las producciones humanas (Ej. Ganadería) y cuando se permiten es con restricciones. Algunos ejemplos locales son El Potrerillo, El Monte de Ombues o Don Bosco. Visito algún área protegida en Uruguay en los dos últimos años?

- A. Una vez. Cual? _____
- B. Dos o más áreas diferentes. Mencione una _____
- C. Ninguna

4) Tener áreas protegidas en Rocha es

- A. Muy malo
- B. Malo

- C. Bueno
- D. Muy Bueno
- 5) Las áreas protegidas en las que el ser humano no puede ingresar bajo ningún concepto son el mejor método para proteger la naturaleza. Esta usted:
- A. Totalmente en desacuerdo
- B. Parcialmente de acuerdo
- C. Totalmente de acuerdo
- D. No opina
- 6) Las áreas protegidas favorecen el desarrollo local en la zona de Castillos. Esta usted:
- A. Totalmente en desacuerdo
- B. Parcialmente de acuerdo
- C. Totalmente de acuerdo
- D. No opina
- 7) Quien se preocupa mas por la naturaleza en Rocha
- A. Los técnicos
- B. Los Rochenses
- C. Los extranjeros
- D. Los partidos políticos
- 8) En los dos últimos años, visito las lagunas Negra y/o Castillos
- A. Una vez
- B. Dos a cuatro veces
- C. Mas de cuatro veces
- D. Nunca
- 9) En una escala de 1 a 10 (1 poco importante, 10 extremadamente importante), cuan importante es para usted el proteger estas lagunas de los usos humanos?
- 1 2 3 4 5 6 7 8 9 10
-
- 10) En una escala de 1 a 10, cuan importante es proteger de los usos humanos los bañados que rodean las lagunas y la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

11) En una escala de 1 a 10, cuan importante es para usted el proteger de los usos humanos la fauna y flora que rodean estas lagunas y la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

12) En una escala de 1 a 10, cuan importante es para usted el proteger de los usos humanos los palmares situados en la zona de estas lagunas y de la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

13) En una escala de 1 a 10, cuan importante es para usted el proteger de los usos humanos las praderas que rodean estas lagunas y la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

14) En una escala de 1 a 10 (1 no están en peligro 10 están muy en peligro), cuan en peligro están estas lagunas?

1 2 3 4 5 6 7 8 9 10

15) En una escala de 1 a 10, cuan en peligro están los bañados que de la zona de las lagunas y de la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

16) En una escala de 1 a 10, cuan en peligro están la fauna y flora que rodean estas lagunas y la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

17) En una escala de 1 a 10, cuan en peligro están los palmares situados en la zona de estas lagunas y la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

18) En una escala de 1 a 10, cuan en peligro están las praderas que rodean estas lagunas y la zona de Castillos?

1 2 3 4 5 6 7 8 9 10

19) Hay otros lugares u aspectos más importantes a proteger en los alrededores de Castillos? Nombre hasta 3 **por orden de importancia**.

_____ / _____ /

20) Que porcentaje de Rocha debería ser área protegida sin ningún uso humano?

- A. 0%
- B. hasta un 10%
- C. entre un 10 y un 20%
- D. entre un 20 y un 50%

21) Debe prohibirse cazar en un área protegida

- A. Totalmente en desacuerdo
- B. Parcialmente de acuerdo
- C. Totalmente de acuerdo
- D. No opina

22) Debe prohibirse pescar en un área protegida

- A. Totalmente en desacuerdo
- B. Parcialmente de acuerdo
- C. Totalmente de acuerdo
- D. No opina

EN ESTAS 4 PREGUNTAS DIGAME LO PRIMERO QUE LE VENGA A LA MENTE

23) Cuál es el lugar más natural de Rocha? _____

24) Cuál es el lugar más útil de Rocha? _____

25) Cuál es el lugar más feo de Rocha? _____

26) Cuál es el lugar más hermoso de Rocha? _____

27) La actividad agropecuaria en Rocha es perjudicial para el medio ambiente. Esta usted

- A. Totalmente en desacuerdo
- B. Parcialmente de acuerdo
- C. Totalmente de acuerdo
- D. No opina

- 28) Castillos merece el título de "Capital del Medio Ambiente"
- A. Totalmente en desacuerdo
 - B. Si, pero debe mejorar
 - C. Totalmente de acuerdo
 - D. No opina
- 29) Debería prohibirse la caza alrededor de Castillos y de las lagunas Negra y Castillos
- A. Totalmente en desacuerdo
 - B. Parcialmente de acuerdo
 - C. Totalmente de acuerdo
 - D. No opina
- 30) Cual es el principal problema ambiental de la ciudad de Castillos
- A. Los plásticos
 - B. La contaminación de las cañadas
 - C. El basurero local
 - D. Otro _____
- 31) Las ciudades de Rocha son perjudiciales para el medio ambiente. Esta usted
- A. Totalmente en desacuerdo
 - B. Parcialmente de acuerdo
 - C. Totalmente de acuerdo
 - D. No opina
- 32) El humano y sus actividades como la agropecuaria deben ser parte de las áreas protegidas
- A. Siempre
 - B. Algunas veces
 - C. Solo en casos excepcionales y con muchas restricciones
 - D. Nunca

33) Poner mas áreas protegidas en la zona de Castillos es bueno para la creación de empleos

- A. Totalmente en desacuerdo
- B. Parcialmente de acuerdo
- C. Totalmente de acuerdo
- D. No opina

34) Estaría dispuesto/a a separar los envases plásticos en su casa a fin de colaborar con que Castillos sea verdaderamente Capital del Medio Ambiente.

- A. No
- B. Quizás
- C. Sí
- D. No opina

35) Visito alguna vez el basurero de la ciudad de Castillos?

- A. No
- B. Si hace menos de un año
- C. Si hace mas de un año

36) Aceptaría sacar la basura 2 o 3 veces por semana en lugar de todos los días si eso mejora la calidad ambiental de Castillos?

- A. No
- B. Quizás
- C. Si
- D. No opina

37) Observa estos paisajes y ordénalos **de mas a menos**. Cual le parece mas...

UTIL

FRAGIL

NATURAL

A

_____ //// _____ //// _____

UTIL

FRÁGIL

NATURAL

B

_____ //// _____ //// _____

38) Cree usted que la distribución de los tachos de basura en Castillos es

- A. Muy buena
- B. Hacen falta mas
- C. Muy mala
- D. Los tachos deben eliminarse

39) La protección de la naturaleza en Rocha debe estar a cargo de

- A. Los Políticos
- B. Los Técnicos Extranjeros
- C. Los Ciudadanos de Rocha
- D. Los Técnicos Nacionales

40) Por favor dibuje en este mapa cuales son las áreas en las que considera mas importante proteger la naturaleza

Appendix 5

Survey Results

The results of the survey are included in this appendix. Question 19 of the survey is not included because the results were too heterogeneous to provide any meaningful information and it would take too much space. Question 37 A and B is part of the Landscape Perception Analysis and is included in appendix C. Finally, question 40 is the map of areas of preference for conservation provided in the text and a few more maps are provided in appendix D.

Question 1. Where did you spend your infancy?

Statistics

Infancy location

N	Valid	350
	Missing	0
Mode		2

Infancy location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Coast	18	5.1	5.1	5.1
	Montevideo or Rocha City	19	5.4	5.4	10.6
	Rural area	93	26.6	26.6	37.1
	Urban area	220	62.9	62.9	100.0
	Total	350	100.0	100.0	

Infancy location

Infancy location

Question 2. In the last years did you leave in the Rural Area?

Statistics

Recent Years in Rural area

N	Valid	319
	Missing	31
Mode		1

Recent Years in Rural area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 year	9	2.6	2.8	2.8
	1 - 7 years	14	4.0	4.4	7.2
	7 years or more	27	7.7	8.5	15.7
	No	269	76.9	84.3	100.0
	Total	319	91.1	100.0	
Missing	System	31	8.9		
Total		350	100.0		

Recent Years in Rural area

Recent Years in Rural area

Question 3. Protected Areas are areas dedicated to the protection of nature. In these areas human production are generally not allowed or allowed with restrictions. Some local examples are El Potrerillo, El Monte de Ombues o Don Bosco. Have you visited a protected area in Uruguay in the last 2 years?

Statistics

Number of visits to PA

N	Valid	338
	Missing	12
Mode		2

Number of visits to PA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once	109	31.1	32.2	32.2
	Never	109	31.1	32.2	64.5
	Twice or more	120	34.3	35.5	100.0
	Total	338	96.6	100.0	
Missing	System	12	3.4		
Total		350	100.0		

Number of visits to PA

Number of visits to PA

Question 4. Having protected areas in Rocha is:

Statistics

Having PAs in Rocha is

N	Valid	349
	Missing	1
Mode		4

Having PAs in Rocha is

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very bad	3	.9	.9	.9
	Bad	11	3.1	3.2	4.0
	Good	140	40.0	40.1	44.1
	Very good	195	55.7	55.9	100.0
	Total	349	99.7	100.0	
Missing	System	1	.3		
Total		350	100.0		

Having PAs in Rocha is

Having PAs in Rocha is

Question 5. Protected areas in which humans cannot enter under any circumstances are the best method to protect nature. Are you:

Statistics

PA only for Nature protection

N	Valid	349
	Missing	1
Mode		3

PA only for Nature protection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	40	11.4	11.5	11.5
	Partially disagree	75	21.4	21.5	33.0
	Totally agree	188	53.7	53.9	86.8
	No opinion	46	13.1	13.2	100.0
	Total	349	99.7	100.0	
Missing	9	1	.3		
Total		350	100.0		

PA only for Nature protection

PA only for Nature protection

Question 6. Protected Areas favour local development in the Castillos area. Do you:

Statistics

PA enhance Local Dev

N	Valid	348
	Missing	2
Mode		3

PA enhance Local Dev

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally agree	216	61.7	62.1	62.1
	Partially agree	65	18.6	18.7	80.7
	No opinion	51	14.6	14.7	95.4
	Totally disagree	16	4.6	4.6	100.0
	Total	348	99.4	100.0	
Missing	System	2	.6		
Total		350	100.0		

PA enhance Local Dev

PA enhance Local Dev

Question 7. Who cares about nature in Rocha?

Statistics

Who cares about N

N	Valid	331
	Missing	19
Mode		2

Who cares about N

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Political Parties	10	2.9	3.0	3.0
	Foreigners	50	14.3	15.1	18.1
	Experts	83	23.7	25.1	43.2
	Rochenses	188	53.7	56.8	100.0
	Total	331	94.6	100.0	
Missing	System	19	5.4		
Total		350	100.0		

Who cares about N

Who cares about N

Question 8. How many times did you visit lagunas Negra and/or Castillos in the last two years?

Statistics

How many visits to lagoons?

N	Valid	347
	Missing	3
Mode		1

How many visits to lagoons?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once	105	30.0	30.3	30.3
	Two - Four times	87	24.9	25.1	55.3
	More than four times	81	23.1	23.3	78.7
	Never	74	21.1	21.3	100.0
	Total	347	99.1	100.0	
Missing	System	3	.9		
Total		350	100.0		

How many visits to lagoons?

How many visits to lagoons?

Graph Questions 9 to 13 (Mean) **Graph Questions 14 to 18 (Mean)**

Question 20. What percentage of Rocha should be PA with no human use?

Statistics

Percentage of Rocha as PA

N	Valid	337
	Missing	13
Mode		4

Percentage of Rocha as PA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0%	21	6.0	6.2	6.2
	Up to 10%	68	19.4	20.2	26.4
	10% to 20%	120	34.3	35.6	62.0
	20% to 50%	128	36.6	38.0	100.0
	Total	337	96.3	100.0	
Missing	System	13	3.7		
Total		350	100.0		

Percentage of Rocha as PA

Percentage of Rocha as PA

Question 21. Hunting should be banned in a Protected Area

Statistics

Hunting should be banned in a PA

N	Valid	347
	Missing	3
Mode		3

Hunting should be banned in a PA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	24	6.9	6.9	6.9
	Partially agree	22	6.3	6.3	13.3
	Totally agree	279	79.7	80.4	93.7
	No opinion	22	6.3	6.3	100.0
	Total	347	99.1	100.0	
Missing	System	3	.9		
Total		350	100.0		

Hunting should be banned in a PA

Hunting should be banned in a PA

Question 22. Fishing should be banned in a Protected Area

Statistics

Fishing should be banned in a PA

N	Valid	347
	Missing	3
Mode		3

Fishing should be banned in a PA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	64	18.3	18.4	18.4
	Partially agree	42	12.0	12.1	30.5
	Totally agree	222	63.4	64.0	94.5
	No opinion	19	5.4	5.5	100.0
	Total	347	99.1	100.0	
Missing	System	3	.9		
Total		350	100.0		

Fishing should be banned in a PA

Fishing should be banned in a PA

Questions 23 to 26. Most natural, useful, ugly, beautiful place in Rocha

Statistics

		Most natural place	most useful place	most ugly place	most beautiful place
N	Valid	350	350	350	350
	Missing	0	0	0	0

Frequency Table

Most natural place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Palmares	41	11.7	11.7	11.7
	Don Bosco	34	9.7	9.7	21.4
	Monte Ombues	33	9.4	9.4	30.9
	z	31	8.9	8.9	39.7
	Polonio	29	8.3	8.3	48.0
	Playa	23	6.6	6.6	54.6
	Castillos	15	4.3	4.3	58.9
	Laguna negra	13	3.7	3.7	62.6
	Fortaleza	12	3.4	3.4	66.0
	Lagunas	11	3.1	3.1	69.1
	Agua Dulce	10	2.9	2.9	72.0
	Laguna Castillos	9	2.6	2.6	74.6
	Campo	8	2.3	2.3	76.9
	Punta Diablo	7	2.0	2.0	78.9
	Monte Nativo	7	2.0	2.0	80.9
	Potrillo	6	1.7	1.7	82.6
	Valizas	6	1.7	1.7	84.3
	Sierra Lechiguana	6	1.7	1.7	86.0
	Barra Valizas	5	1.4	1.4	87.4
	Guardia del Monte	3	.9	.9	88.3
	Cerro de los rocha	3	.9	.9	89.1
	La Coronilla	3	.9	.9	90.0
	Santa teresa	3	.9	.9	90.9
	Cueva del tigre	3	.9	.9	91.7
	Banado del Indio	2	.6	.6	92.3
	Sierras	2	.6	.6	92.9
		2	.6	.6	93.4
	Cerro Oratorio	2	.6	.6	94.0
	Banados	2	.6	.6	94.6
	Dunas	2	.6	.6	95.1
	Sierra San Miguel	1	.3	.3	95.4
	Los moros	1	.3	.3	95.7
	Chuy	1	.3	.3	96.0
	La Esmeralda	1	.3	.3	96.3
	Velazques	1	.3	.3	96.6
	Alrededores	1	.3	.3	96.9
	Cascadas	1	.3	.3	97.1
	Todo	1	.3	.3	97.4
	Serrania	1	.3	.3	97.7
	Las Dunas	1	.3	.3	98.0
	Laguna de Rocha	1	.3	.3	98.3
	Mar	1	.3	.3	98.6
	Isla del Padre	1	.3	.3	98.9
	Isla Negra	1	.3	.3	99.1
	La Paloma	1	.3	.3	99.4
	Puerto Botes	1	.3	.3	99.7
	Cerro la Virgen	1	.3	.3	100.0
	Total	350	100.0	100.0	

most useful place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Playa	97	27.7	27.7	27.7
	z	49	14.0	14.0	41.7
	Campo	45	12.9	12.9	54.6
	Cabo Polonio	17	4.9	4.9	59.4
	Castillos	13	3.7	3.7	63.1
	Palmares	10	2.9	2.9	66.0
	Lagunas	9	2.6	2.6	68.6
	La Paloma	8	2.3	2.3	70.9
	Agua Dulce	7	2.0	2.0	72.9
	Balnearios	7	2.0	2.0	74.9
	Rocha	6	1.7	1.7	76.6
	Santa Teresa	5	1.4	1.4	78.0
	Ciudades	4	1.1	1.1	79.1
	Fortaleza	4	1.1	1.1	80.3
	Chuy	4	1.1	1.1	81.4
	Todo	3	.9	.9	82.3
	Don Bosco	3	.9	.9	83.1
	Bosque Ombues	3	.9	.9	84.0
	La Coronilla	3	.9	.9	84.9
	Monte Ombues	3	.9	.9	85.7
	Barra Valizas	2	.6	.6	86.3
	Estancias	2	.6	.6	86.9
	Pradera	2	.6	.6	87.4
	Centros estudiantiles	2	.6	.6	88.0
	Hospital	2	.6	.6	88.6
		2	.6	.6	89.1
	Arenas negras	2	.6	.6	89.7
	Estancias turisticas	2	.6	.6	90.3
	Rural Areas	2	.6	.6	90.9
	Puerto La Paloma	2	.6	.6	91.4
	Punta Diablo	2	.6	.6	92.0
	Zoo	2	.6	.6	92.6
	Montes	2	.6	.6	93.1
	Guardia del monte	1	.3	.3	93.4
	Valizas	1	.3	.3	93.7
	Arroyo Balizas	1	.3	.3	94.0
	Fauna y Flora	1	.3	.3	94.3
	Costa Cebollati	1	.3	.3	94.6
	Laguna Castillos	1	.3	.3	94.9
	Mar	1	.3	.3	95.1
	Cerro Pensadores	1	.3	.3	95.4
	Laguna negra	1	.3	.3	95.7
	Laguna de rocha	1	.3	.3	96.0
	Banados	1	.3	.3	96.3
	Su Casa	1	.3	.3	96.6
	Zona Rural	1	.3	.3	96.9
	Agricultura	1	.3	.3	97.1
	Chacras	1	.3	.3	97.4
	represa	1	.3	.3	97.7
	La pedrera	1	.3	.3	98.0
	Montes Eucaliptus	1	.3	.3	98.3
	Oceano	1	.3	.3	98.6
	Museos	1	.3	.3	98.9
	Campana	1	.3	.3	99.1
	Potreriillo	1	.3	.3	99.4
	La esmeralda	1	.3	.3	99.7
	Cantera India Muerta	1	.3	.3	100.0
	Total	350	100.0	100.0	

most ugly place

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid z	122	34.9	34.9	34.9
Rocha	48	13.7	13.7	48.6
Dumps	40	11.4	11.4	60.0
Castillos	28	8.0	8.0	68.0
Chuy	18	5.1	5.1	73.1
19 de Abril	12	3.4	3.4	76.6
Aguas Dulces	10	2.9	2.9	79.4
Streets Castillos	8	2.3	2.3	81.7
Velazques	7	2.0	2.0	83.7
La Coronilla	7	2.0	2.0	85.7
Ciudades	7	2.0	2.0	87.7
Campo	5	1.4	1.4	89.1
Valizas	5	1.4	1.4	90.6
	4	1.1	1.1	91.7
Barra Valizas	4	1.1	1.1	92.9
La paloma	3	.9	.9	93.7
Lascano	3	.9	.9	94.6
Plaza Rocha	2	.6	.6	95.1
Cebollati	2	.6	.6	95.7
Cabo Polonio	2	.6	.6	96.3
Banados	2	.6	.6	96.9
Wetlands	1	.3	.3	97.1
18 de julio	1	.3	.3	97.4
Laguna Merin	1	.3	.3	97.7
Frontera	1	.3	.3	98.0
Esmeralda	1	.3	.3	98.3
Canal andreoni	1	.3	.3	98.6
Barrios	1	.3	.3	98.9
Rutas	1	.3	.3	99.1
Muros	1	.3	.3	99.4
Banados india muerta	1	.3	.3	99.7
Cementerio	1	.3	.3	100.0
Total	350	100.0	100.0	

most beautiful place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Castillos	41	11.7	11.7	11.7
	z	38	10.9	10.9	22.6
	Playa	36	10.3	10.3	32.9
	Polonio	36	10.3	10.3	43.1
	Punta Diablo	29	8.3	8.3	51.4
	Agua Dulce	29	8.3	8.3	59.7
	Fortaleza	22	6.3	6.3	66.0
	Todo	13	3.7	3.7	69.7
	Santa Teresa	10	2.9	2.9	72.6
	La Paloma	9	2.6	2.6	75.1
	Don Bosco	9	2.6	2.6	77.7
	Palmares	9	2.6	2.6	80.3
	Rocha City	6	1.7	1.7	82.0
	Barra De Valizas	6	1.7	1.7	83.7
	Laguna Negra	5	1.4	1.4	85.1
	Monte ombues	5	1.4	1.4	86.6
	Lagunas	5	1.4	1.4	88.0
	Campo	4	1.1	1.1	89.1
	Alrededores	4	1.1	1.1	90.3
	Zona Castillos	4	1.1	1.1	91.4
	Sierras	3	.9	.9	92.3
	La Pedrera	3	.9	.9	93.1
	Chuy	2	.6	.6	93.7
	Camino del Indio	2	.6	.6	94.3
	Plaza	2	.6	.6	94.9
	La Coronilla	2	.6	.6	95.4
	Paisajes	1	.3	.3	95.7
	Represa India Muerta	1	.3	.3	96.0
	Banados	1	.3	.3	96.3
	Cerro oratorio	1	.3	.3	96.6
	Sierra lechiguana	1	.3	.3	96.9
	Dunas	1	.3	.3	97.1
	Monte Indigena	1	.3	.3	97.4
	Puerto	1	.3	.3	97.7
	Potreriillo	1	.3	.3	98.0
	Laguna	1	.3	.3	98.3
	A. Valiza	1	.3	.3	98.6
	valizas	1	.3	.3	98.9
	Mi casa	1	.3	.3	99.1
	Centro	1	.3	.3	99.4
	Cerro Verde	1	.3	.3	99.7
	Zoo	1	.3	.3	100.0
	Total	350	100.0	100.0	

Bar Chart

most ugly place

most beautiful place

Question 27. "Agropecuaria" activities in Rocha are bad for the environment.

Statistics

Agri-food production is bad for env

N	Valid	347
	Missing	3
Mode		1

Agri-food production is bad for env

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	125	35.7	36.0	36.0
	Partially agree	96	27.4	27.7	63.7
	Totally agree	71	20.3	20.5	84.1
	No opinion	55	15.7	15.9	100.0
	Total	347	99.1	100.0	
Missing	System	3	.9		
Total		350	100.0		

Agri-food production is bad for env

Agri-food production is bad for env

Question 28. Castillos deserves the "Environmental Capital" title

Statistics

Castillos deserves title

N	Valid	348
	Missing	2
Mode		2

Castillos deserves title

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	35	10.0	10.1	10.1
	Yes, but it has to improve	271	77.4	77.9	87.9
	Totally agree	30	8.6	8.6	96.6
	No opinion	12	3.4	3.4	100.0
	Total	348	99.4	100.0	
Missing	System	2	.6		
Total		350	100.0		

Castillos deserves title

Castillos deserves title

Question 29. Hunting should be banned around Castillos and the Negra and Castillos Lagoon

Statistics

Hunting should be banned around lagoons

N	Valid	348
	Missing	2
Mode		3

Hunting should be banned around lagoons

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	33	9.4	9.5	9.5
	Partially agree	73	20.9	21.0	30.5
	Totally agree	228	65.1	65.5	96.0
	No opinion	14	4.0	4.0	100.0
	Total	348	99.4	100.0	
Missing	System	2	.6		
Total		350	100.0		

Hunting should be banned around lagoons

Hunting should be banned around lagoons

Question 30. Which is the main environmental problem in Castillos?

Statistics

Worst env problem in Castillos is

N	Valid	302
	Missing	48
Mode		2

Worst env problem in Castillos is

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Plastics	30	8.6	9.9	9.9
	Other	37	10.6	12.3	22.2
	Local Dump	111	31.7	36.8	58.9
	Creeks Contamination	124	35.4	41.1	100.0
	Total	302	86.3	100.0	
Missing	System	48	13.7		
Total		350	100.0		

Worst env problem in Castillos is

Worst env problem in Castillos is

Question 31. Cities in Rocha are bad for the Environment.

Statistics

Rocha cities are bad for env

N	Valid	343
	Missing	7
Mode		1

Rocha cities are bad for env

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	117	33.4	34.1	34.1
	Partially agree	108	30.9	31.5	65.6
	Totally agree	49	14.0	14.3	79.9
	No opinion	69	19.7	20.1	100.0
	Total	343	98.0	100.0	
Missing	System	7	2.0		
Total		350	100.0		

Rocha cities are bad for env

Rocha cities are bad for env

Question 32. Humans and their activities part of PA

Statistics

Humans and agriculture should part of PA

N	Valid	342
	Missing	8
Mode		2

Humans and agriculture should part of PA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	95	27.1	27.8	27.8
	Sometimes	129	36.9	37.7	65.5
	Exceptionally and with restrictions	89	25.4	26.0	91.5
	Never	29	8.3	8.5	100.0
	Total	342	97.7	100.0	
Missing	System	8	2.3		
Total		350	100.0		

Humans and agriculture should part of PA

Humans and agriculture should part of PA

Question 33. More PA in the Castillos area will be good for job creation.

Statistics

More PA create jobs

N	Valid	344
	Missing	6
Mode		3

More PA create jobs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	25	7.1	7.3	7.3
	Partially agree	64	18.3	18.6	25.9
	Totally agree	238	68.0	69.2	95.1
	No opinion	17	4.9	4.9	100.0
	Total	344	98.3	100.0	
Missing	System	6	1.7		
Total		350	100.0		

More PA create jobs

More PA create jobs

Question 34. Are you willing to separate plastics in your house to help Castillos be the Environmental Capital?

Statistics

Would you recycle

N	Valid	345
	Missing	5
Mode		3

Would you recycle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	2.6	2.6	2.6
	Maybe	32	9.1	9.3	11.9
	Yes	295	84.3	85.5	97.4
	No opinion	9	2.6	2.6	100.0
	Total	345	98.6	100.0	
Missing	System	5	1.4		
Total		350	100.0		

Would you recycle

Would you recycle

Question 35. Have you seen Castillos' dump?

Statistics

Have you seen dump?

N	Valid	346
	Missing	4
Mode		2

Have you seen dump?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	108	30.9	31.2	31.2
	Less than a year ago	134	38.3	38.7	69.9
	More than a year ago	103	29.4	29.8	99.7
	4	1	.3	.3	100.0
	Total	346	98.9	100.0	
Missing	System	4	1.1		
Total		350	100.0		

Have you seen dump?

Have you seen dump?

Question 36. Would you take the garbage out less times a week if this improves environmental quality in Castillos?

Statistics

Garbage 2-3 times a week

N	Valid	346
	Missing	4
Mode		3

Garbage 2-3 times a week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	33	9.4	9.5	9.5
	Maybe	24	6.9	6.9	16.5
	Yes	276	78.9	79.8	96.2
	No opinion	13	3.7	3.8	100.0
	Total	346	98.9	100.0	
Missing	System	4	1.1		
Total		350	100.0		

Garbage 2-3 times a week

Garbage 2-3 times a week

Question 38. You think the garbage cans distribution in Castillos is.

Statistics

Garbage cans in Castillos are

N	Valid	340
	Missing	10
Mode		2

Garbage cans in Castillos are

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very good	25	7.1	7.4	7.4
	Need more	253	72.3	74.4	81.8
	Very bad	44	12.6	12.9	94.7
	Cans should be eliminated	18	5.1	5.3	100.0
	Total	340	97.1	100.0	
Missing	System	10	2.9		
Total		350	100.0		

Garbage cans in Castillos are

Garbage cans in Castillos are

Question 39. Who should be in charge of the protection of nature in Rocha?

Statistics

Who should be in charge of protection of N

N	Valid	332
	Missing	18
Mode		3

Who should be in charge of protection of N

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Politicians	4	1.1	1.2	1.2
	Foreign experts	16	4.6	4.8	6.0
	Local experts	112	32.0	33.7	39.8
	Rochenses	200	57.1	60.2	100.0
	Total	332	94.9	100.0	
Missing	System	18	5.1		
Total		350	100.0		

Who should be in charge of protection of N

Who should be in charge of protection of N