

Private Reserves in Brazil

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Introduction

In the past 30 years, there has been a growing concern about the role of the private sector in contributing to *in situ* conservation of natural resources. The main factors propelling it are the inadequate quality of governmental protection of protected natural areas, well known as “paper parks,” (i.e., parks and natural reserves that are created by law but are not implemented on the ground), the increasing rate of habitat loss (and biodiversity) of tropical forests and the finding that about 90% of important ecosystems worldwide remain vulnerable (Langholz 1996; Morsello 2008). Although throughout the world privately owned protected areas are proliferating, there are still few studies about them. According to Langholz and Lassoie (2001) the nascent private reserve literature has thus far relied on site-specific case studies, for example the Monteverde Cloudforest Preserve in Costa Rica (Alyward et al. 1994) and international mail surveys addressing private parks’ management and activities, problems, economics, and other attributes in Latin America and Sub-Saharan Africa (Alderman 1994, Langholz 1996; Mesquita 1999). Only recently have scholars given attention to the role that private reserves play in a broader conservation policy at national (Langholz and Lassoie 2001; Environmental Law Institute 2003) and at regional levels (Mesquita 2004a; Cegana 2005; Costa 2006).

In Brazil, the idea of including to the civil society as active participants in the national efforts to conserve natural resources first appeared in 1977, after a land owner from Rio Grande do Sul State (South Region of Brazil) claimed official recognition and protection of his private

natural area in face of pressures suffered from hunters. Despite several other claims since this particular event, only in 1990 was a better legal mechanism defined for privately owned protected areas – the RPPN (*Reservas Particulares do Patrimônio Nacional*) - to satisfy land owners who wanted to perpetuate the conservation of their natural areas with public recognition. Since this decree establishing RPPNs, 856 RPPNs were created encompassing approximately 627,596.19 ha in the entire country (CNRPPN 2010), creating one of the best systems for permanently protected private reserves in Latin America according to the Environmental Law Institute (2003).

In the early 2000s, the private reserve increased its importance and role in the Brazilian conservation arena. In 2003, a pool of national and international NGOs, the Alliance for the Conservation of Atlantic Forest – *Aliança para Conservação da Mata Atlântica* (SOS Mata Atlântica in partnership with Conservation International and, since 2006, with The Nature Conservancy) - created a program that provides direct financing for landowners – the Incentive Program for the RPPN in the Atlantic Forest, which was the first non-governmental economic incentive program to support private reserves established in Brazil. At the same time, the Alliance for the Conservation of Atlantic Forest was also responsible for supporting several studies on private reserves in the Brazilian Atlantic Forest Biome¹ (Mesquita 2004a; Costa, 2006; SOS Mata Atlântica 2007 for example). In addition there are a few other studies (Mesquita and Viera 2004; Mesquita 2004b; Ojidos and Rizzieri 2009), theses and dissertations (Mendonça 2004; Cegana 2005; Machado 2007; Morsello 2008) conducted about private reserves mainly in this highly threatened and fragmented Rain Forest ecosystem.

¹The Brazilian Atlantic Forest is one of the most threatened tropical forest ecosystems in the world, home to over 20,000 plant species and hundreds of animal species, many of which are endemic. In addition, the *status* of conservation of a large numbers of Atlantic Rain Forest's species (flora and fauna) is still precarious (SOS Mata Atlântica 2007).

Therefore, the overall goal of this literature review is to evaluate how scholars are addressing the most efficient ways to implement private reserves in Brazil, including the significance of private reserves, landowners' motivations, and improvements needed to increase the effectiveness of RPPN as a conservation tool. The ultimate goal is to provide an overview of how the topic of private reserves in Brazil has been addressed in order to be able to propose a possible broader approach to further understand/study it.

This literature review is divided into four sections: 1) a brief historical context of the passage of the RPPN law in Brazil, 2) a discussion of the international literature on private reserves (Alderman 1994; Langholz 1996; Mesquita 1999; and Langholz and Lassoie 2001), 3) a discussion of private reserves in Brazil (Environmental Law Institute 2003; Mesquita and Viera 2004; Mesquita 2004a; Mesquita 2004b; Mendonça 2004; Cegana 2005; Costa, 2006; SOS Mata Atlântica 2007; Machado 2007; Morsello 2008; Ojidos and Rizzieri 2009), followed up with a final considerations section.

Brief Historical Context of RPPN

In Brazil, environmental conservation by means of creation and implementation of protected areas, especially national and state parks, reserves, and ecological stations, has been the major approach adopted by policy makers for the protection of the environment within a context of irrational use of natural resources by the Brazilian development model. Therefore the main goal for establishing protected areas by the Federal and State governments was to constrain the degradation of natural resources, especially in the Atlantic Forest Biome. In the 1990s, strongly influenced and supported by NGOs, civil organization groups started to demand new legal forms of protected areas, which resulted in the implementation of a new approach to achieve

conservation on private lands: Federal Law 98.914/1990. This law recognizes the creation of private reserves – RPPNs by landowners, who *voluntarily* decide to preserve and conserve their natural areas, thus allowing the civil society to participate actively in the protection of national resources. For the first time in the Brazilian history the State shared with the civil society the possibility of creating and managing protected areas (Wiedmann 2001). Since then, the government (federal, state and municipal levels) is not the only entity responsible for the protection of the national natural resources. This law makes it possible to include and open other possibilities of management of natural resources by landowners, since it allows the creation and use of the RPPNs for scientific investigation, visitation, recreation and educational objectives (e.g. ecotourism). In addition, another important aspect of the mechanism of protection of natural resources on private lands was the inclusion of the RPPN in the National System of Protected Areas (SNUC), established by federal law in 2000.

International Literature on Privately Owned Protected Areas

In the 1990s, several studies were carried out in order to understand and define the characteristics of privately owned protected areas. At that time, the more comprehensive studies were: Alderman 1994; Langholz 1996 and Mesquita 1999. These studies sought to understand how these private reserves have been managed, who are their owners, the area and the ecosystems they are protecting, how they are funded and what the owners think about the performance of their reserves based on the support and incentives they are receiving. In addition, these studies also aimed to define which factors contribute to the success of a private reserve in Latin America and Sub-Saharan Africa. Overall, the three researchers stressed the importance of private reserves as a *complementary* tool in the effort to conserve natural resources in face of the government failure to meet society's demand for nature conservation, the rising societal interest in

biodiversity conservation, and the explosion of ecotourism. The main motivations for the creation of private reserves were the desire to conserve natural resources, to protect ecosystems, to assure habitat for threatened species and to promote environmental education. Therefore, these scholars conclude that private reserves have been established as a result of conservation reasons, rather than personal or financial incentives. The main reported problems faced by landowners in all three studies were hunting, and lack of government cooperation and financial resources. While in the Aldermand and Langholz studies (1990 and 1993) financial problems were ranked third in importance, for Mesquita (1999) they represented the most critical factor impeding private reserves accomplish their ecological and social goals. The former studies pointed out that several private reserves draw their revenue from tourism more than other source while the latter study emphasized the necessity to implement new sources of credit (public and private) for private reserves in order to maintain them. It is important to notice that for these researchers private reserves also have an important *social role* as they can provide conservation education and employment for local communities.

It is important to notice that Aldermand and Langholz studies also emphasized the lack of official recognition of private reserves as one impeding factor for their creation. A factor which became irrelevant in the latter study due the establishment of governmental incentive programs for example, the RPPN in Brazil. Although these researchers claim that the strength of private reserves is their protection of biodiversity, comparing the results obtained by Alderman (1994), Langholz (1996) and Mesquita (1999) the average area of private reserves fell. The usual small size/area of these conservation units has been pointed out as the main weakness of this conservation model (Morselho 2008). For example, Alderman reported that 30 % of private reserves in Latin America covered fewer than 200 hectares, and Langholz reported 36% while

Mesquita reported about 49%. However, only Alderman (1994) and Mesquita (1999) presented the location of private reserves nearby or adjacent to a public protected area in Latin America. In Alderman's study about 46% of them bordered a public protected area while Mesquita found 57%, however, 38% of his sampled private reserves were further than 20 km from other larger public protected areas. In addition, the authors also recognized management plan as an essential tool to balance conservation and other activities (i.e., tourism, environmental education, etc.) within private reserves.

Langholz and Lassoie (2001) presented a detailed assessment of private reserves' role in national conservation strategy in Costa Rica, including their types, ownership patterns, social implications, objectives, and experience with governmental incentive programs. Their overall findings were similar to those presented above. The private sectors can provide a substantial supplement to a government's national conservation strategy and make an important contribution to biodiversity conservation and sustainable development. The important point here is that none of these scholars defined clearly the meaning of the words "biodiversity conservation", as pointed out by Kramer and van Schaik (1997:4): "biodiversity has come to represent ecological services and products (...) shift(ing) away from species protection to toward sustainable use." This definition opens up a broader range of possible approaches to conservation strategy that might not place biodiversity protection as the primary goal (as discussed by Chan et al. 2006; Peres and Zimmerman 2001; Terborgh and van Schaik 1997).

Brazilian Literature on RPPN

The literature on private reserves in Brazil focuses on a range of different goals such as the legal framework (Environmental Law Institute 2003), the criteria used for the selection of

private reserves (Morselho 2008), the assessment of private reserves at the regional level (Mesquita and Viera 2004; Mesquita 2004a; Cegana 2005; Costa 2006; Machado 2007) and on-site specific cases (Mendonça 2004), the available incentive mechanisms (Mesquita 2004b; Ojidos and Rizzieri 2009), and personal statements (SOS Mata Atlântica 2007). With few exceptions, most of the studies were carried out within the Atlantic Rain Forest Biome (Mesquita and Viera 2004; Mesquita 2004a; Cegana 2005; Costa, 2006; Machado 2007; SOS Mata Atlântica 2007). The Atlantic Forest Biome has been the focus of the most researches due to its importance as biodiversity hotspot as well as to the existence of incentive programs to support the creation of RPPNs by environmental NGOs working in this region, in addition to the state and national incentives. Although the goals of each study are slightly different; the main causal factors cited for the success and/or failure of RPPNs are similar, as I will show below. Another similarity among them, and also encountered at the international literature on the subject, is the fact that the literature do not present a clearly definition of “biodiversity conservation,” nor what it represents in each context.

In the following sections I will present the factors of success and failure behind the private reserve conservation strategy discussed by Brazilian researchers and studies cited above.

Significance of RPPNs

Besides the increase in public and national concern regarding environmental problems such as deforestation and loss of biodiversity, especially in the Amazon and the Atlantic Forest, there is a general consensus among Brazilian researchers and policy makers that protected areas are the central pillar for the development of national and regional strategies for biodiversity conservation. They also recognize that their effectiveness has been severely limited as most of

the public protected areas lack implementation on the ground. Therefore, privately owned protected areas are seen as a key factor to achieve long-term conservation in conjunction with public conservation areas, especially in the Atlantic Forest, where remaining forested areas that are important for conservation are under private ownership. The main reasons pointed out by these authors fall into three major categories: ecological, political-institutional and economic.

Ecological –Private reserves can augment the coverage of a national systems of public protected areas, directly conserve key sites of biological importance (endemic and endangered species), as well as strengthen the protection of large landscapes and public protected areas through buffer zones and conservation corridors. Although several authors recognized the weakness of the private reserve conservation model (i.e., size area limitation), a few researchers (Cegana 2005; Morselho 2008) argue in favor of more integrated ecological criteria in establishing private reserves. They stress the importance of considering *size* as well as *spatial location and distribution* in order to overcome the weakness of this conservation model.

Political-institutional –A few studies point out that government recognition of property as an official private reserve guarantees the security of the land as it justifies an adequate socio-economic use of private forested land (SOS Mata Atlântica, 2007; Environmental Law Institute, 2003). Overall the studies stress the importance of private reserves as an alternative solution to overcome the lack of funds, inefficient and unqualified staff, and lack of enforcement of environmental regulations by the State. In addition, private reserves are seen as a way to increase the area under protection without as many the political, social and economic costs.

Economics – It is well documented that more than 80% of the Brazilian Atlantic Forest territory is under private ownership. Therefore, private reserves are seen a conservation tool to

avoid expropriating lands by the State. Private reserves also save the State the costs associated with their management.

Landowners' motivations

Ecological - With one exception, the major motivation behind the creation of private protected areas by landowners cited by Brazilian literature is the willingness to participate in the protection of the national natural resources. For example, Cegana (2005) showed that 68% of landowners create their private reserves for conservation reasons. However, the study conducted by the SOS Mata Atlântica (2007) shows that emotional reasons (“romantic view” of natural resources) rather than environmental concern are the major reasons landowners decide to create RPPNs. Indeed, according to Morselho (2008) the creation of RPPN as a category of conservation unit reflects the desire for participation of groups interested in protect the environment as well as the new institutional and political arrangements necessary to incorporate these new actors.

Political- institutional – One important aspect of the mechanism of protection of natural resources was the inclusion of the RPPN in the National System of Protected Areas (SNUC) in 2000. For several authors the legal recognition of RPPN as a category of conservation unit increases the security of land tenure, e.g., protecting land property rights against challenges by different parties ranging from squatters to government (Environmental Law Institute 2003; Cegana 2005; SOS Mata Atlântica 2007).

Economic - Several studies also point out that government incentives, especially economic ones, are the most important tools in promoting the creation of these private reserves (Environmental Law Institute 2003; Mesquita 2004b; Costa 2006; Ojidos and Rizzieri 2009).

There are two main incentives: rural property tax breaks and *ICMS-Ecológico*. The most common financial incentive is an exemption from rural property tax for areas under official private land conservation programs. However, as these rural property taxes tend to be very low, this form of incentive has not been highly attractive to private landowners. In addition, some states use a portion of sales tax revenues for ecological purposes - *ICMS-Ecológico*. This unique tax incentive has been considered the main financial incentive to promote and support RPPNs in the entire country (Environmental Law Institute 2003; Mesquita 2004a; Mesquita 2004b; Cegana 2005; Costa 2006). The *ICMS-Ecológico* transfers state financial resources to compensate municipalities that had their development limited because of the existence of a Conservation Unit in their territory, and to support the conservation of their protected areas. The strength of this incentive is shown in Paraná State, where RPPN landowners have the possibility of obtaining financial resources to manage their protected areas using the resources of the *ICMS-Ecológico* of the municipality (Cegana 2005). Another economic incentive is preferential access to the National Environmental Fund – FNMA - although most private landowners lack the technical knowledge and support to develop a successful proposal. Besides the governmental incentives mentioned above, other important economic support programs have been created by environmental NGOs, for example the RPPN Incentive Program in the Atlantic Forest (SOS Mata Atlântica 2007).

Improvements needed to foster the effectiveness of RPPN

Ecological- Although there is a general consensus among researchers that RPPNs constitute an efficient category of conservation unity to the permanent protection of private forests, to biodiversity conservation and to the preservation of environmental quality, the lack of a Management Plan becomes an obstacle to reach the desirable conservation goals. Several

authors point out that this problem can compromise the long-term conservation of forest ecosystem, for example, Cegana (2005) shows that 89% of RPPN in the state of Paraná didn't implement their Management Plan. Therefore there is urgent need of support (technical and economic) from environmental government agencies as well as increase the participation of representatives of the scientific society and local communities in order to effectively implement private reserves. Machado (2007) found that conservation attitude of the owners does not correspond to the environmental quality of their reserves (e. g., presence of exotic and invasive species), although other studies such as Mesquita (2004a) and SOS Mata Atlântica (2007) present examples of private reserves with excellent status of conservation (i.e., high levels of fauna and flora diversity and endemic species). On the other side, Cegana (2005) and Machado (2007) warned about the lack of technical criteria in defining areas for creation of RPPNs generates degraded reserve as well as uneven distribution of conservation areas within ecosystems.

Political- institutional – The studies carried out in the beginning of the 1990 (Mesquita 2004a; Costa 2006) stressed the necessity in establishing incentive programs for RPPN at state level. They reported increasing in the number of private reserves and area under protection in the states that had established incentive programs for RPPN. For example, Paraná State was the first state implementing its own program in 1994, and since then, it is the state with the large number of RPPN in the entire country: 209 private reserves (CNRPPN 2010). Although up to now all the states had implemented their programs for RPPN there is still a need to continue strengthen the environmental governmental agencies in order to provide technical support and efficient enforcement of environmental regulation in conservation units (public and private). Likewise several authors point out the importance to strengthen the network of the private reserve at state

and national levels to promote the rights of private landowners and improve their ability to manage private reserves, as for example FREPESP (*Federação das Reservas Ecológicas Particulares do Estado de São Paulo*) in São Paulo State. Morselho (2008) is one of the few scholars that stress the necessity of an integrate conservation planning at regional level by the State in order to prioritize incentives for private reserve with unique attributes such as located near public conservation units and within a ecological corridor, and/or presence of endemic and endangered species.

Economics – Although most of reserves were created for conservationist purpose, the lack of resources and technical support are cited as main factors related with the failure of effective implementation of private reserves (i.e., lack of management plan). Thus all the authors pointed out the importance of economic incentives in promoting privately owned protected areas. Among them, tax revenues for ecological purposes - *ICMS-Ecológico* is considered the main financial incentive to promote and support RPPNs in the entire country. Mesquita (1994b) and Ojidos and Rizzieri (2009) present a list of economic alternatives and incentives for the RPPN owners to improve their ability in achieving conservation goal. These studies explore potential donors, some still little explored and other untried, in promoting and supporting private reserves in Brazil. These are the only studies with the goal to inform RPPN owners about options to generate economic gains in the reserve itself (e.g., ecotourism, payment for ecological services) as well as a list of programs and institutions that have promoted RPPNs (describing their main characteristics, approach, actions that can be supported, restrictions for applicants, deadlines and minimum requirements) in order to support them implementing and managing private reserves.

Further Considerations

Despite RPPNs' small size limitation, in Brazil, private reserves are seen as an important mechanism to promote the formation of ecological corridors and consequently to protect biodiversity and its ecological processes (e.g., purification of the air and water, water protection, and recreation) over time. However, the analysis of the scholars cited here lack biological information to guide forest conservation such as forest fragment size, shape, degree of isolation, location, context, habitat heterogeneity and community composition to explain/evaluate how and whether indeed these private reserves are protecting the biodiversity and its ecological processes as they claim. In fact, there is still a poor understanding of the effects (biological and socioeconomic) of landscape matrix on fragment dynamics in the Atlantic Rain Forest as well in relationship to extensive public protected areas. The vitality of conservation units system (public and private) also depends on the patterns of distribution of fragmented forests at the landscape level (Machado 2008), but so far, the available studies on RPPNs also lack data about their spatial distribution.

The incorporation of private landowners in conservation policy strategy is seen by several scholars cited here as a key factor to achieve long-term conservation, especially in the Atlantic Rain Forest. Although most of the studies emphasize that the economic incentives are the driving forces to stimulate the creation of private reserves; however, this factor is not enough to justify their creation. In fact, the creation of private reserve is due the voluntary will of landowners therefore landowners must be seen as active actor with their own demands rather than just passive actors reacting to incentive programs given by government and NGOs. Indeed, the future of these forested areas will largely depend on a good/strong understanding of how landowners perceive the value of forest fragments (understand the decision-making

processes by the landowners that lead to forested areas conservation) and, how effective government policies can create a more positive attitude toward forest fragments.

Overall, all the studies lacked to present an integrated theoretical human and environment interactions framework. So far the analysis in these several studies focused on the political-institutional or on the economic or on the ecological aspects of private reserves conservation model. Therefore there are still some gaps in the Brazilian literature on private reserves to be filling in.

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