



Natureza & Conservação

Brazilian Journal of Nature Conservation

Supported by Boticário Group Foundation for Nature Protection

<http://www.naturezaeconservacao.com.br>



Research Letters

Federal protected areas management strategies in Brazil: sustainable financing, staffing, and local development



Rafael Morais Chiaravalloti^{a,b,*}, Caroline Delelis^a, Cristina Tofoli^a,
Claudio Valladares Padua^a, Katia Torres Ribeiro^c, Gilceli Alves Menezes^c

^a Instituto de Pesquisas Ecológicas, Nazaré Paulista, SP, Brazil

^b University College London, London, United Kingdom

^c Instituto Chico Mendes de Biodiversidade, Brasília, DF, Brazil

ARTICLE INFO

Article history:

Received 8 April 2014

Accepted 5 May 2015

Available online 3 June 2015

Keywords:

Protected areas

Management

Partnerships

ABSTRACT

The leading response to environmental challenges has been the creation of protected areas, yet they constantly are jeopardized by problems of staffing, sustainable finance and local development. Documentation of alternative strategies that could enhance success of protected area management is still at a nascent stage. To evaluate such strategies we built an on-line questionnaire to be answered by all Federal protected areas in Brazil. Just 12.8% confirmed and explained the strategies sought. Partnerships seemed to underpin most strategies cited. We believe that the low percentage of managers seeking alternative strategies is a result of the increasing lack of a strong, coherent and comprehensive policy for protected areas in Brazil, which will only change if a new breakthrough on conservation policy is made.

© 2015 Associação Brasileira de Ciência Ecológica e Conservação. Published by Elsevier Editora Ltda. All rights reserved.

Introduction

Natural resources are under pressure worldwide; loss of biodiversity stands out (Pimm et al., 2014). The leading response to such challenge has been the creation of protected areas (PA). Today, worldwide, 15.4% of terrestrial and inland water areas and 3.4% of oceans are protected, covering a total of 20.6 million km² (Juffe-Bignoli et al., 2014). Brazil has the largest PA system in the world; currently, there are 1930 locally-termed as Conservation Units in Brazil that cover 1,513,366 km², which

represents 17.20% of terrestrial and inland water areas and 1.5% oceanic areas (Ministério do Meio Ambiente, 2015), and 585 Indigenous Lands that cover 1,131,211 km² which represents 13.2% of the Brazilian Territory (FUNAI, 2015).

However, while PAs are a well-established tool for biodiversity conservation, on the other hand, they face serious questions as to whether they meet their targets or not. There are several concerns, such as negative changes in conservation status through downsizing, downgrading and degazettement in recent years (Bernard et al., 2014), reduction in game populations inside National Parks (Ogutu et al., 2011) and overuse

* Corresponding author at: Instituto de Pesquisas Ecológicas, Nazaré Paulista, SP, Brazil.

E-mail address: chiaravalloti@ipe.org.br (R.M. Chiaravalloti).

<http://dx.doi.org/10.1016/j.ncon.2015.05.003>

1679-0073/© 2015 Associação Brasileira de Ciência Ecológica e Conservação. Published by Elsevier Editora Ltda. All rights reserved.

of natural resources of Sustainable Use PAs (Peres et al., 2003). This negative scenario raises the urgent need to establish the main struggles of PA management and identify strategies which could bring them closer to targets.

Analysis of effectiveness and its challenges can be used as a good indicator to better understand PA management difficulties. The most widespread of such analysis is the Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) (Ervin, 2003). In Brazil the methodology was applied twice in the federal PAs (2005–2006 and 2010). In the first one, Staffing emerged as the main struggle; in the second, Sustainable Finance was the main challenge (ICMBio and WWF-Brasil, 2015). These results show us that Staffing and Sustainable Finance need a great attention from managers, policy makers and other stakeholders to tackle conservation targets in PAs.

Although not directly addressed in the RAPPAM analysis, a third axis highly important to the effectiveness of PA is Local Development. Scholars have widely reported negative outcomes due to physical and economic displacement of local people imposed by the creation of PA (Adams and Hutton, 2007). Some argue that, to solve these problems, PA managers should seek participative approach and co-management with local communities (Homewood et al., 2013). Therefore, even though there are some contrary opinions (Soulé, 2013), Local Development is a theme that cannot be left out of such discussions.

While the main challenges are more or less understood, on the other hand, the strategies to solve them are not. Legally all PAs in Brazil need to have a management plan for the reserve and an Advisory Board and Deliberative Council set up. Be that as it may, the understanding of strategies being applied in day to day of PA management, the documentation of such achievements, and the key issues faced are still at a nascent stage (Kothari et al., 2013). Moreover, first, even though the literature present us with a variety of possible strategies to better manager a PA according to its specific goals, we do not have a clear idea as to whether it is possible to put them into practice in context of the Brazilian legal and bureaucratic reality. Secondly, although innovative strategies, whether by the adaptation of known strategies in new realities, or creation of new tools, might be applying in the day-to-day management of PAs, have yet to undergo systematic evaluation for the Brazilian Federal Protected Area System.

Therefore, our purpose was to understand alternative strategies of PA management regarding Staffing, Sustainable Finance and Local Development in federal PA answering the following questions: (1) What are the most commons alternative strategies of management brought to bear on these three main challenges; (2) Are there innovative ways of doing it? (3) Do managers of PA seek different alternative management strategies depending on the type of PA and their specific goals?

Material and methods

In order to answer our questions, we used an Internet questionnaire survey. The questionnaire was sent to all 312 Federal PAs in Brazil, and it was available to be answered

during 20 days (from July 27, 2012 until August 15, 2012). The questionnaire included closed questions to, first, understand patterns about fixed information (such as PAs' biome and type of category), and open-ended questions to get more broad descriptions of management strategies sought (Bernard, 2006). It was divided into three main blocks: staffing, Sustainable Finance, and Local Development (on-line supplementary material).

We used descriptive statistics to assess the number and frequency of answers. Then, we used content analysis to build categories of responses from the descriptive answers. These categories were set apart on a presence/absence table where we could visualize which mechanisms were sought by each PA. Table S1 clarifies all strategies and categories.

Working from on the presence/absence table of management strategies sought, we investigated whether certain PA types favor some strategies over others according to their goals or not. Thus, we considered each strategy as a variable and ordinated it using a Non-Metric Multidimensional Scaling (NMDS). We tested goodness of fit, first, through a Scree Plot of different stress values of models with one, two, three, four, and five dimensions (Wickelmaier, 2003). The results showed that two dimensions model had the best model fit; secondly, we built a Shepherd Diagram based on two dimensions model which showed a low points dispersion confirming its goodness of fit (Fig. S1). Using both the dimensions of the NMDS analysis as the dependent variables and the PA types as the independent variables, we applied a Multivariate Analysis of Variance using Pillai's Trace as a post hoc test to verify if the types and quantity of management strategies sought by PA of Sustainable Use and Strictly Protected were significantly different.

Results

We obtained 125 responses from Federal PAs in Brazil, representing 40% of the total. Just 40 (32%) of the 125 responses explained the alternative management tool applied, which represented 12.8% of the total federal PA in Brazil. Table 1 lists all the strategies, showing the total number and frequency of each one and Table S1 explains them.

The alternative management strategies sought by Strictly PAs and Sustainable Use PAs did not show a significant difference ($F=0.25$; $p=0.61$) (Fig. 1). Our results suggest that managers do not strengthen a group of strategies over another according to the type of Protected Area they are running.

Discussion

Different biomes and types of protection were roughly equally represented in our analysis. The distribution of Federal PA in our sample among the different biomes: Amazon, Atlantic Forest, Cerrado, Caatinga, Pantanal was 32%, 32.8%, 12%, 8%, and 0% respectively and the real distribution is 38.1%, 31.8%, 14.6%, 7.8%, and 0.06% (Ministério do Meio Ambiente, 2015) respectively on the same order. The percentage of PA of Sustainable Use and Strictly Use in our sample was 48% and 52% respectively; the real distribution is 55.3% and 44.6% respectively on the same order (Ministério do Meio Ambiente, 2015). We faced

Download English Version:

<https://daneshyari.com/en/article/4400825>

Download Persian Version:

<https://daneshyari.com/article/4400825>

[Daneshyari.com](https://daneshyari.com)