Policy Forums

Uneven conservation efforts compromise Brazil to meet the Target 11 of Convention on Biological Diversity

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Brazil is the most biodiverse country in the world. It performed an expansion of its Protected Areas system in order to better preserve nature and to accomplish international agreements, such as the Target 11 of the Convention on Biological Diversity, which establishes a minimum percentage of territorial coverage and adequate management of Protected Areas (PAs). We evaluated the achievement of those objectives by analyzing the distribution of Conservation Units (CUs), Indigenous Territories and other classes of PAs on Brazilian biomes, as well as their current management situation. The country is unlikely to meet the target due to the lack of PAs outside the Amazon biome and to poor CUs management conditions, whose main causes are the fragile financial situation of environmental agencies and the high costs of land tenure regularization. In addition to other environmental policies setbacks, the Brazilian environmental leadership is seriously threatened.

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Introduction

Protected Areas (PAs) are one of the main pillars of species conservation and ecosystem functions safeguard (Rodrigues et al., 2004). According to the Convention on Biological Diversity (CBD), a Protected Area is "a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives". In order to foster the effective protection of global natural heritage, the CBD has set 20 targets (Aichi Targets) in its Strategic Plan for Biodiversity 2011–2020. Aichi's Target 11 establishes that Protected Areas should cover 17% of terrestrial and inland water, and 10% of coastal and marine areas in all countries, while being ecologically representative, satisfactorily integrated into the wider land and seascapes, and managed in an effective and equitable way (CBD, 2017).

Brazil is a signatory of CBD and has set its own goals to meet Aichi Targets in one of the National Biodiversity Commission resolution (BRAZIL 2013). Such goals are even more ambitious than CBD's as they establish that 30% of the Amazon should be protected and each biome should individually meet 17%, while keeping the management statement. In order to accomplish it, Brazil considers the following PAs classes: Conservation Units (CUs), the main land use designation for environmental conservation in the country, corresponding to the classification of IUCN Protected Areas (classes I to VI); Permanent Preservation Areas (PPA), including riverside forest buffers, hilltops, high elevations and steep slopes; Legal Reserves (LR) which are part of rural properties whose native vegetation has to be maintained by the landowner, representing 80% of forested and 35% of savanna areas located in the Legal Amazon, and 20% of other ecosystems in Legal Amazon and regions of Brazil; and Indigenous Territories (ITs) containing native vegetation.

In the present study, we evaluated the Aichi's Target 11 achievement, in attendance of Brazil (2013), by: (1) analyzing the proportion of the Brazilian territory and its biomes covered by PAs – CUs, PPAs, LRs and ITs; (2) discussing the PAs effectiveness and main challenges for environmental protection; and (3) monitoring the CUs financial situation based on the available literature and data synthesis, including the liability of implementation and expansion of the entire CU system given the current political context.

Material and methods

In order to estimate the extent of Brazilian territory covered by CUs, we consulted the National Registry of Conservation Units (CNUC, 2017). We collected information on the area covered by federal, state, and municipal CUs in each of the six Brazilian biomes, in addition to coastal and marine areas, and recorded the kind of land and natural resources uses allowed (i.e., Sustainable Use CUs = IUCN categories IV, V and VI; Strict Protection CUs = IUCN categories I, II and III). Conservation Unit categories are detailed in Table 2. Coastal

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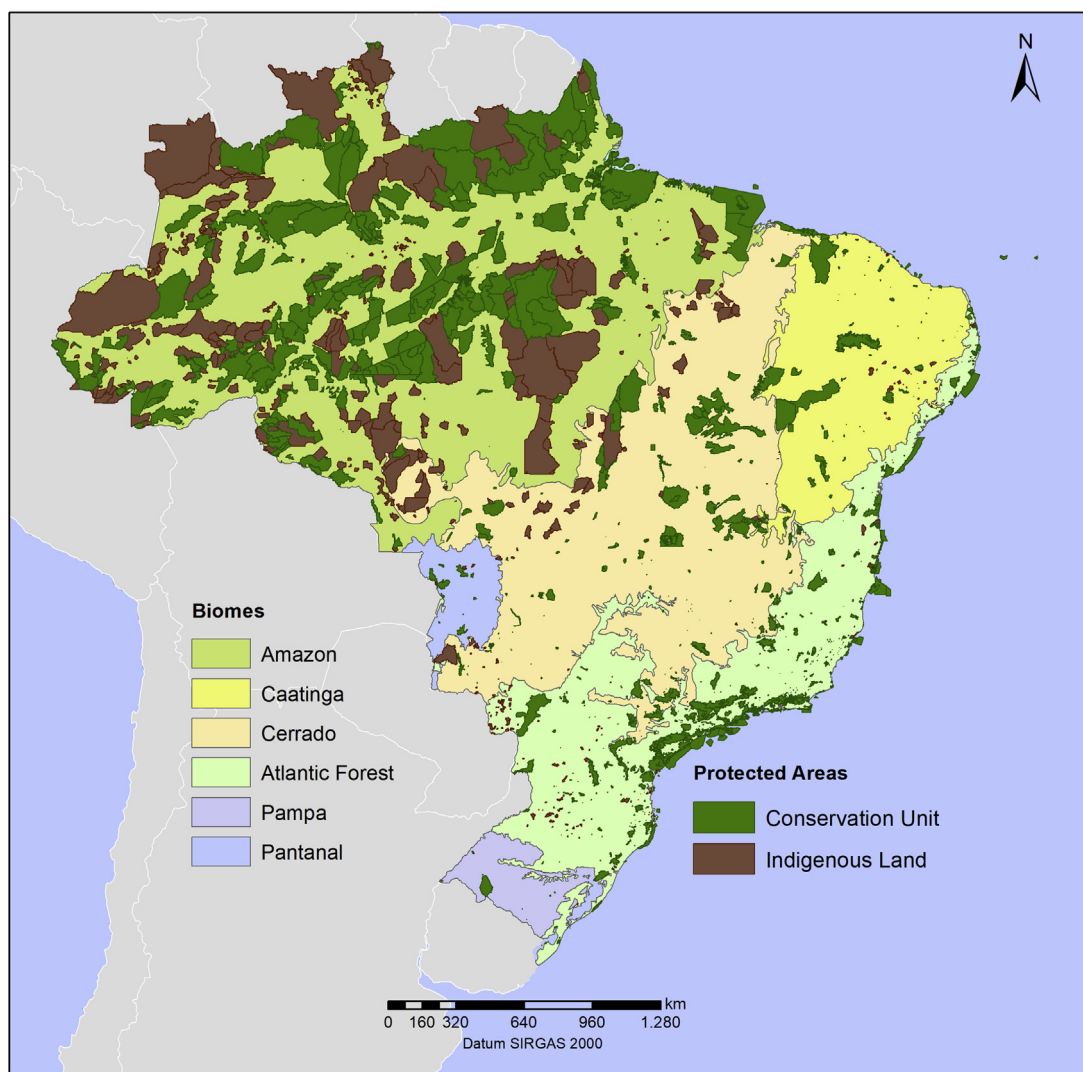*E-mail address:* andrearoeirap@gmail.com (A.A. Pacheco).

Fig. 1. Brazilian biomes and its coverage by current CUs and ITs.
Source: Brazilian Ministry of Environment database (http://mapas.mma.gov.br/i3geo/datadownload.htm). Elaboration: Alexandre Ferrazoli.

and marine ecosystems were evaluated as a single biome according to data arrangement in literature and to the methodology defined by the National Biodiversity Commission Resolution (Brazil, 2013). No information was found about the extension of PPAs and LRs coverage by biomes, and the most recent estimates were obtained from Sparovek et al. (2010) and Soares-Filho et al. (2014). Indigenous Territories coverage follows ISA (2017) and includes identified, delimited, demarcated and homologated ones, not counting areas under identification studies.

We analyzed five groups of indicators concerning management effectiveness of terrestrial CUs: (i) the existence of a Management Plan – a document that determines the management objectives, planned procedures and actions in the focal CU; (ii) existence of an Advisory Board – a group of representatives from the government and the society that deliberates and issues opinions on the CU, ensuring balanced decision making; (iii) human resources of CUs, including local workers and senior planning officials; (iv) land tenure regularization, i.e., a process that guarantees the land ownership by the national or local governments in some CUs categories and strongly influences the relationship with the surrounding populations and the execution of the management plan; and (v) the existence of adequate infrastructures and operational resources, related to the existence of equipment and financial assets

enabling the daily activities running. Data were obtained from Onaga and Drumond (2007), Brazil (2009), Muanis et al. (2009), Fonseca (2012), Rocha et al. (2010), Medeiros and Young (2011), Veríssimo et al. (2011) and TCU (2012).

The CUs financial situation has been analyzed based on the references previously mentioned, aside from the government expenditures and investment database (Portal da Transparência, 2015) and official data published in reports (Angelo and Magalhães, 2011; Bragança, 2013). All monetary values were calculated in Brazilian currency (Real), adjusted for inflation according to the IGP-M index (FGV), and then converted to US$ using the exchange rate of 1US$ = R$ 2.692 (January 2015).

Results

Territory coverage by Protected Areas

The distribution of ITs and CUs in each biome is presented in Fig. 1.

Altogether, the 2251 Brazilian CUs cover a total area of 1.54 million km² (Table 1).

The Amazon biome almost reaches the goal, with 27.7% of coverage (Table 1). The marine biome falls far short with the 10%