



Natureza & Conservação

Brazilian Journal of Nature Conservation

Supported by Boticário Group Foundation for Nature Protection

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



Policy Forums

Policy reversals do not bode well for conservation in Brazilian Amazonia

João Vitor Campos-Silva^{a,*}, Sinomar Ferreira da Fonseca Junior^b,
Carlos Augusto da Silva Peres^c

^a Departamento de Ecologia, Centro de Biociências, Universidade Federal do Rio Grande do Norte, Natal, RN 59072-970, Brazil

^b Environmental Consultant, Manaus-AM, Brazil

^c School of Environmental Sciences, University of East Anglia, Norwich Research Park, Norwich NR47TJ, UK

ARTICLE INFO

Article history:

Received 5 August 2015

Accepted 9 November 2015

Available online xxx

Conservation policy in Brazilian Amazonia

The Amazon basin represents nearly half of the world's remaining tropical forests (Hansen et al. 2013) and a large fraction of the terrestrial biodiversity. Due to a wealth of increasingly desirable above- and below-ground natural resources, the Amazon also represents a divisive development opportunity for South American countries. In practice, however, reconciling the Herculean challenges of implementing sustainable strategies for biodiversity conservation, poverty alleviation, and economic growth will determine the ultimate fate of the region. Here, we express concerns over two successful conservation and development strategies in the Brazilian Amazon over the last two decades involving the concomitant creation of a comprehensive system of protected areas and strengthening of the scientific and technical capacity to manage natural resources.

In 2000, the Brazilian government established the National Protected Areas System (SNUC), which was enshrined by the

new constitution. Currently, SNUC has consolidated a total of 1940 protected areas containing 1,513,828 km² of tropical forest, which represents 17.8% of Brazil's entire territory. Of this total, 205 are managed by municipal county agencies, 781 are protected areas managed by state government agencies, whereas the remaining 954 are managed by the federal government (MMA, 2015). Since 2006, indigenous and Quilombola (traditional communities of Afro-Brazilian descendants) territories were included as part of the National Plan for Protected Areas, which represents about one quarter of the Brazilian territory under non-private protection (PNAP, 2006). This is an area larger than France, Spain, Portugal, the United Kingdom, Italy and Germany combined.

This national protected area system represents the key frontline of deterrence against tropical deforestation, habitat degradation, and biodiversity loss (Bruner et al., 2001; Nepstad et al., 2006; Ricketts et al., 2010), and is often considered as the largest contributor to recently observed global scale declines in tropical forest loss (Hansen et al., 2013). The huge advances made over the last 15 years are undeniable, when Brazil gained

* Corresponding author.

E-mail address: jvpiedade@gmail.com (J.V. Campos-Silva).

<http://dx.doi.org/10.1016/j.ncon.2015.11.006>

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

a world leadership status in conservation (Ferreira et al., 2014). However, in the last few years, these hard-won conservation gains have been severely embattled by central-government environmental policy, particularly in the State of Amazonas, the largest subnational political unit in Brazil (155.9 million hectares), where >95% of the total area remains forested, ~51% of which within formal protected areas and indigenous territories (IMAZON, 2015).

It is widely known that in most cases the mere creation of a protected area on paper does not in itself ensure its long-term conservation. Most Amazonian protected areas have yet to be properly implemented through local investments in reserve personnel, infrastructure and securing land-tenure, so they remain at the mercy of encroachment by squatters, other economic interests, poaching and deforestation (Peres and Terborgh, 1995; WWF, 2012; Ferreira et al., 2013). For instance, 46.4% of all state protected areas within Amazonas have no management plans, but even if management plan guidelines are the first precondition to manage a protected area, they alone cannot ensure legal enforcement of reserve regulations. Moreover, overall human capacity to implement protected areas is wholly insufficient. Currently, only 27 full- or part-time staff are employed to manage the 42 state protected areas of Amazonas, representing only 0.65 employees per reserve, or a mean reserve area of 6966 km² under the watch of each full or part-time reserve manager. This situation is even worse when reserve personnel who are physically stationed at the state capital, rather than in situ, are excluded from this workforce. This would equate to only 16 reserve staff, representing only 0.38 employees per reserve or a mean forest reserve area of 11,756 km² per park manager.

Clearly, despite considerable conservation investments over the last two decades, Brazil remains at a cross-roads in implementing and consolidating its large network of protected areas on paper. While further governmental investments in science, surveillance technology, and human resources could lead low-governance regions like Amazonia to truly sustainable growth, most of the dividends from conservation investments over the last four decades could be lost if the current atmosphere of political neglect persists.

Another component of conservation management investments is scientific capacity and output. Over the last two decades the number of postgraduate students who are based at universities and research agencies within Brazilian Amazonia leaped from 214 to 2159 per year, representing an >1000% increase in capacity throughput. This is reflected in the growing number of papers published, from 471 to 2776 per year (SECTI, 2015). Sustainable natural resource exploitation and scientific development are inextricably linked. Moreover, many of these postgraduate students go on to work in research institutes, government agencies and NGOs, and continue to contribute to regional scientific development one way or another. Retaining proficient research and technical staff within Amazonia is critical, so government agencies should think strategically about continued career opportunities in regional job markets.

However, all recent hallmarks in government executive orders have rapidly drifted in the opposite direction, generating alarming concerns over the balance between conservation and unhinged development, at least in Amazonia. This

follows a series of policy swings, beginning with the controversial overhaul of the well established Forest Act (Metzger et al., 2010; Michalski et al., 2010). Recently, new political decisions implemented by the state government of Amazonas severely threaten the operational viability of the main agencies implementing conservation and natural resource management. First, the Science, Technology and Innovation Council (SECTI) was dissolved by the new state governor, which will severely damage scientific growth, since this agency funds much of the science investment throughout Amazonas.

Second, the Protected Area Management and Climate Change Agency was also dissolved under the watch of the State Department of the Environment and Sustainable Development. This massive cut in human resources can result in the collapse of the entire state protected area system since most of these PAs depend on state resources and are far from implemented. If human resources were insufficient prior to these cuts, they are now virtually non-existent. Overall investments in environmental management (including funding allocation to protected areas) were also cut off by 88%, and it is important to emphasize that these budget cuts will impair not only the upkeep of protected areas but all associated local collaborative management structures. In a scenario of meager investments becoming even scarcer, the state government will likely fail to honor collaborative management arrangements and contracts previously co-signed by conservation NGOs.

To make matters worse, the current government plans to link what is left of the conservation departments to the state Production Department. This is a Machiavellian strategy to eliminate the autonomy of the former, subordinating it to the economic demands of primary production, which are often diametrically opposite to the interests of forest and biodiversity conservation. Unfortunately these political blunders do not stop there. Indigenous reserves – which represent 27.3% of the state area – have also succumbed to the current wave of government proposals. There are loud rumors that the State Secretariat for Indigenous Peoples will also become subordinate to another department, which led to protests by indigenous leaders, due to their sudden loss of autonomy.

The government's simple justification is the wider context of budget cuts. However, beyond monetary issues, this reform reflects the operational paradigm of the Brazilian Federal Government: economic growth at any cost. In March 2015 the State government passed a new law (PL155/2015) effectively fast-tracking the licensing of large infrastructure projects without the scrutiny of federal environmental institutions. These institutions control the approval and installation of new large development projects, and the new law essentially provides a 'blank check' for large contracts to be rolled out to large construction companies operating in the Amazon. This is added to the fact that some 277 dams across the entire Brazilian Amazon basin have been earmarked for construction, which at the very least is highly questionable, not least because the costs of large dams on biodiversity and livelihoods of traditional peoples are prohibitive and still difficult to predict and quantify (Gunkel et al., 2003) given their overall environmental and biodiversity costs (Finer and Jenkins, 2012; Benchimol and Peres, 2015). There is also a clear government strategy to invest in

mining exploration in Amazonia, even within protected areas. In 2011, the central government created the State Department of Mining, Geodiversity and Water Resources (SEGEORH, whose main objective is to support the construction of large infrastructure and mining projects to promote regional economic growth. This is very alarming, because approximately one fifth of all strictly protected areas and indigenous reserves overlap officially sanctioned mining claims, representing an area of 315.6 km² under threat (Bernard et al., 2014; de Marques and Peres, 2015).

Moreover, if government plans are to cut costs, there is little justification for the strong increment in staff in the Governor's Office, which now has the highest number of employees ever recorded. There are more than 70 staff, 34 positions assigned to the direct assistance of the Office and 40 positions assigned to ceremonial duties (Diário Oficial, 2015). This means that the State of Amazonas has more employees to organize the annual calendar of solemnities of a single office than to support conservation and sustainable use of natural resources in the subnational political unit controlling the largest tropical forest area on Earth.

The government saga to instigate economic exploitation of Amazonian surface and underground resources, followed by the rapid dismantling of state-level conservation agencies suggest that Brazil is reaffirming its postmodern colonial condition, in which natural resources are exploited without proper planning and environmental restraints, often caving in to external demands, rather than regional socio-economic needs.

This sea-change in government attitudes to strategic planning has amounted to serious detrimental effects since 2008. Brazil has lost 12,400 km² of protected areas to degazetting, and an additional 31,700 km² to downsizing of forest reserves. Moreover, an additional 21,000 km² could be lost via these processes if new law proposals under discussion in the National Congress are sanctioned (Bernard et al., 2014; de Marques and Peres, 2015). Moreover, since last year Brazil has seen a 215% increase in deforestation, which partly reflects both legal and illegal clear-cutting in private landholdings in the aftermath of the controversial legislative reform to the Brazilian Forest Code (IMAZON, 2015).

Apparently, new governmental development trajectories no longer take into account the conservation of biological and cultural diversity. Thanks to a series of unwise policies forcefully fast-tracked by the federal executive under the questionable watch of President Dilma Rousseff, Brazil once again is entering a gloomy time for conservation in the Amazon. Active engagement in the political process by both the science community and civil society is therefore critically needed to veer off course from the worst collisions steamrolled by wanton disregard for the long term-future of natural resources, which after all is the bedrock of sustainable development.

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

- Benchimol, M., Peres, C.A., 2015. Widespread forest vertebrate extinctions induced by a mega hydroelectric dam in lowland Amazonia. *PLOS ONE* 10, 7, <http://dx.doi.org/10.1371/journal.pone.0129818>.
- Bernard, E., Pena, L.A.O., Araujo, E., 2014. Downgrading, downsizing, degazetting, and reclassification of protected areas in Brazil. *Conserv. Biol.*, 1–12, <http://dx.doi.org/10.1111/cobi.12298>.
- Bruner, A.G., et al., 2001. Effectiveness of parks in protecting tropical biodiversity. *Science* 291, 125–127, <http://dx.doi.org/10.1126/science.291.5501.125>.
- de Marques, A.A.B., Peres, C.A., 2015. Pervasive legal threats to protected areas in Brazil. *Oryx* 49 (01), 25–29, <http://dx.doi.org/10.1017/S0030605314000726>.
- Ferreira, A.J.M., et al., 2013. Relatório Conclusivo de Auditoria Operacional e Ambiental em Unidades de Conservação Estaduais do Amazonas. Tribunal de Contas do Estado do Amazonas, Available from http://www.tce.am.gov.br/portal/wp-content/uploads/relatorio_de_auditoria_operacional_e_ambiental_em_ucs.pdf (accessed 26.06.15).
- Ferreira, J., et al., 2014. Brazil's environmental leadership at risk. *Science* 346, 706–707.
- Finer, M., Jenkins, C.N., 2012. Proliferation of hydroelectric dams in the Andean Amazon and implications for Andes-Amazon connectivity. *PLoS ONE* 7 (4), e35126.
- Gunkel, G., et al., 2003. The environmental and operational impacts of Curuá-Una, a reservoir in the Amazon region of Pará, Brazil. *Lakes Reservoirs Res. Manage.* 8, 201–216, <http://dx.doi.org/10.1111/j.1440-1770.2003.00227.x>.
- Hansen, M.C., et al., 2013. High-resolution global maps of 21st-century forest cover change. *Science* 342, 850–853, <http://dx.doi.org/10.1126/science.1244693>.
- MAZON – Instituto do Homem e meio ambiente da Amazonia, 2015. Available from <http://amazon.org.br/> (accessed 26.06.15).
- Metzger, J.P., et al., 2010. Brazilian law: full speed in reverse? *Science* 329, 276–277, <http://dx.doi.org/10.1126/science.329.5989.276-b>.
- Michalski, F., Norris, D., Peres, C.A., 2010. No return from biodiversity loss. *Science (New York, NY)* 329 (5997), 1282.
- MMA – Ministério do Meio Ambiente, 2015. Available from http://www.mma.gov.br/images/arquivo/80112/CNUG_Categoria_Fevereiro_2015.pdf/ (accessed 26.06.15).
- Nepstad, D., et al., 2006. Inhibition of Amazon deforestation and fire by parks and indigenous lands. *Conserv. Biol.* 20, 65–73, <http://dx.doi.org/10.1111/j.1523-1739.2006.00351.x>.
- PNAP, 2006. Plano Estratégico Nacional de Áreas Protegidas. Decreto número 5.758.
- Peres, C.A., Terborgh, J.W., 1995. Amazonian nature reserves: an analysis of the defensibility status of existing conservation units and design criteria for the future. *Conserv. Biol.* 9, 34–46.
- Ricketts, T.H., et al., 2010. Indigenous lands, protected areas, and slowing climate change. *PLoS Biol.* 8, 1–4, <http://dx.doi.org/10.1371/journal.pbio.1000331>.
- SECTI – Secretaria do Estado de Ciencia Tecnologia e Inovação, 2015. Available from <http://www.cienciaempauta.am.gov.br/> (accessed 26.06.15).
- WWF and Instituto Chico Mendes de Conservação da Biodiversidade, 2012. Management Effectiveness of Brazilian Federal Protected Areas: Results of 2010, Available from <http://d3nehc6yl9qzo4.cloudfront.net/downloads/rappam-management-effectiveness-of-brazilian-federal-protected-areas.2010.results.pdf>.