

The future of Brazilian seas

Marine Scherer is an expert in integrated coastal management and executive secretary of the Brazilian Sea Forum. Alberto Lindner is an expert in marine ecology and conservation. Both are at the Universidade Federal de Santa Catarina, Brazil, and here discuss recent trends in marine and coastal science and policy in Brazil.

■ **What, in your view, are the top three priorities for the sustainable use of coastal and marine environments in Brazil?**

MS: Despite some improvement in coastal and marine management, Brazil still needs a strong focus on the basics, such as urban planning and sewage treatment. For example, coastal tourism is one of the main drivers of urban development, which leads to marine pollution, increased coastal vulnerability and ecosystem loss. Other important issues are fisheries and aquaculture, as well as the mining and oil and gas industries. The latter are scaling up fast, with impacts on marine areas (for example, oil spills) and coastal ones (for example, oil refinery plants). Ecosystem-based Marine Spatial Planning (MSP) and ecosystem-based adaptation need to become management priorities. Even though they are relatively new fields of research in Brazil, research groups working on these issues are growing, such as the ones based at the Coastal Oceanography Laboratory and on the Integrated Coastal Zone Management Laboratory, both at Universidade of Santa Catarina.

AL: In past decades, overfishing and coastal development have dramatically changed marine and coastal areas in the country. To foster sustainable fisheries, a first step will be to establish a national system of fishing reports and statistics. The little information available suggests that several fisheries are already depleted or over-exploited, but there are no rigorous catch statistics. In addition to sustainable coastal development through ecosystem-based management (EBM), we need to look offshore. The human footprint has extended to the deep sea and now is the right time to adopt precautionary measures to tackle potential threats from deep-sea mining and drilling to deep-sea and mesophytic ecosystems.

■ **The coastal and marine area protected in Brazil increased remarkably earlier this year. Some argue that critical ecosystems are left unprotected, or that more extension does not imply better protection if geographical targeting is inappropriate. What are the implications of these arguments for the optimism regarding this**

increased protection? What key areas are still unprotected?

MS: Most of the extension within Brazilian Marine Protected Areas (MPA), including those designated earlier this year, is categorized as 'multiple-use', meaning that human uses and activities are allowed. Besides, MPAs largely lack good and enforced management plans that delineate the zones that need total protection and those that are suitable for human activities (fishing, deep-sea mining, diving and so on). This is worrying because the most valuable ecosystems remain effectively unprotected. However, just two months ago, a new rule was released that restricts and regulates fisheries in these new MPAs, thanks to a joint initiative of the Brazilian Protected Areas Agency and the Brazilian Navy.

AL: The recent increase in MPAs in Brazil (from 1.5% to 25% of the Exclusive Economic Zone; EEZ) results from the establishment of just two new oceanic MPA systems (off Trindade Island and St Peter and St Paul Archipelago). Unfortunately, these do not fully protect key reef habitats. For example, most shallow reef habitats off Trindade Island, a site with endemic species and threatened by overfishing, are not part of the Trindade Island MPA and therefore remain unprotected. However, I am optimistic: the establishment of these new MPAs has fostered a long-needed discussion on the protection of oceanic habitats in Brazil. The design of these new MPAs did not take into account important scientific evidence, but it is a first step towards oceanic conservation that we can now build upon.

■ **A major concern in declaring protection figures is whether these new areas will run with sufficient resources and capacity. What are the prospects regarding management and conservation effectiveness of these new MPAs?**

MS: The lack of human and financial resources for protected areas in Brazil is intensified within MPAs, especially those far from the coast where monitoring is much more expensive and challenging.

AL: Success stories such as that of the Atol das Rocas Marine Reserve, established in 1979, show that it is possible to effectively protect oceanic ecosystems



Marinez Scherer. Credit: Walter Widmer

off the coast of Brazil. The new MPAs off Trindade Island and St Peter and St Paul Archipelago are much larger than Atol das Rocas. Therefore, successful management and conservation will largely depend on the technology and resources allocated. Some of this technology, such as satellite-monitoring of fishing vessels, is readily available. If combined with activities like local enforcement and fishing regulation in the vicinity of the islands (for example, in the multiple-use areas), prospects regarding management and conservation are very good. This regulation could and should be done in a broad participatory way, such as by involving local communities that depend on those resources.

■ **Is this expansion of MPAs advisable for other countries? If so, what have we learnt from the Brazilian experience?**

MS: Ocean-based human activities are growing fast, driven by the so-called blue economy. This leads to competing interests that need to be reconciled in implementing conservation initiatives, as experienced during this recent MPA expansion. The final MPA design and category of protection was very much influenced by arguments other than biodiversity conservation



Alberto Lindner. Credit: Carla Zilberberg

and science, such as EEZ military defence and marine-resources exploitation. The example from Brazil shows that all key stakeholders should be around the table to better address conflicting interests during the planning process.

AL: Expansion of MPAs is the right move to protect the world's oceans. However, new MPAs are often established based on opportunity and not so much on scientific evidence, which should be used whenever available. For example, a last-minute change on the MPA design and category of protection, introduced by the government right before the establishment of MPAs by law, largely ignored scientific evidence, undermining the conservation effectiveness of these initiatives. The lesson for other countries is quite clear: if scientific data are

available, MPA design should be science-based for a more effective use of resources.

■ **The Brazilian Blue Initiative is a strategic framework to coordinate different sectors of society into partnerships, projects and other actions. Can you tell us about the initiative and how researchers in the field are experiencing it? What do you expect to come out of it?**

MS: The Brazilian Blue Initiative emerged in 2017 from the need for a more effective and efficient protection of the Brazilian coastal and marine environments in order to achieve the Aichi Targets. The Environment Ministry leads it with the support of international NGOs. Despite important accomplishments, such as the creation of the new MPAs, the initiative needs a detailed plan of action and dedicated resources to achieve their protection and management goals. We expect it to continue developing, including under the new central government to be established in 2019.

AL: The creation of oceanic MPAs was an important result and I hope that further MPAs, particularly no-take areas, will be declared or expanded in the near future, in both oceanic and coastal areas.

■ **What are the two main emerging issues in sustainable coastal and marine management that researchers should heed?**

MS: We need more research on EBM and adaptation for a comprehensive MSP. EBM can help societies transition to policies founded on a solid understanding of ecosystem functions, processes and services, as well as of derived benefits and human well-being. EBM must expand across environmental policies and tools, such as the National Policy on Marine Resources. For this to happen, more knowledge about

coastal and ocean ecosystems is necessary. Research on how to better integrate this knowledge into management systems is also needed.

AL: In coastal areas, EBM remains a challenge. Managers and researchers should keep in mind the need for more integrative approaches. For example, historical data of marine ecosystems in Brazil (prior to the dramatic human population increase since the 1960s) may provide a more accurate baseline on biodiversity. There is also a clear move to explore oceanic and deep-sea habitats around Brazil for potential economic benefits. Yet little is known about the biodiversity and resilience of several of these ecosystems. Additional research on deep-sea biodiversity is urgently needed.

■ **Many international sustainability researchers investigate Brazil's environment. How can the international research community contribute to research and practice in Brazil?**

MS: Sharing information and knowledge is key, as is participating in common projects and networks. A good example of such international initiatives is the Ibero American Network for Coastal and Ocean Management (Red Ibermar; www.ibermar.org).

AL: For decades, there has been great international interest in and partnerships on sustainability in Brazil. But these are mostly on terrestrial environments, such as forests in the Amazon Basin. More partnerships in the marine realm would be welcomed, but now they still lag behind.

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