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**Scaling up local community-based monitoring and incorporating into national management programs**

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All around the globe, human societies are looking for increasing their knowledge on biodiversity. Beyond that, people at different scales, from local communities to international fora, agree on the need to continuously make biodiversity information available as a base for evaluate and improve their capacities to conserve and manage biodiversity sustainably.

Worldwide, indigenous peoples and local communities, practitioners, citizens scientists, and other holders of knowledge outside the academic sphere are involved in efforts to monitor biodiversity and natural resources. Local and indigenous communities are increasingly participating in and initiating their own monitoring schemes, particularly in regions where considerable portions of population live in rural forest areas with high biodiversity (Danielsen et al. 2010a). It is widely recognized that, indigenous peoples and local communities can participate in various ways, contributing at different monitoring stages (Danielsen et al. 2009), which can consequently result in local empowerment (Constantino et al 2012a).

Communities are more often involved in monitoring initiatives that are designed to answer local needs, participating in several of their phases. As more initiatives scale up, the roles of communities tend to diminish. As a result, local monitoring has higher chances to have impact on local management and to support local decision making and governance than at larger scales (Danielsen et al. 2010b).

Currently, one of the main challenges of participatory community-based monitoring thus is the recognition and adoption of this approach to biodiversity monitoring, as well as the use of the generated information and analysis at larger scales.

Based on my experience, I am going to present two cases of participatory community-based biodiversity monitoring that exemplify the challenges and solutions to scaling-up and incorporating into national managing programs.

In the indigenous territories of Acre state, in Brazilian Amazonia, several indigenous communities are engaged in the monitoring of natural resources use, especially game species, motivated and supported by collaboration with a regional and an international NGO. Based on more than 30 years of experience of the regional NGO, the indigenous peoples participated intensively in all stages of the monitoring initiative that was designed to answer the indigenous needs. At that point, the indigenous peoples were concerned on the decline in the availability of some natural resources that are key to their societies. Game species that provide meat and structure social relations, palm trees that provide leaves for thatch and wood for floors and walls of their houses, and timber for boats, fuel, and some local trade. Scientists have collaborated with knowledge holders to develop instruments to translate the knowledge, needs and information produced by the indigenous peoples to a language that outsiders could recognize and understand. As the indigenous peoples understood, part of the decline was due to the relationship they had established with the national society. Hence, changing that trend would require dialogue. Although institutions at larger scales would benefit of having this kind of information available, there was no initial intention to scale-up. After 7 years, the initiative created local capacity and empowered the indigenous communities, but the use of information use was limited to their local area. There was no involvement of the state or federal government, and the NGOs decided to move to a satellite based monitoring. Despite the distribution of some reports and publication of papers in scientific journals (Constantino et al. 2008, 2012a,b, Constantino 2010, 2015) the natural resource monitoring continued only in few villages where communities were using the information.

The lessons learned in developing this initiative of participatory community-based monitoring were extremely relevant and influenced the design of the Brazilian National Program for Biodiversity Monitoring (Pereira et al. 2013). Different from the initiative developed in indigenous lands where government has a very limited role in management, the federal government led the monitoring in protected areas for biodiversity conservation[[1]](#footnote-1). In 2012, the Ministry of Environment and the national agency for biodiversity conservation and protected areas, ICMBio, in cooperation with the German agency for international technical cooperation started to develop a monitoring program that operates at two frontlines. First, ICMBio created a monitoring scheme to provide continuous and systematic information on the effectiveness of biodiversity conservation of the national system of protected area. Local communities did not participated in the design, but contribute in data collection. Engagement in the monitoring is volunteer and communities select candidates to participate in the capacity-building upon a list of criteria. The information produced from data also collected by communities flow from each protected area to the national office.

In parallel, the government wants to support the local management of biodiversity and improve community governance of protected areas. Hence, it has promoted a complementary monitoring oriented towards locally-based issues. Communities living inside or near protected areas and using natural resources participate in all stages of this monitoring, from deciding the issued that guide monitoring targets to using the information to make decisions at the scale of the protected area. Mostly, locals were interested in understanding how their consumption was affecting their production, commercial of for subsistence, and the sustainability of their activities. For instance, communities and local government staff of the first protected areas to adhere to the program decided to monitor the production and consumption of Brazil nut, aquatic quelonians, game and certain fish species, as well as logging for subsistence and internal trade. During this process, researchers and local staff contributed providing the scientific rigor needed to produce high quality information and recognizing the pertinence of local decisions. As a result of this collaboration, the central office of ICMBio in creating a system in which this information will also be integrated to support decisions at the regional and national level, beyond the expected local application.

Interestingly, now that the federal government has established the national program for biodiversity monitoring, the agency for indigenous affairs, FUNAI, is interested in promoting the adoption of their participatory community-based approach and methodology across indigenous lands. As well as the state government of Acre is interested in applying it in the state protected areas. In a long feedback movement, the model developed in indigenous lands in Acre is probably going to return to the regional and scale-up.

Recently, observing the increased interest in community participation in biodiversity monitoring all over the world, some people are organizing a network to promote the participatory monitoring and management through several actions that put together community members. The Participatory Monitoring and Management Partnership, PMMP, is under development and intends to put together the lessons learned, disseminate them and advocate for the participatory monitoring with governments and decision-makers, while promoting knowledge interchanges among local communities and capacity-building ([www.pmmpartnership.com](http://www.pmmpartnership.com)).

As a first attempt effort, the PMMP together with the participants of an international seminar held in 2014 have elaborated the Manaus Letter with recommendations for participatory monitoring of biodiversity (PMMP 2015). One of the main issues debated during the seminar that resulted in several recommendations is the possibility and necessity to scale up both the model of participatory monitoring and the information produced.

From these experiences, we could learn that collaborating with state or federal governments, might be crucial for the up scaling of the information produced in participatory community-based monitoring. Governments, in turn, might be more open to engage and support participatory monitoring if they recognize it as a trustful source of information and as a way to improve the management of protected areas. To achieve these, it might be important to consider a stakeholder that facilitates the understanding, the dialogue and the recognition of the two knowledge systems. In some cases, researchers and local staff can contribute in this role.

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1. A clarification is needed here. In Brazil, indigenous lands are one category of protected area that is managed by the indigenous people with support of FUNAI in some aspects. This category is not part of the National System of Protected Areas (locally know as Conservation Units), which is composed by several categories that share the main purpose of biodiversity conservation and are managed by ICMBio. Local communities, traditional but mostly non-indigenous, have the rights to inhabit, use the natural resources and co-managing the protected areas in some of these categories. Nevertheless, there always has to be some sort of governmental participation. [↑](#footnote-ref-1)