Understanding governance structures in community management of ecosystems and natural resources: The Marujá case study in Brazil

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ABSTRACT

Community management is seen as one important approach in environmental governance to manage ecosystems and natural resources. Understanding the underlying principles of how and under which premises the different local actors successfully collaborate in environmental governance can offer valuable insights into how ecosystems and their natural resources as well as related ecosystem service delivery can be sustained for the livelihoods of local communities. In this study, Ostrom's set of design principles and Cox and others' enlarged set of principles were used to investigate one co-management example of community management: the Marujá community in the Cardoso Island State Park in south-eastern Brazil, which was evaluated as successful by the community itself. The aim of the study was to analyse the presence or absence of each principle and how the principles were met in specific. Furthermore it was discussed in how for the specific compliance with the principles shapes certain features of the governance approach and helped in explaining its overall success. The analysis was mainly based on data collected through qualitative interviews with the different governance actors. All of Ostrom's principles and most of Cox and others' enlarged set of principles could be verified for the community. The principles helped in explaining how the community was able to organize collective action and initiate a governance change from top-down management of the state park to a co-management agreement which was considered a win–win by both parties: the community and the state park authorities. However, several additional factors were identified which contributed to the overall success. This included that the governance change was initiated bottom-up with the support of the whole community, could draw support from very committed governance actors both from the community and the state park authorities, who pushed the process forward over a long time period, and that the community received initial external funding which gave enough momentum to the process at the beginning.

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1. Introduction

Community management is seen as one important approach in environmental governance to manage ecosystems and natural resources (e.g. Agrarwal and Narain, 2000, Beitl, 2014, Berkes et al., 1991, Berkes, 2006, Carlsson and Berkes, 2005, Fabricius et al., 2007, Liu et al., 2014, Olson, 1965, Ostrom, 2000, Poteete et al., 2010). Community management thereby represents one of the three main governance concepts that are typically differentiated, the other two being hierarchies and markets (Vatn, 2010). While hierarchies are based on a system of command and resource allocation happens according to existing authority and power structures, markets are driven by self-interest and voluntary exchange of goods and services between individual actors and resource allocation takes place on account of their willingness to pay. By contrast, community management is based on collective action and cooperation among actors. For resource allocation, both individual and common goals are taken into account. As pure forms of each governance concept are rare, often hybrid solutions develop which combine elements of one or two or all concepts. One prominent example for a governance hybrid in community management is co-management, an arrangement where local resource users and government actors share power and
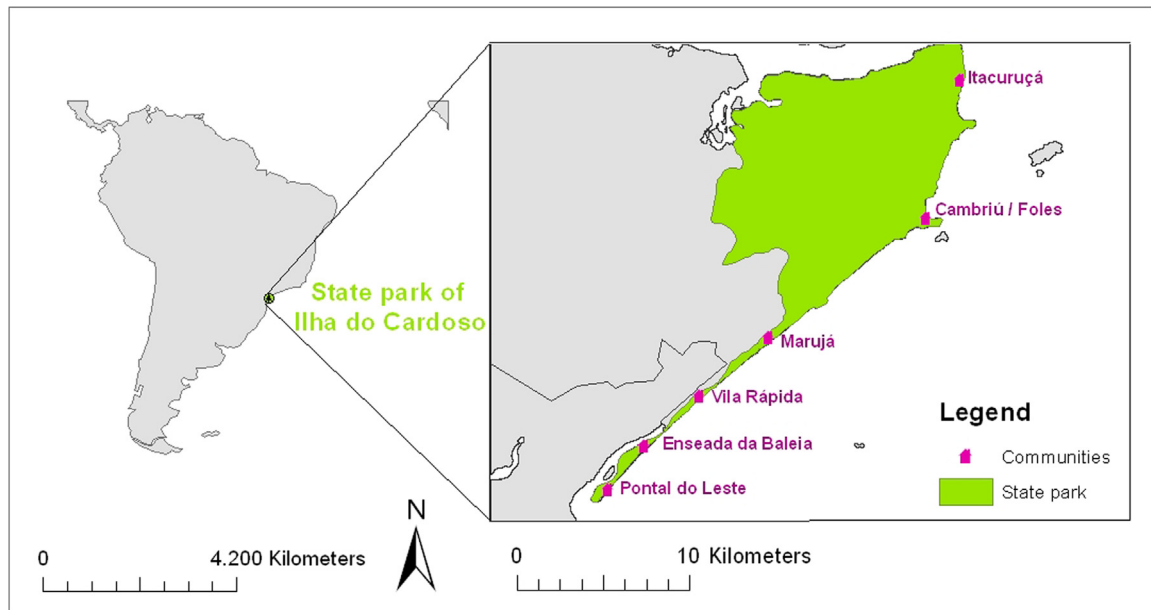
Fig. 1. : Geographical location of the Marujá community in the Cardoso Island State Park in south-eastern Brazil. Source: Own illustration based on data from D-maps (http://d-maps.com) and Diva-GIS (http://www.divagis.org/gdata).

responsibility in resource management (cf. Berkes et al., 1991). Co-management thus combines elements of community management with hierarchies. Collective action as the underlying principle in community management then can be defined as the cooperation among individuals (cf. Beitl, 2014, p. 93) and relates to any action taken together by a group of people to pursue common goals and their joint welfare (Ostrom, 1990, p. 5 et seq.).

Successful governance solutions based on community management, including co-management, are particularly well described in the context of common pool resource (CPR) management (e.g. Ostrom, 1990, Ostrom and Walker, 1991, Ostrom et al., 1992) In her work, Elinor Ostrom investigated how local communities co-operate to share resources, effectively avoid the overuse of CPR, and also assure their survival for future generations. Based on her studies, she derived a list of eight design principles[1] associated with successful collective action in CPR governance (Ostrom, 1990). However, also critique has been voiced that Ostrom's principles are not exhaustive enough and that additional factors need to be taken into consideration, both in respect to the social system as well as the natural system (e.g. Agrawal and Chhatre, 2006, Cinner and McClanahan, 2006; Harkes, 2006, Tucker et al., 2007). In this context, Cox et al. (2010) re-viewed the principles and developed an extended and modified list of design principles.

Against this backdrop, Ostrom's set of design principles (Ostrom, 1990) as well as Cox and others' enlarged set of principles (Cox et al., 2010) were used to investigate one co-management example of community management in the Marujá community in south-eastern Brazil, which was evaluated as a success by the community itself.

The objectives of this study are to analyse and discuss in how far these principles help to explain why the governance change was evaluated as successful. In particular we investigated the following research questions:

- Can all of Ostrom's and Cox and others' defined principles be verified for the governance approach developed in the Marujá community and how are the principles met in particular?
- How defines the specific compliance with the principles certain features of the governance approach and helps explain its success?
- Are there additional factors that were crucial for the success?

2. Methods

2.1. Case study

The Marujá community is located in the Ilha do Cardoso State Park (Parque Estadual da Ilha do Cardoso, PEIC) in São Paulo state in south-eastern Brazil (Fig. 1).

The area comprises about 22,500 ha and holds large remainders of continuous Atlantic Forests extremely rich in biodiversity which includes large stretches of mangrove ecosystems on one side, and sensitive dune ecosystems and beaches on the other side of the island.

Altogether six communities live inside the park, Marujá being the largest one. At present, Marujá is home to about 60 families with approximately 180 inhabitants. The residents are traditional „Caiçara", an ethno-cultural mixture of indigenous people, descendants of Portuguese colonizers, and former African slaves. In terms of ecosystem services, their livelihood depend on provisioning services such as food and fiber, but also extraction of wood and other materials for handcrafting, and regulating services such as water filtration for waste water treatment through a system of installed tubes filled with soil. Very important are also cultural services, as the Caiçara culture is based on the belief that they are caretakers of the ecosystems they depend upon for their living. Historically, the Caiçaras used to live on sustainable small-scale agricultural, fishing and hunting activities. Today, their livelihood is based mostly on eco-tourism and fishing for self-consumption, as agricultural activities and hunting are no longer allowed inside the park.

The PEIC was already created in 1962 and although this category of protection areas per se does not allow inhabitants inside the park and requires relocation of existing communities within a