



Looking back and looking forward: Exploring livelihood change and resilience building in a Brazilian coastal community



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ABSTRACT

In Brazil, as in many other tropical countries, coastal communities have been dealing with a complex dynamics of change, mostly related to the degradation of ecosystems, growing tourism and changing government policies, with consequences for natural resources conservation and management. Understanding how these communities are dealing with such change and the trade-offs provide insights for building resilience. In this paper, we investigate how a Caiçara community (traditional group of mixed heritage) has been dealing with social-ecological changes over the last 50 years, and how these changes have affected the livelihood resilience. Livelihood pathway analysis revealed how the system behaved historically and how the past dynamics influenced and may continue to influence resilience building. In face of challenges and disturbances, the coping and adaptive strategies used by this community have helped to maintain the diversity of livelihood options and ecosystem services, which contributed to resilience. Self-organization, collective action and political agency were important components to deal with crises mainly related to territorial disputes concerning overlap with protected areas. The trade-offs in social-ecological system dynamics were related to the geographical isolation of the community (located on an island), the creation of protected areas, and the use of tourism income as a livelihood strategy. Over the years, social cohesion has weakened due to increased economic rationality and conflicts – which may undermine social-ecological system resilience in the future.

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1. Introduction

Coastal communities worldwide are experiencing rapid changes in livelihoods. In Brazil, living along the southeastern coast in the Atlantic Forest Region are the Caiçara, a traditional group of mixed heritage (indigenous Brazilians, African and European descendants), who historically has combined small-scale fishing with small-scale agriculture and plant resource extraction for their livelihood (Sanches, 2001; Begossi et al., 2010). The complex dynamics of change that several communities have been dealing with are mostly related to the degradation of coastal ecosystems, growing tourism and changing government policies in general, including pressures concerning natural resources conservation and

management (Hanazaki et al., 2007). In this paper, we investigate how a Caiçara community dealt with social-political and ecological coastal changes during the last 50 years and how these changes have hampered or contributed to livelihood resilience.

We define livelihood following Chambers and Conway (1992) as the “capabilities, assets (including both material and social resources) and activities required for a means of living”. The concept is about individuals, households or communities making a living and coping with uncertainties. According to Allison and Ellis (2001), the livelihood approach centres on the links between assets, the activities in which households can engage with a given asset profile, and the mediating processes (institutions, regulations etc.) that govern access to assets and to alternative activities. In this regard, a livelihood is said to be sustainable when it can cope with stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Scoones, 1998; Ashley and Carney, 1999).

This interpretation of livelihood sustainability, with emphasis on

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coping with stresses and shocks, is strongly related to resilience (Berkes, 2011). Resilience is the capacity of a social-ecological system to absorb disturbance and reorganize while undergoing change, so as to still retain essentially the same function, structure, identity and feedbacks (Walker et al., 2004; Folke, 2006). Resilience theory offers a vision of sustainability (Berkes and Seixas, 2005), and this concept embraces change as a basic feature of the way systems work and develop, and therefore is especially appropriate in times when changes are a prominent feature (Chapin et al., 2009).

A few studies have attempted to link livelihood approaches and social-ecological resilience (Marschke and Berkes, 2006; Knutsson and Ostwald, 2006; Gwimbi, 2009; Sallu et al., 2010; Hanazaki et al., 2013; Goulden et al., 2013). An important factor in assessing resilience is analyzing the way in which livelihoods change over time, in response to various drivers (Vaitla et al., 2012). De Haan and Zoomers (2005) bring to the discussion the concept of a livelihood pathway, assuming that strategies are made within a specific historical and economic context and are constantly shaped by institutions and social arrangements.

In the social-ecological systems perspective, the past events can have large effects on subsequent dynamics, which generates path dependence i.e. that links current dynamics to past events and lays the foundation for future changes (Chapin et al., 2009). We understand that new situations may be evaluated in light of past experiences, but not static in the sense that it determines livelihood in a fixed way. In a forward-looking analysis for management, we consider that understanding the drivers of change and how the system behaved in the past, can provide insights into how historical dynamics have shaped the current system and what effects they might have in the future (Resilience Alliance, 2007).

Livelihood approaches take into consideration assets and strategies available to deal with change. According to Bebbington (1999), assets or capitals are not simply resources that people use in gaining a livelihood, but are what gives them the capability to be and to act. In this sense, the greater the range of options and innovations (i.e. diversification strategies, Ellis, 1999), the greater the chance to combine and transform assets for building livelihood resilience. However, when some things are gained, others may be lost (McShane et al., 2011) and few studies attempt to point strategies for trade-offs. In a world of persistent ecosystem changes and poverty, approaches to conserve biodiversity while also furthering well-being (Armitage et al., 2012), indicates that across a variety of places and contexts, trade-offs can and do occur (McShane et al., 2011). Following Janssen and Anderies (2007), understanding the trade-offs associated with a specific social-ecological system context are also important to manage resilience. More explicit acknowledgment of trade-offs may lead to more resilient and sustainable outcomes.

In this paper, we aim to understand the main drivers of change affecting local livelihoods, as well as the responses to these drivers by the community or households. Following Seixas and Berkes (2003), we interpret cycles of change as adaptive cycles to investigate resilience-building in a coastal community of southeastern Brazil and its livelihood pathway over the last 50 years. We examine how changes and decision-making in livelihood activities contributed to the enhancement or loss of resilience. The historical case approach helps to analyze livelihood pathways and to assess responses as coping mechanisms or adaptive strategies. We follow Davies (1993), who defines coping mechanisms as short-term responses to situations that threaten livelihood systems. Adaptive strategies, on the other hand, are considered long-term responses, in which households and communities change their productive activities and modify local rules and institutions to secure livelihoods. According to Allison and Ellis (2001) livelihoods approach can help to bring a fuller understanding of fishing communities'

adaptive strategies into the policy arena of management.

After describing the study area and research methods, we present the livelihood pathway and the main drivers of change affecting Aventureiro village in the last 50 years. We use the adaptive renewal cycle (Holling, 1986; Gunderson and Holling, 2002) as a heuristic model to understand the periods and cycles of change in livelihoods (Goulden et al., 2013). Next, we discuss how changes in livelihood activities were occurring and how some choices and strategies contributed to livelihood resilience. Finally, we raise some points regarding trade-offs for resilience building.

2. Study area and methods

The Aventureiro village is located at Ilha Grande, an island in the municipality of Angra dos Reis, Rio de Janeiro State, southeastern coast of Brazil. It is the largest island in the state and the third largest in Brazil. The whole area is situated within the Atlantic Forest Region and is one of the most biodiverse areas in Brazil.

The study site was located on the southern part of Ilha Grande, it is one of the smallest and most isolated villages. According to oral information, current residents are descendants of people who have lived there for at least four generations. People are considered traditional Caiçara and the community is composed by approximately 90 residents and 20 households, who still practice subsistence activities, such as fishing. There is no grocery store in Aventureiro and the residents buy almost all their supplies in Angra dos Reis, which is approximately two and half hours by motor boat.

The demography of Aventureiro has not changed much in the last 16 years (Seixas and Begossi, 2001). There is only an elementary school, and high school age youth have to go to the neighboring village Provetá (approximately 6 nautical miles of distance), or to Angra dos Reis (approximately 13 nautical miles of distance) to complete their studies. There are no medical services nor any municipal electric power or water treatment. Most households have their own electric oil generators and the water system is comprised of a simple network of rubber hoses to bring water from nearby streams.

The community is surrounded by a diverse and well preserved environment (sand beaches, lagoons, mangroves, forest, rocky shores and the sea). There is an important archaeological site located within the area. All these factors have contributed to conservation initiatives since the 1980's, both in terrestrial and marine zones. A no-take Biological Reserve (Reserva Biológica da Praia do Sul) and a no-take Marine Park (Parque Estadual Marinho do Aventureiro) were located over and in front of the community land, respectively (Fig. 1).

Fieldwork took place between September 2011 and July 2012 and was based on: (i) participant observation of all livelihood activities, (ii) livelihood surveys (including qualitative and quantitative data) with all 20 Caiçara households, (iii) semi-structured interviews with fishermen, and (iv) a review of scientific and grey literature as well as public policies relevant for the area in the last 50 years (Table 1).

We carried out participant observation (Bernard, 2006) of the various livelihood activities (i.e. small-scale fisheries, agriculture, manioc flour milling, home garden production, marine invertebrate gathering, handicrafts and local tourism) with different households. We also observed other aspects of daily life, such as meetings, social and religious events. The participant observation allowed for a deep understanding of how livelihood activities are changing in terms of resources use, management, and importance over time. It also contributed to build good relationships with the community.

The livelihood survey was carried out in each of the 20 Caiçara households, lasting from 30 to 50 min. The interview target was the

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