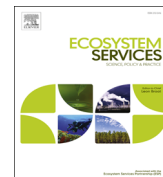




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Social capital as an ecosystem service: Evidence from a locally managed marine area

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ABSTRACT

Social capital is an important ecosystem service, yet we lack common understanding of how it fits, and can be operationalized, within the ecosystem services framework. We review the literature to clarify the role of social capital in this context, establishing it as a multidimensional concept and a fundamental constituent of human well-being that is both supported by, and affects, all categories of ecosystem services. We then draw on qualitative and quantitative data to assess and value social capital as an ecosystem service and explore its role in facilitating management goals in a Malagasy locally managed marine area. We find high levels of social capital, gauged by trust, community involvement, and social cohesion. Results of a choice experiment show positive utilities associated with high levels of social cohesion. Respondents also ranked social cohesion higher than some provisioning, regulating, and cultural ecosystem services. Qualitative data suggest social capital increased as a result of the community based management institution, and has facilitated the success of marine management measures. Our results offer insight into the ways in which social capital can both affect, and be affected by, the management of natural resources, and how it can be assessed and valued as an ecosystem service.

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1. Introduction

The notion of social capital has historical roots, but the term's prevalence in academic discourse has greatly expanded since the 1990s. Social capital is multifaceted, broadly referring to the individual and collective benefits embedded in relationships between people and communities (Bourdieu, 1986; Coleman, 1988; Putnam, 2001). Though there is some debate over its use (or misuse) (Dasgupta and Serageldin, 2000; Durlauf, 2002), social capital is often defined by its function, which emphasizes the notion that social bonds and cohesion build trust, encourage reciprocity and

exchanges, and enable the establishment of common rules, norms, and sanctions (Ostrom and Ahn, 2009; Pretty, 2003; Putnam, 1995).

Social capital and ecosystems are linked. Strong social bonds at the community level can enhance ecosystem service flows by facilitating collective action and sustainable natural resource governance (Gutiérrez et al., 2011; Ostrom, 1990; Pretty and Ward, 2001). Conversely, ecosystem change can impact networks of trust, reciprocity, and exchanges within and among communities by altering human–environment relationships (Burke, 2010; Chan et al., 2012b; Hicks et al., 2009). Recognizing this critical feedback, many articles in the ecosystem services literature cite social capital as an important ecosystem service. Yet few ecosystem service assessments and economic valuations include even basic analyses of social capital. This is likely due to its inherent complexity as a multidimensional and somewhat intangible concept, whose definition and place within the ecosystem services framework has not been clearly established. When considering trade-offs involved in environmental decision-making, potential impacts to social capital are thus likely overlooked in favor of more tangible, quantifiable factors.

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We begin with a review of the literature to clarify the place of social capital within the ecosystem services framework. We then draw on qualitative and quantitative data to assess social capital and its role in facilitating marine management goals in a Malagasy locally managed marine area (LMMA). Finally, we provide the first economic valuation we are aware of that explicitly captures the value individuals place on social capital as an ecosystem service. Social capital values linked to natural ecosystems are likely particularly important for resource-dependent, indigenous communities involved in community-based environmental management (Pretty, 2003). In the absence of effective institutional support for marine and coastal governance, LMMAs have been rapidly proliferating across the globe, and are particularly prevalent in developing economies (Govan et al., 2009; Johannes, 2002). Our results offer insight into the ways in which social capital can both affect, and be affected by, the management of marine and coastal resources in this context, and how it can be assessed and valued as an ecosystem service.

2. Social capital and ecosystem services

Social capital has long been recognized as an important contributor to human welfare due to its ability to foster collective action for mutual benefit. The idea can be traced back to Tocqueville ([1840] 2014), though the concept benefited from substantial theoretical development by Bourdieu (1986), Coleman (1988), and Putnam (2000), among others. Despite this rich history, social capital was generally overlooked by classical economics with its focus on self-interested individuals and a welfare model comprised solely of land, labor, and manufactured capital. In their seminal work, Daly and Cobb (1989) offered a rebuke of this oversight, arguing that individuals are inherently social beings embedded in communities of interrelations, and that the quality and thickness of these social relationships comprise important components of human well-being that both affect, and are affected by, all aspects of economic life. Their work, now cited over 4700 times², had a profound influence on both development and environmental economics, where the connection between social capital, human well-being, and environmental sustainability has become an increasingly popular research focus (e.g., Costanza, 2000; Howarth and Farber, 2002; Lehtonen, 2004).

Though economic system models now consider social capital a key contributor to human well-being (see Costanza, 2000), to our knowledge the Millennium Ecosystem Assessment (MEA) (2005) was the first to recognize an explicit connection between changes in natural capital (and ecosystem service flows) and changes in social capital. Throughout its five technical volumes and six synthesis reports, the MEA (2005) identifies several aspects of social capital as central dimensions of human well-being affected by ecosystem change (i.e., social relations, social cohesion, cultural ties, communal interaction, interactions between individuals, networks of relationships, alliances, mutual respect, and social networks). The MEA largely recognizes social capital as a nonmaterial ecosystem service under the umbrella category of cultural ecosystem services (MEA, 2005). An example is given in the very first chapter, where the authors note that the loss of important ecosystem service attributes linked to ceremonial or spiritual practices can weaken community bonds, which in turn affects human well-being (MEA, 2005, p. 29). Despite its principal assignment to the cultural services category, the overarching MEA framework also identifies social capital (i.e., 'good social relations' comprised of social cohesion, mutual respect, and the ability to

help others) as one of five primary constituents of human well-being supported by all categories of ecosystem services (supporting, provisioning, regulating, and cultural) (MEA, 2005, p. 28).

Identifying the importance of social capital to human well-being and recognizing its explicit relationship to environmental services was one of many significant contributions made by the MEA (2005). Yet the report failed to provide a formal definition of social capital, a consistent description of how it fits within the framework, and an expansion of how it can be operationalized, quantified, and valued. This, in conjunction with social capital's complex and multidimensional nature, has likely contributed to sparse references to social capital in ecosystem service work. Some exceptions include recent advancements in the cultural ecosystem services literature, where social capital is identified as an important benefit (Chan et al., 2011, 2012a, 2012b; Daniel et al., 2012; Milcu et al., 2013). Yet even these examples lack clarity on social capital specifically. One exception is Chan et al. (2012b), who classify 'social capital and cohesion' as one of nine prominent cultural ecosystem services and dedicate a small section to its description. Per Chan, 'social capital and cohesion' have both intrinsic and instrumental value. The authors explain that activities enabled by ecosystems, such as hiking and traditional fishing, are associated with interactions between individuals that contribute to rich, cultural networks of relationships. These relationships facilitate trust, reciprocity, and cultural norms that are intrinsically valuable to people (as social cohesion), while also providing instrumental (i.e., functional) 'social capital' benefits. The authors acknowledge that both the instrumental and intrinsic benefits of social capital can be impacted by ecological (or social) change (Chan et al., 2012b).

Outside the ecosystem services literature most of the work on social capital in relation to the natural environment is largely in line with its functional conceptualization, focusing on the ways in which social capital can enhance environmental health and integrity by facilitating cooperation toward sustainable resource governance. For example, Pretty and Ward (2001) provide analyses of rural community groups in diverse settings from Kenya to the U.S. who have leveraged local social capital to act collectively in order to confront environmental problems and sustain key environmental services. Bodin and Crona (2009) review empirical evidence highlighting the critical role of social networks in facilitating, and sometimes constraining, successful natural resource governance. Several other studies describe social capital as a key feature of successful collaborative environmental management (e.g., Gutiérrez et al., 2011; Plummer and FitzGibbon, 2006; Pretty, 2003).

Though the contribution of social capital toward the effective management of resources is well established, only a thin literature exists linking its intrinsic value to natural ecosystems. Yet this appears to be changing, with several recent notable examples documenting how changes in ecosystem service flows (even if not labeled as such) and the management of ecosystems can impact social capital. For example, Burke (2010) showed that the virtual collapse of a first nation local fishery in British Columbia negatively impacted community-level social capital in several distinct manners, e.g., by decreasing the community's ability to access and exchange traditional resources, engage in social and kinship networks, and perform acts of generalized reciprocity. Hicks (2009) found evidence suggesting government management interventions on the Kenyan coast that maximized coral reef direct use values (primarily for tourism) were associated with losses in social capital in resource-user communities. Conversely, Wagner and Fernandez-Gimenez (2008) found that community-based collaborative resource management can enhance social capital at the community level and foster outside links to formal agencies. Analyzing the societal impacts of marine protected areas (MPAs) in four countries in the Asia-Pacific region, Van Beukering et al.

² Google Scholar as of October 7, 2014.

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