



Synergy as strategy: learning from La Restinga, Canary Islands

José J. Pascual-Fernández¹ · Raquel De la Cruz Modino² · Ratana Chuenpagdee³ · Svein Jentoft⁴

Received: 5 April 2018 / Accepted: 2 May 2018 / Published online: 29 May 2018
© Springer-Verlag GmbH Germany, part of Springer Nature 2018

Abstract

In this paper, we draw attention to the role of synergies in marine conservation and community sustainability. Using marine protected areas (MPAs) as examples, we argue that MPAs that are carefully designed to fit the existing social systems can be instrumental in synergy building and fostering community development. Such synergy creation is an essential governance strategy that helps enhance governability as it reduces conflicts and provides opportunities for constructive cooperation among stakeholders, especially in times of crisis. We illustrate this using the case of La Restinga MPA in the Canary Islands. Based on data and experiences from long-term research programs on coastal communities in the Canary Islands in general, and La Restinga in particular, we discuss the functions of the MPA in the local contexts and describe how the MPA has transformed relationships and interactions among stakeholders, leading to different levels of synergies. While some of the interactions have not been conducive to the implementation of the MPA, strong synergies have been created, especially after the volcano eruption. The story of La Restinga offers valuable lessons about the way the community copes and responds to change, and the role that synergies play in the process.

Keywords Sustainable development goals · Marine protected areas · Synergy · Small-scale fisheries · Coastal tourism · Governability

Introduction

Community sustainability in the face of environmental degradation and, in some instances, crises, is an urgent concern in global discourses. As countries aim to achieve Sustainable

Development Goals (SDGs), several policy measures have emerged, though not always accompanied by strategies that actually foster their implementation. A holistic approach has been promoted based on the recognition of the need for comprehensive strategies. Yet, such an approach may sometimes be more effective if it was based on a systemic understanding of social and ecological interactions. Specifically, there is a need to examine the degree to which such interactions can lead to synergies among different activities and actors in concrete circumstances.

A case in point is about the use of marine protected areas (MPAs) as a means to achieve SDG14 (Life Below Water) that argues for a holistic perspective to underlie their design and establishment. Lessons from the implementation of MPAs around the world suggest that they do not always succeed mainly because they do not pay sufficient attention to social interactions and impacts. In many instances, MPAs end up creating animosity and resistance in communities and among stakeholders. The discussion about MPA implementation in the context of SDGs would benefit from an examination of how MPAs interact with communities in ways that may foster or hinder synergies.

Synergy is a concept that has been used to explain sociological interactions, both as an outcome and as a means through which more constructive relationships are fostered. We can see this in the way neighborhoods are established and organized, especially in small- and medium-sized cities,

✉ José J. Pascual-Fernández
jpascual@ull.es

Raquel De la Cruz Modino
rmodino@ull.es

Ratana Chuenpagdee
ratanac@mun.ca

Svein Jentoft
svein.jentoft@uit.no

- ¹ Instituto Universitario de Investigación Social y Turismo (ISTUR), Universidad de La Laguna, Campus de Guajara, 38205 La Laguna, Tenerife, Spain
- ² Departamento de Sociología y Antropología, Universidad de La Laguna, 38205 La Laguna, Tenerife, Spain
- ³ Department of Geography, Memorial University of Newfoundland, St. John's, NL, Canada
- ⁴ Norwegian College of Fishery Science, UiT-The Arctic University of Norway, Tromsø, Norway

where local residents build networks to facilitate their collective interests and actions. Similarly, in business, the idea about the merits of industrial clusters (Porter 1998) is based on the assumption that bringing enterprises closer together geographically and organizationally would be mutually beneficial, more so than if they were to operate individually and independently. In the context of interactive governance (Kooiman et al. 2005), synergy is a possible outcome of interactions that occur between the governing system and the system that it aims to govern, as well as internally to both systems. Although such outcomes may be observed in concrete cases, they are not always easy to explain or describe how exactly they come about. This prevents the active use of synergy as a strategy for implementing policy measures, like MPAs, to achieve major goals like SDGs.

While not the only tool, many consider MPAs as one of the obvious solutions to addressing global sustainability concerns (Fenberg et al. 2012; Wood et al. 2008; Halpern and Warner 2002). MPAs are thus positioned as the main vehicle to achieving SDG14 (<https://oceanconference.un.org/callforaction>). Ambitious plans for their establishment are made at all levels. The Convention for Biological Diversity (CBD) has proposed Aichi Target 11, encouraging countries to set aside 10% of coastal and marine spaces as protected areas by 2020 (see <https://www.cbd.int/sp/targets/rationale/target-11/>). In Europe, the Natura 2000, the Marine Strategy Framework Directive, and the OSPAR convention are promoting their establishment. Spain is among the countries in Europe where MPAs are high on the agenda. Research shows, however, that people whose livelihoods are affected by the MPAs may not be so supportive, hence reducing their governability (Jentoft et al. 2011; Bavinck et al. 2013; Christie and White 2007; McClanahan et al. 2005). People affected by MPAs tend to see MPAs less as a solution but more as a problem, interfering with what they normally do, for instance, in order to sustain themselves (Segi 2014).

However, MPAs do not have to be detrimental to the sustainability of small-scale fisheries and their communities, providing that they are properly conceived, carefully designed, and well implemented (Chuenpagdee et al. 2013; Pomeroy et al. 2007). We argue here that, given the right approach, especially with an attention to the pre-implementation phase, they could provide positive stimuli by creating synergies within and across sectors. MPAs may be instituted in ways that support small-scale fisheries, while mobilizing the latter for a conservation agenda. They can also help promote other income-generating activities such as marine tourism, and thus benefit communities as a whole (Biggs et al. 2016). The “trick,” we argue, is to facilitate the symbiosis between diverse marine users and sectors that may otherwise be in conflict, as seen for instance in the case of the Philippines (Fabinyi 2008). However, such symbiosis does not necessarily emerge automatically but needs deliberate planning, interventions, and negotiation among stakeholders (Oyanedel et al. 2016).

The aim of this paper is to explore how synergies can occur in a context of an MPA in La Restinga, in El Hierro, an island in the Canary Island Archipelago of Spain. Contrary to the general experience (Christie 2004; Chuenpagdee et al. 2013), the MPA was received positively among most stakeholders exactly because of the synergies it fostered. In this case, the synergy attained helped create resilience in times of crisis and has proven to be a basis for community sustainability. Along with other communities in the archipelago, La Restinga has been a focus of study since the 1980s by natural and social scientists from the University of La Laguna. These projects and numerous publications have provided insights and the long-term perspective of the social transformation occurring in the coastal areas, and where the introduction of MPAs has played an important role.

Established in 1996, La Restinga MPA was meant to be a tool not only for environmental conservation but also for sustainable small-scale fisheries development. Thus, it falls within the IUCN category *VI - Protected area with sustainable use of natural resources*. Although officially named a “Marine Reserve of Fishing Interest” (Revenge 2003; Jentoft et al. 2012), this paper uses the generic term MPA to refer to this protected area. Here, the nature and types of relationships and interactions between small-scale fisheries, tourism, and conservation have provided opportunities for synergy creation around the MPA. Though fishing takes place in other areas of El Hierro, La Restinga is considered the “only fishing community” and the principal fishing port on the island. It is a holiday destination for Canarians and is increasingly known internationally for scuba diving. In 2011, La Restinga experienced an underwater volcanic eruption, massively affecting both fisheries and tourism, and testing the resilience and sustainability of the local community. The role of the MPA in facilitating synergies, especially after the disaster, is the focus of this paper.

In the following sections, we introduce the concept of synergy in the context of governability. Next, we describe La Restinga’s small-scale fishing community and discuss the relationships among stakeholders and with the MPA. Lessons for other MPAs form the concluding arguments on strategies for building synergy, and by implication, supporting the implementation of the SDGs and the CBD targets.

Synergy for governability

Milgrom and Roberts (1992) define synergy as a circumstance when doing more of one activity increases the return on other related activities. It is the “plus” that mutually supportive activities bring when considered in tandem, in addition to their contributions being taken individually, i.e., when two plus two equals five. In this instance, synergy is built upon compatibility of concerted effort and cooperation. As has been shown in “employment system theory” (Jentoft and Wadel 1984;

Sønvisen et al. 2011), when synergy in organizations and communities occurs, it leads to constructive outcomes and helps build relationships. A synergistic interaction is advantageous: when people cooperate, they may be able to do more than they can accomplish when acting alone, reducing the prevalence of internal conflicts. They may also be able to cope better when faced with external threats and risks, including those induced by nature. In the absence of such cooperation, conflict and paralysis may occur, in a way that inhibits the realization of synergy. While synergetic relationships help to create virtuous circles, negative ones may generate self-reinforcing, vicious circles of antagonism. Yet, it is also possible for conflict, confrontation, and competition to have a positive function, eventually bringing about progress, as Coser argues (1956). Turning these opposing relationships into positive synergy is about looking for opportunities that may exist, through a careful examination of all aspects of the governance system, including the natural and the social systems that are being governed, and the governing system (Kooiman et al. 2005). Enhancing governability in fisheries is about finding ways to nurture synergy and supportive actions, turning an existing or potential conflict into one of cooperation, and creating unity out of division.

Thus, synergy in personal or institutional relationships and hence governability, i.e., the overall governance quality of the entire system (Kooiman 2003), may be created through governance intervention, either from within or driven by external forces, including governments, as a form of hierarchical governance. Self-governance, by means of local level organizations such as a cooperative, may help bring positive interactions and build social capital for later use. Experience, whether negative or positive, may also create institutional learning, which may increase the capacity of governing actors to create synergy. In some instances, communities become paralyzed in their conflicts and need external interventions in various forms, including legal, from governments or other non-local actors, in order to move on. Existing relationships and patterns of interaction may in themselves represent an unrealized opportunity, which can be activated by various means, including from outside actors. Synergy is something that governance should strive for but creating it is not easily accomplished, for the reasons explained above. When synergy creation is highly problematic, it may be referred to as a “wicked problem,” following the seminal article of Rittel and Webber (Rittel and Webber 1973; Jentoft and Chuenpagdee 2009).

We suggest that synergy should not be perceived in binary terms, as something you have or do not have. Rather, it should be looked at as a “gradient,” i.e., something that you can have more or less of, and thus can be improved. Moving up the ladder from weak to strong synergy requires initiatives and efforts in building relationships, facilitating positive interactions and dissolving conflicts and tension. In a governance setting, this is partly an issue of organization and leadership, which can be formal or informal, present or absent (Micheli and Niccolini 2013). In small

communities where people interact with each other in several capacities and roles, and therefore know each other from multiple encounters, relationships are inherently complex, which could affect synergy, making the system more or less governable. Even so, synergy can be fostered through other constructs such as re-organization, new institutional rules, and facilitation of informed interactions. Synergy can also be enhanced through informal mechanisms, building on existing relationships.

Even small fishing communities, exemplified by La Restinga, are systems made up of individual units and enterprises with their own interests and agendas, which may be compatible or conflictive, thus inhibiting synergy and affecting governability. These units may form groups, with relationships and interactions inside these groups or between them, which can be asymmetrical and unequal. Governance for synergy creation must commence with an analysis of how they add up and form a system of relationships and interactions. It also needs to take into account the existing institutional arrangements that may shape these interactions. Time and effort are required to understand where people stand on particular issues, what influences their behavior and decision-making, and what their specific stakes are.

Further, synergy is contingent upon two other key characteristics of systems, namely components and boundaries (Jentoft and Chuenpagdee 2009), which may either foster or limit these relationships and interactions. New actors can diversify the system’s components and broaden its boundaries, thus, bringing positive synergy, if their activities are compatible and symbiotic with ongoing activities. On the other hand, in a small island community, like La Restinga, the limited number of inhabitants with specialized activities and restricted opportunities for expansion may not be conducive to livelihood diversification, if it is a necessary condition for synergy creation. In such circumstances, creating synergy is a “wicked problem,” although not impossible to overcome.

Although synergy creation is helpful for conflict resolution and community survival, it is not necessarily a panacea for everything difficult and important in a community. Efforts to create synergies may also become new sources of conflicts, worsen therefore the situation. For instance, the relationships and the interactions that generate synergy may be beneficial to some while marginalizing others. Thus, while synergy is something governance interventions should aim for, its creation must be built on knowledge of the ecological, social, economic, and political systems and their connectivity and interaction. In the context of La Restinga, this means that the MPA needs to be investigated as part of the larger whole, in order to detect potential for synergy, and hence enhance governability.

Discovering synergies in La Restinga

The research on coastal communities in the Canary Islands that has been ongoing for decades provides the background

for the study of La Restinga. Anthropological field work in La Restinga commenced in the mid-1980s to the early 1990s, focusing on a range of topics including the establishment of a fishers' cooperative, fishers' identity and livelihoods, and local ecological knowledge (Galván Tudela 1997, 1990). Beginning in the 2000s, the next wave of research was related to the MPA that had been established in 1996. Research in La Restinga is still ongoing, with added emphasis on crisis management and resilience after the volcanic eruption. The focus of this paper, on the role of the MPA in fostering synergies, emerges out of the cumulative knowledge that has been built up about La Restinga and other communities in the Canary Islands. In effect, the paper does not result from a case study particularly designed to examine synergies in La Restinga. Rather, it is a synthesis that draws on previous research and reflects our observations of the kinds of transformations that have occurred in La Restinga and beyond in recent decades. Notably, this paper is also a theoretical contribution to the discussion about the role of synergies for conservation and governability. The research activities and the key projects that have been carried out in the area, including the methods employed, are summarized in Table 2 in Appendix 1.

Brief history of La Restinga

Founded in the 1940s, La Restinga is situated in the southwest of the island of El Hierro, the smallest and the least populated among the seven islands that form the Canary Island archipelago. Originally dependent on agriculture, cattle raising and fisheries, the economy of El Hierro is presently based on the services sector, with tourism playing an important role, especially in an area known as the *Sea of Calms*,¹ which has become an increasingly popular scuba diving destination in the last two decades (De la Cruz Modino and Pascual-Fernández 2013). Although the number of jobs in agriculture and fisheries is low, these productive activities make important contribution to the local economy and have enjoyed a historically strong institutional support. Besides, many families combine these activities with other jobs in the service sector, having therefore supplementary income. Since 2000, the population of La Restinga has increased slightly from 443 to 541 inhabitants (Data: ISTAC, see Appendix 2).

The fishing history of La Restinga began with fishers fleeing the crisis of the fishing industry in La Gomera, the other island in the archipelago, during the Second World War and the Francoist² repression. Tough conditions marked the origin of this community, which also suffered from successive years of drought. The situation improved at the end of the 1950s, when some tuna canning enterprises became interested in the area, and started to

buy local catches, installed an ice factory, provided loans to the local fishers to upgrade their boats, and created a stable market for the local tuna production (De la Cruz Modino 2012). In 1968, fishers became organized and a local *cofradía*³ was created (Galván Tudela 1997), serving to channel many of the demands from fishers to higher authorities, the first of which was asking for a fishing harbor for winter activities.

Small-scale fisheries

Traditionally, fishing in the *Sea of Calms* involved small boats (4–6 m) propelled with engines. After the fishing harbor was built in 1988, many small-scale fishers invested in larger boats (10–13 m). However, the maintenance cost of these larger boats and the diminishing catches of tuna forced many to reduce the size of their boat to 7–8 m for operation in inshore areas. These boats are technologically well equipped, safe, easy to maintain, and versatile for multi-gear, multi-species fisheries.

Except for hook and line that targets a wide range of species, other common gears used in the area are selective. For instance, harpoon is used to catch *peto* (wahoo, *Acanthocybium solandri*), small cylindrical pots for *morenas* (moray eel, *Muraenidae*), pots for shrimp, and *puyón* for catching *vieja* (parrotfish, *Sparisoma cretense*). In terms of income, *vieja* brings in about 23% of the total, followed by *peto* and *alfunsiño* (red bream, *Beryx decadactylus*) at 21 and 14% respectively.

In 2017, 36 fishers were active on the island. Thirty were in La Restinga, operating 31 boats, organized into 23 small-scale fishery productive units, each with one to four fishers depending on the fishery. In the last 5 years, seven new young fishers started to work in La Restinga replacing the retirement of older fishers, making it one of the youngest fisher' populations in the entire Canary Island archipelago.

In terms of governance, fisheries are generally managed by the *cofradía*. The cooperative, *Pescarestinga*, is also instrumental in making fishing a viable livelihood. Its foundation was motivated by a conflict that fishers had with a powerful middleman who controlled the price and the amount of fish that they could catch (Galván Tudela 1990). Not all members of the *cofradía* join the cooperative. Leaders of both organizations have always been different and the governing body of the *cofradía* normally includes a balanced number of representatives of *Pescarestinga* and other fishers.

Pescarestinga manages all landings of 17 productive units and organizes their sale. Most of these catches are sold outside of El Hierro, mainly in Tenerife, and a good percentage in La

¹ This name is due to the good weather prevailing in the maritime area, as the mountains of the island protect the zone from the dominant winds during almost all the year.

² It refers to a period from the end of the Spanish Civil War (1936–1939), when the authoritarian dictator Francisco Franco took control of the Spanish Government until his death in 1975.

³ *Cofradías* are local non-profit public corporations, which represent the interests of the whole fishing sector by acting “as consultative and cooperative bodies for the administration, undertaking economic, administrative, and commercial management tasks” and with the ability to “cooperate in matters of regulating access to the resources and informing about infringements occurring in their territory” (Pascual-Fernández 1999). They have played an important role in the implementation of MPAs in Spain.

Restinga, to local restaurants and bars, some of which are owned by fishing families. A small minority of fishers who are not members of *Pescarestinga* sell their own catches among restaurants, middlemen, or other networks.

Tourism development

In the early 1960s, a few restaurants and tourist apartments were built and catered for vacationers, many of them come from the other islands. Some of the businesses were owned and operated by fishing families, for whom tourism became an additional source of livelihood and income. Women, in particular, were heavily involved in tourism accommodation and related services, especially since the inception of *Pescarestinga*, which had minimized their roles in post-harvest activities. They also have a strong presence in the local catering sector. Currently, female members of over 70% of fishing families are engaged in tourism services during the high season, thus gaining additional income for their households (De la Cruz Modino and Pascual-Fernández 2005). In 1996, when the MPA was established, there were 200 lodging beds in La Restinga, including apartments and holiday homes. Today, there are more than 800 beds, the majority of which are still managed by local women, using social relationships in the neighborhoods, in the absence of any tour-operator.

Tourism constitutes an important economic supplement for fishing families. Apartments were built by men, while women have been working in bars, supermarkets, and restaurants, as well as running the rental and the maintenance of the tourist apartments. In contrast to what other studies have reported (e.g., Gustavsson et al. 2014), these tourism-related activities offer a stable market for small-scale fisheries production in La Restinga.

In 1968, a German entrepreneur started the first scuba diving business, consisting of a boarding house with a restaurant, where only his family members were employed. Villagers were not involved in this early scuba diving business development. It was not until the 1990s that other scuba diving entrepreneurs, from mainland Spain, appeared in the village using existing apartments, boarding houses, and restaurants managed by the local women. This change improved the perception of local villagers regarding the scuba diving tourism. The number of diving centers increased from 3 in 1996 to 9 in 2005, when a regulation on the number of divers inside the MPA was approved. Nowadays, there are 10 diving centers in La Restinga (including one multi-adventure enterprise offering other tourism activities), operating inside the MPA. Despite this development, there are some clear constraints for tourism expansion on the island. For instance, traveling to El Hierro and La Restinga is difficult and expensive, with only one small airport, and with restricted archipelago maritime connections. Limited tourism amenities and poor standard of some services add to the challenges.

The *Sea of Calms* and the MPA

Both fishing and tourism development generate ecological concerns in the area, especially in the extremely biologically diverse area, the *Sea of Calms*. The island has a very narrow continental shelf, with a steep slope very close to the coast, constituting a potentially fragile coastal ecosystem with high diversity of species but low in biomass. This structure, along with the warm sea surface temperature (21 °C annual average), offers great potential for scuba diving and other recreational activities.

Local fishers and the *cofradía* have always been aware of the fragility of the ecosystem and, with the backing of the national and regional fisheries administration and the University of La Laguna (Tenerife), had taken decisions in the past to ban several kinds of fishing gear in all the island such as trammel, fish pots, and long-lines (De la Cruz Modino 2012). During the 1990s, fishers were also concerned about the decline in tuna fisheries and the increased fishing effort on benthic species. They considered that it would be a good strategy to protect the benthic resources in the *Sea of Calms* using a tool such as an MPA⁴ (Jentoft et al. 2012). They wanted, however, to maintain some control over the design and the implementation, and, thus, insisted on being represented on the governing board, along with other local, regional, and scientific institutions.

The initial proposal for a protected area came from researchers at the end of 1980s, but was rejected by fishers because of the top-down process and the disagreement about where it should be located. Years after, the *cofradía* came up with considering MPA as a possibility and discussed it among fishers and scientists, later with policy-makers. Finally, the protected area received support from the majority of fishers and the area was declared a “marine reserve with fishing interest” in 1996. Some fishers opposed the idea because they were not convinced of the benefits. Over time, however, they have recognized the advantages of the MPA. In addition to addressing the decline in tuna fisheries and reducing pressure on other species, the MPA also aims at limiting tourism activities in the area. The basic information about the MPA is summarized in Table 1 (see also Fig. 1).

The zoning system shown in Fig. 1 was extensively discussed during the design process, but without participation from scuba diving enterprises. They became involved in the MPA governance mainly after the volcanic crisis (Jentoft et al. 2012). Further details of the social and economic context of La Restinga can be found in appendix 2 with Figs. 2, 3, 4 and 5.

⁴ We lack space in this paper to provide details about the establishment and the implementation of this MPA. Some of our previous publications describe these processes (De la Cruz Modino and Pascual-Fernández 2013; Jentoft et al. 2012; De la Cruz Modino 2012; Pascual-Fernández and De la Cruz Modino 2011)

Table 1 General information about the La Restinga MPA

Key features	Details		
Year established and decrees	1996 (National Government Ministerial Order of 24 January 1996 and Regional Government Decree 30/1996 of February 16)		
Implementation	1998–1999		
Depth range	0–400 m		
Habitats	Rocky reefs, caves, sandy substrates		
Main objectives	Fisheries enhancement and conservation		
Management body	<i>Comisión de Gestión y Seguimiento</i> (Advisory body) / <i>Comisión de Control</i>		
Responsibility	Shared between national and regional governments		
General services	Surveillance/visitors center		
Scientist and management activities	Signposting of diving points, monitoring of underwater activities, monitoring of angling from the shore, collaboration in research projects		
Activities forbidden in all MPA	Anchoring, recreational fishing by boat, spear fishing, scuba diving with propulsion systems, extractive uses other than those allowed		
Zone classification	Core	Buffer	Multiple uses
Size (Ha)	180	90	480
Uses allowed	Small-scale tuna fishing when a shoal being fished enter in the area	Small-scale fishing, scuba diving	Small-scale fishing/scuba diving/angling from the shore/other recreational uses
Gears allowed	Pole and line for tuna fishery exclusively	Hook and line gears, tuna fishery gears, harpoon for wahoo	Hook and line gears, tuna fishery gears, harpoon, traps for shrimps, traps for moray, nets for bait and for shoals of <i>Salma salpa</i>

The 2011 volcanic eruption and future development

The current analysis cannot be considered complete without noting the earthquakes and underwater eruption that struck the *Sea of Calms* in 2011, disrupting fishing and tourism activities in El Hierro, and especially in La Restinga (Pérez et al. 2013). The volcanic activity in the area increased in September–October 2011 and eventually, the village of La Restinga had to be evacuated for a brief period. Navigation, scuba diving, and fishing were either banned or severely limited for a long period, with the eruption remaining active until March 5, 2012. For months, the boats were moved from La Restinga harbor to other areas of the island. The volcano occurred right in the middle of the MPA, destroying the majority of the marine life there. Urged by the *cofradía*, a temporary ban on fishing in the most affected area was announced. Small-scale fishers received monetary compensation from the state for the inactivity during most of this period. These subsidies created some controversy because small-scale fishers clearly received more support compared to other sectors on the Island, despite the fact that the scuba diving centers were also in a vulnerable position. They made attempts to carry on their diving activities in different areas, but with limited success. Moving to other areas of the island was not easy, as the environmental conditions elsewhere are not as suitable for year-round business, and travel logistics are complicated. All diving enterprises stopped their activities in the area during the volcanic activity, but as of summer 2012, they have returned to La Restinga to resume their businesses.

The temporary ban in El Hierro MPA was not well received by a large group of recreational fishers and business associations. One of their arguments was that limiting recreational fishing could reduce the number of tourists at a time of economic crisis. Recreational fishers took to the streets in the main town on the Island, which led to modifications of some restrictions (Pascual Fernández et al. 2015). In this instance, the new president of the *Cabildo* (Island government) sided with the recreational sector, breaking a long tradition of cooperation with professional fishers.

The impact of this natural hazard on tourism in El Hierro was huge, as the seismic movements were widely publicized by media, discouraged thus visitors and affected the already fragile industries due to increasing transportation difficulties. The number of tourists went down by about 20%, from approximately 17,000 in 2009 to around 13,000 in 2013 (ISTAC, <http://goo.gl/8Mxi3p>). These estimates are conservative as the majority of the tourist accommodation on the island is informal and thus is not included in the official statistics.

The fishing ban ended in March 2013, but recreational fishers and scuba divers continue to demand inclusion in decision-making related to fisheries and ecosystem management. Such inclusion is critical given the possibility of establishing a Marine National Park in the area. Since 2014, this proposal is undergoing consideration by the national government, the *Cabildo* (Island government), municipalities, the *cofradía*, and a variety of civil society organizations in El Hierro. It is again opposed by the same group of recreational fishers, fearing that the marine park will lead to additional restrictions. And once

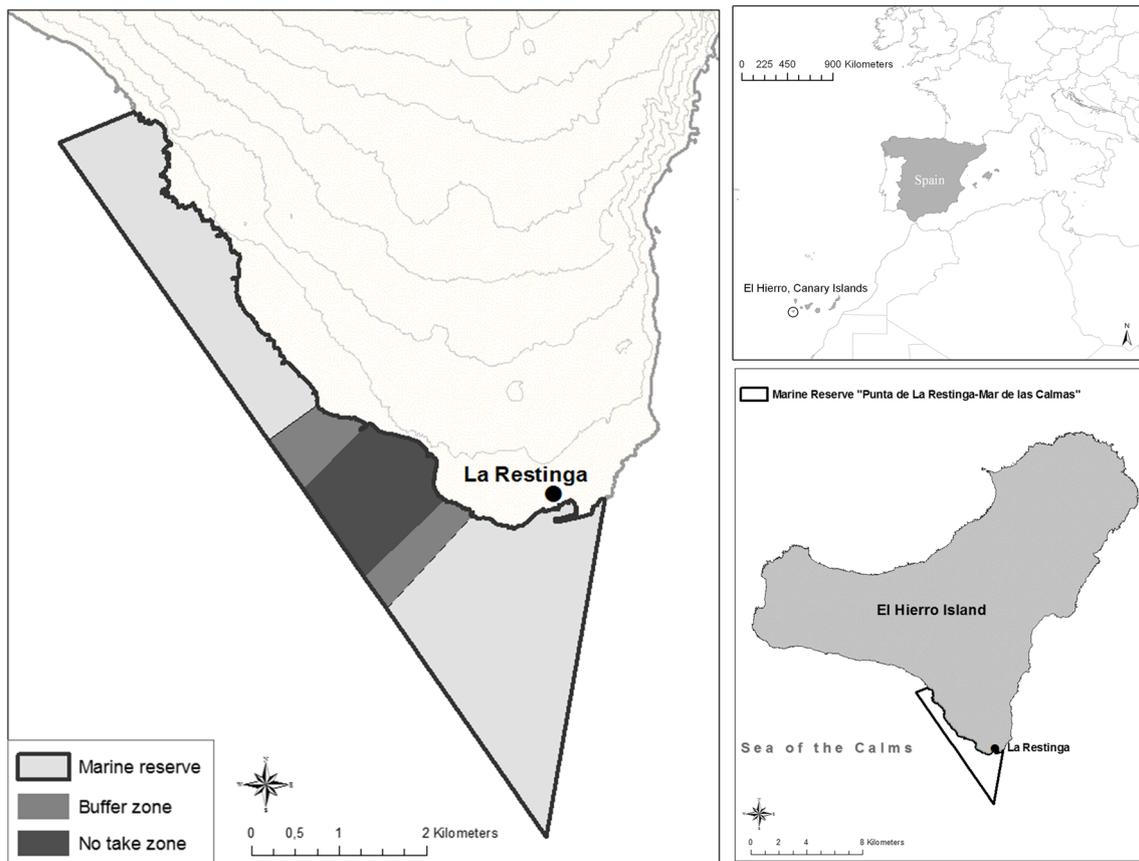


Fig. 1 Marine Reserve of La Restinga and the Sea of Calms (map by Alberto Jonay Rodríguez Darías)

more, their position draws support from the president of the *Cabildo* (Pascual Fernández et al. 2015).

Discussion

La Restinga and its MPA should be examined, first and foremost, as a governing system made up of institutions and organizations as well as a system-to-be-governed, comprising the nature itself and a diverse set of interacting individuals, organizations, and stakeholder groups (Kooiman et al. 2005). It is within these systems that synergies emerge, often as a direct outcome of internal or external interventions, such as the introduction of an MPA (Jentoft and Chuenpagdee 2009). These synergies are created from the relationships and interactions that exist in the community. They also emerge from the opportunities that the MPA generates.

The following discussion is organized according to the four distinct properties, which according to interactive governance theory are the key characteristics of any governance system. Whereas *components* refer to the natural and social entities (like species and social actors) that make up the system, *relationships* are about linkages between components, for instances the roles and rules that connect them and govern their *interactions*. The latter refers to the dynamic performance of the entities within

their constitutive relationships. *Boundaries* define which components belong to the system. They also exist where relationships are weakened and interactions dwindled, as for example through the MPA zoning.

Components

La Restinga has most of the elements that make up a thriving small-scale fisheries community. Here, fishing is the backbone of the local economy, and other activities have developed tangentially to it. Our research indicates that the MPA, while adding complexity, diversity, and new dynamics to the local community, is nevertheless well integrated into the local social and economic fabric. Furthermore, it has led to economic diversification without the fishing community losing control of their resources or the power to self-govern. In effect, the MPA is a value-added component to the La Restinga community, serving as an inducement for small-scale fisheries and local tourism operations to grow. As such, the system-to-be-governed, within which the MPA is placed, does not need to face conflicts that are common elsewhere, where MPAs are misfits.

From a conservation perspective, no-take zones may be the ideal way to preserve and restore a pristine environment. This assumes that humans are not a “natural” element of the ecosystem, and that their activities pose a risk to conservation. While

prohibiting the access and the use of MPAs configured as no-take zones seems sensible to some, this can be clearly contradicted in many empirical cases (Voyer et al. 2014; Lopes et al. 2013, 2015). Removing humans from nature, and thus denying them access to their livelihoods, is likely to cause conflict and trigger opposition to the implementation of an MPA. Thinking more broadly about who among the stakeholders can be part of an essential alliance to work on compromises may be necessary to enhance MPA governability. This implies that an MPA does not need to be the hub, around which everything in the community revolves, but could be an added component for synergy creation, if well embedded into a comprehensive and balanced system.

In fact, insisting on conservation goals without a willingness to incorporate interests and perspectives of local stakeholders may easily stand in the way of obtaining synergies. As shown in La Restinga, the MPA never rejected the needs of the local fishing community and the rights of access that fishers as its first citizens could legitimately claim. As a consequence, fishers were also motivated to support the ecological agenda, becoming a constructive force in making the MPA work, rather than an adversary and obstacle. The formal branding of the MPA “for fishing interest” emphasizes the synergy that has been achieved between conservation and fisheries. The MPA in La Restinga is designed to serve multiple purposes, including but not exclusively local fishers (Jentoft et al. 2012). The fishing interest is protected through the leadership of the *cofradía*, with its strong presence on the governing board of the MPA. The strength of the integration of the MPA into the local and social fabric could be exemplified by thinking about what could have happened in their absence. As seen in many other areas of the archipelago (Couce-Montero et al. 2015), having no MPA in the area would imply the lack of surveillance in the area, the intensification of uncontrolled fishing activities, and the degradation of the local ecosystem. It could also put in peril the livelihoods of small-scale fishing people and compromise the growth of scuba diving and tourist activities in the area.

Relationships

La Restinga demonstrates the value of multi-stranded relationships and linkages in the success of place-based management tools like MPAs for creating synergy. Building a more diversified local economy by adding other activities and enterprises to the fisheries contributes to making the community less fisheries dependent but still maintaining fishing culture and tradition. In La Restinga, many of these diversification initiatives have come from people and institutions within the community, while others have arisen from non-local people, such as with the first scuba diving centers and those that followed. The spin-offs from the MPA and these new economic opportunities to the community include economic benefits to spouses and other members of fishing families. Thus, besides fishing, family income is drawn from other sources like restaurants, stores, and hostels that have been

established to help build a viable small-scale tourism industry in the community (Lopes et al. 2015). In some instances, family members have jobs that are directly related to the MPA, as guards, or indirectly related like working in tourist information points centered on the natural values of the area.

The lessons from La Restinga also demonstrate the advantage of complementarity —“when A does X, B can do Y, and therefore C can do Z”— as within a symbiotic relationship where different activities, including the MPA, create spin-off opportunities without competition. When A fishes around and within the MPA, thus directly benefiting from its ecosystem services (X), B can run a fish restaurant (Y) using fish from A. Furthermore, this fish restaurant can be useful to scuba diving enterprises (C), which may recommend this quality food to their clients (Z), thus increasing the demand for fish from A. This is a local scenario, where a simple market mechanism constitutes a win-win situation. But transactions run more smoothly when people know and trust each other and are mutually concerned that they should all benefit, also for the sake of building their community. In La Restinga, like in many other places, this is only partially the case because conflicts at the interpersonal level may inhibit the market from running smoothly. In such a community, transactions occur between actors that are involved in complex relationships where the role of buyers and sellers cannot be easily separated from other roles and affinities that people have towards each other.

In general, synergy (S) occurs “when A does X, B does Y, and C does Z, and together they can also do S.” People in small communities may be more capable of realizing such a synergic potential by doing things that those in a competitive and adverse relationship would not be able to. La Restinga is closer to the former, but not free from the latter. Although a small, tightly knit community, it is not idyllic and homogeneous with all members cooperating equally. For instance, tension occurs because of the strong position that small-scale fishers have relative to other groups, particularly scuba diving operators.

When the initial idea about the MPA was launched, it was met with skepticism within the community and among local fishers. Later, and especially after the son of a local fishing family studying marine biology and a university professor became involved in the discussion, the proposal was welcomed by the local fishers and the *Cofradía*. It made a big difference who the messengers were and how people in the community related to them (Gonzalez and Jentoft 2011). For synergy to occur, it not only matters what people do but also who they are relative to each other.

Interactions

La Restinga demonstrates the importance of checks and balances. Obviously, the community needs stable and predictable conditions, and opportunities to assert their power over the running of local affairs, including the MPA. There is a risk that someone might “highjack” the MPA agenda if there is no

mechanism to enable local stakeholders to become part of the governing system (Jentoft et al. 2011; Segi 2014). In La Restinga, the *cofradía* provides the mechanism for the local fishers to make decisions about what the MPA should be and do. Other stakeholders do not have similar organizations to represent their interests. Certainly, as definitive stakeholders, the small-scale fishers of La Restinga would have a high score in power, urgency, and legitimacy criteria due to their permanent residency status (Buanes et al. 2004). They did, after all, create the community in the first place. The fact that many diving entrepreneurs came much later, from abroad, and do not usually stay long in the community, may explain their difficulties in becoming integrated into the community.

Tension between local fishers and diving entrepreneurs or external tourist operators is to be expected (Fabinyi 2008). But the “weak ties” that outsiders and newcomers have to the community can be a positive force, as suggested generally by Granovetter (1973). In fact, it seems that after the volcanic crisis, their interaction with the *cofradía* has improved. The confrontation with some recreational fishers because of the fishing ban promoted by La Restinga fishers after the volcano may facilitate the confluence of interests between small-scale fishers and diving centers. Interestingly, those families in La Restinga that have a foot in both the fishery and tourism business coped better with the crisis caused by the eruption than those who only relied on one type of activity, such as scuba diving.

As a general lesson for the formation of an embedded and synergistic MPA, one which links up to a larger system, it matters which interactions take place. In La Restinga, despite some minor strains with outsiders, these linkages have not led to external domination; instead fishers have received support from scientists, civil servants in key positions, and lately, by environmental organizations. For this reason, some of these actors are using La Restinga as an example to be imitated in other areas of Spain.

Boundaries

Can MPAs help build symbiosis and synergies, if their locations and boundaries are contested? To answer this key question, one needs to investigate the extent and intensity of ongoing activities both within the area and beyond. Further, as Chuenpagdee et al. (2013) emphasize, this question needs to be extended to the pre-implementation or the “step zero” stage. While for the most part, it is the system-to-be-governed that calls for the creation of an MPA, each MPA system is unique and needs to be looked at and understood on its own terms, before the perimeters can be set. This process, even if done through participatory mapping, should not be the first exercise, but something that comes once the knowledge about the system, particularly about social boundaries, has been established.

While zoning may help minimize spatial competition, it often creates other kinds of conflict. MPAs are therefore difficult to set up, as they easily trigger local resistance among those who fear

that their action space might be restricted (Hoffman 2014). Thus, spatial demarcation is not a geo-technical issue or a mapping exercise, although that can be part of it. Demarcation also raises issues regarding social justice pertaining to differential access within the MPA, for instance between commercial and recreational fishing and scuba diving, as in La Restinga. MPAs are therefore also political, and as discussed elsewhere, they raise problems that are inherently “wicked” (Jentoft and Chuenpagdee 2009).

MPAs are clearly direct interventions into relationships and interactions between various stakeholders and uses. In a situation when “stakeholder A does X, B cannot do Y,” A and B are in a competitive, zero-sum game where more space for one means less for the other. Considering that space is scarce, and one type of resource use may limit the use of others, keeping them apart through some kind of boundary setting or working out rules for how to share the same space, should help avoid conflicts (Jentoft 2017).

However, whether different uses are inherently antagonistic and/or “parasitic,” unable to co-exist or incapable of cooperating and compromising, is an issue to be explored when MPAs are crafted and boundaries are drawn. On closer inspection, however, this may not really be the case. In La Restinga, the conflict between different users was avoidable, and the synergies can be easily exemplified. For instance, fishers in La Restinga agreed to protect and not fish an emblematic grouper, named the “*Mero Pancho*,” as a way of collaborating with divers in the area. This extremely large grouper was at one time a symbol for the MPA, covered widely by media, and an attraction for incoming divers. In the end, the local economy and their families have benefited from it. This may come as a surprise to those who see MPAs as just a tool for securing the integrity of marine ecosystems, and also to those who do not believe in a win-win situation. Unfortunately and to the dismay of fishers and divers, *Mero Pancho* disappeared from the area some years ago. Some divers from other islands who came with spearguns were blamed for this, but nothing could be demonstrated. In this case, the boundaries and rules assumed and respected by the locals were not recognized by outsiders or poachers. The incident reaffirms the importance of boundaries and the need to improve relationships and interactions between local stakeholders.

Generally speaking, as a lesson from this particular case, a workable system-to-be governed, of which the MPA is part, along with other activities like tourism, must be an open system for synergy to be created. It must allow its boundaries to be permeated and work across scales. It must let itself be exposed to external influences, because they often come with resources and new opportunities for building a more complete system and therefore a thriving fishing community, like La Restinga has been achieved (cf. also (Bennett and Dearden 2014; Hassanalı 2013). The introduction of the Marine National Park will broaden the area under protection but may also make the usability of the area more complex.

Conclusion

This paper draws from long-term research programs on coastal communities in the Canary Islands. Synergies have been observed in these places but not theorized until now. Synergy creation is not restricted to MPAs. Rather, other institutional frameworks like Integrated Coastal Zone Management (ICZM) may benefit and learn from using this concept and by placing some focus on synergy creation. Connection between synergy and other frameworks like social innovation (van der Have and Rubalcaba 2016) can also be conceptually explored.

Whether existing or potential, synergy is a dynamic quality of the system-to-be-governed and the governing system, as well as an outcome of the interactions and relationships between them. Some levels of diversity and complexity are imperative to synergy creation: these are features of the systems where MPAs are introduced and operate. Coupling diversity with complexity to build integrated and interactive systems of individual components makes communities less vulnerable. This does not contradict the importance of specialized competencies of individual system components (e.g., fishing, scuba diving and restaurants, in La Restinga). As Chadwick (2010) holds, the highest potential for creating synergy (and hence improving governability) is when components have both specialized competencies and strong relationships. It could be argued that individual specialization helps form buffer against systemic collapse, as effects can be isolated to individual components. But from a governability perspective, symbiotic relationships between specialized components are likely to lead to improving governability and to a speedier recovery from disaster, like the volcanic eruption in La Restinga. Individual actions and collaboration can create exponential growth through synergistic spin-offs. This does not have to be a spontaneous process but one that requires negotiated institutional arrangements that facilitate cooperation and joint decision-making. This is something that should be considered when moving forward with the plan to establish the new Marine National Park for El Hierro.

MPAs bring uncertainty to the community, as no one can predict their outcomes. This sense of insecurity can be met, however, with more stakeholder involvement and greater transparency, as stakeholders must know what is going on. They must understand how they are linked to the system as a whole, how they are affected both directly and indirectly from outside their immediate surroundings, and what threats and opportunities for synergy creation exist. Relationships must allow interactions that inform people about the relevance of each other's undertakings. MPAs cannot therefore remain isolated from the rest of the community, and the community cannot be ignorant about what is happening to and within an MPA. This calls for MPAs to be embedded as entities that fit within a greater whole. This is precisely what makes La Restinga stand out in comparison with many other MPAs in Spain and elsewhere.

Synergies, as the case of La Restinga exemplifies, are not developed in a vacuum. It is possible to highlight some conditions that facilitated the development of synergies in this example. The marine ecosystem, while fragile, has provided long-term subsistence to a close-knit fishing community. The local collective actions and strong leaderships, first in the *cofradía* and later in the cooperative, enabled effective resource management and the creation of the MPA. No less important was the partnership developed between community, fisher organizations, scientists, and the administration (local, regional, and national). Since its inception, the clear access rules and the surveillance service contributed to fisheries compliance. Finally, the slow pace of tourism development, due partly to the remoteness of the Island, fostered the linkages between local fishing families and the service sector, resulting eventually in favorable outcomes for all stakeholders, including the late comers like the scuba diving business.

Our analysis shows that MPAs, ICZM, and other spatial planning approaches should be less about demarcation and separation but more about building symbiosis between activities, aligning with the characteristics of the natural and social systems. Communities are not just zero-sum games but certainly have the potential to transform competition and conflict into relationships, characterized by cooperation and synergy. Such transformation has to be facilitated since moving beyond the individual interests of involved parties in a way that improves interactions and builds relations is not an easy task, as the La Restinga example shows. The well-being of local communities and the functionality of the entire governance systems should be incorporated as part of the strategy to create synergy. The strategy should also, as Kooiman (2003) states for interactive governance, include caring for the institutions that facilitate integration and coordination of activities for a better dynamic and governability. This would help strengthening communities and prepare them for shocks, as happened in La Restinga with the volcanic eruption. A community must have mechanisms and institutions that foster relationships and interactions that enable local people as well as newcomers to sort out their differences and to pull together, which La Restinga has in its cooperative (Pescarestinga), the *cofradía* and, indeed, in the MPA.

Acknowledgements. We acknowledge the collaboration of the Network of Marine Reserves of the General Secretary of Fisheries, Ministry of Agriculture, Food and Environment of Spain. This work draws on Clive Tyrell for the English editing, and Carmelo Dorta for research assistance. This article is based on research conducted under the project “Governance challenges for sustainable small-scale fisheries: creating synergies with marine conservation and tourism” (GOBAMP II, CSO2013-45773-R, financed by Ministry of Economy and Competitiveness of Spain). We also acknowledge support from the “Too Big To Ignore: Global Partnership for Small-Scale Fisheries Research”, funded by the Social Sciences and Humanities Research Council of Canada (grant number 895-2011-1011).

Appendix 1

Table 2 Projects developed that included fieldwork in La Restinga (El Hierro). In all of these projects, one or both of the authors of ULL were involved

Project	Period	Main research goals	Methods and data sources	Target groups
Carta etnográfica de la pesca en Canarias (Tenerife, El Hierro, Gran Canaria y La Gomera): tecnología y cambio socioeconómico en la pesca artesanal canaria [1]	1985–1988	Comparison of the transformations of small-scale fishing communities in several Islands of the Archipelago Analysis of fishing strategies Tourism impacts on coastal areas	Long-term fieldwork Interviews Participant observation Demographic data extracted from census Documental and historical analysis Semi-structured interviews Documental and historical analysis Participant observation Local household census Questionnaire with open ended questions	Small-scale fishers Local small-scale fishers MPA managers at national and local level Local entrepreneurs (mainly scuba diving entrepreneurs but also restaurants and recreational fishing providers)
Marine reserves and littoral fishing populations: impacts and strategies by a sustainable development [2]	2001–2005	Step-zero analysis for the MPA implementation in the Sea of Calms Coastal and marine tourism development analysis in La Restinga, with special focus on fishing families Level of knowledge and participation on the MPA analysis, with special focus on small-scale fishers involved with the MPA and their local institutions Analysis of economic strategies of local families facing tourism development Analysis of the role and conditions of local women involved in tourism activities	Semi-structured interviews Local inventory of lodging beds, restaurants and stores	Women involved in accommodation services in La Restinga Women involved in other economic activities related with tourism
Women in fisheries and Aquaculture in Europe [3]	2002–2005	Socio-economic analysis of MPAs in southern Europe	Questionnaires Local census of enterprises with activities linked to the Marine Reserve and other service providers Semi-structured interviews Semi-structured interviews Local census Questionnaire Mapping of marketing channels for tourism products Content analysis of destination images Questionnaires Semi-structured interviews Content analysis of destination images	Direct and indirect MPA users: Small-scale fishers, recreational fishers, scuba diving entrepreneurs, scuba diving tourist, lodging-bed providers
European Marine Protected Areas as tools for Fisheries management and conservation [4]	2005–2008	Analysis of MPAs management Recreational fisheries assessment Analysis of coastal and marine tourism	Review current situation of fisheries and other coastal activities Define a future strategy with stakeholders Questionnaire Semi-structured interviews	Local leaders and other local stakeholders
Marine reserves, governance and sustainable development. Fishing activity, tourism development and diversification strategies [5]	2006–2009	Analysis of economic impact of scuba diving tourism on sharks and rays in the MPA	Template for step-zero analysis Semi-structured interviews Questionnaire about images of MPAs	Direct and indirect MPA users: small-scale fishers, recreational fishers, scuba diving entrepreneurs, scuba diving tourist, lodging-bed providers
Study on economic benefits of shark diving in Canary Islands [6]	2009–2010	Preparation of a development strategy for the Fisheries Local Action Group (FLAG) of El Hierro Governability analysis and tools design		Small-scale and recreational fishers Local small-scale fisheries leaders Scientist working with Spanish Oceanographic Institute Tourism entrepreneurs (scuba diving and lodging beds providers) Scuba diving entrepreneurs Scuba diving tourists Expert scuba divers in the Canary Islands
Strategy for the Fisheries Local Action Group of El Hierro [7]	2011			Local leaders and other local stakeholders
Excellence in Marine Sciences [8]	2010–2012			Direct and indirect MPA users: small-scale fishers, recreational fishers, scuba diving entrepreneurs, scuba diving tourist, lodging-bed providers
Governability analysis applied to the creation process of Marine Protected Areas [9]	2009–2012			Direct and indirect MPA users: Small-scale fishers, recreational fishers, scuba diving entrepreneurs,

Table 2 (continued)

Project	Period	Main research goals	Methods and data sources	Target groups
Integral Plan for the tourism recovery in El Hierro Island [10]	2013	Comparison of case studies in national and international context Design a strategy for the tourist destination recovery after the 2011 earthquake-volcanic crisis Analysis of local tourism offer and demand Proposals for new tourist products	Semi-structured interviews Workshops Inventory of resources, activities, enterprises and tourist products.	scuba diving tourist, lodging-bed providers Tourism policy-makers and leaders of organizations Community leaders and tourism enterprisers Local population involved in tourism activities
Provision of a database containing the main socio-economic variables and socio-economic data series 2011, 2012 and 2013 for the island of El Hierro (Tenerife) within the process of declaration of the Marine National Park on the island [11]	2014	Creation of dataset related with the socio-economic characteristics of the population of El Hierro and La Restinga for the proposal of a Marine National Park in El Hierro	Synthesis of existing data from previous research, processing of statistical data Primary and secondary data of fisheries analysis (fishing time, main fisheries, fishing work-force) Demographic data Socio-economic data from available statistical sources	Local population Small-scale fishers Tourism-related actors Other actors
Governance challenges for sustainable small-scale fisheries: creating synergies with marine conservation and tourism [12]	2014-2017	Governability analysis for the scuba diving tourism activity in the MPA	Questionnaires (scuba diving entrepreneurs and scuba diving tourists) Specific method to evaluate ecological impacts of scuba diving based on participant observation Workshop with scuba diving entrepreneurs	Scuba diving entrepreneurs Scuba diving tourists

[1] Financed by the Dirección General de Universidades del Gobierno Canario

[2] Financed by the Ministerio de Ciencia y Tecnología, Dirección General de Investigación REF: Ren 2001/3350/MAR

[3] European Union, DG MARE, 5° PCRD, REF: Q5TN-2002-01560 CCE]

[4] Financed by: 6th FPRD, European Union, SSP. REF: EMPAFISH, Contract n°006539

[5] Financed by Ministerio de Educación y Ciencia, Dirección General de Investigación, FEDER, REF: SEJ2006-0629/SOCI]

[6] Financed by Shark Alliance and PEW

[7] Financed by Viceconsejería de Pesca, Gobierno de Canarias

[8] Financed by Agencia Canaria de Investigación, Innovación y Sociedad de la Información

[9] Financed by Ministerio de Ciencia e Innovación, Secretaría de Estado de Investigación, FEDER CSO2009-09802]

[10] Financed by Dirección General de Promoción Económica. Gobierno de Canarias

[11] Financed by Grupo Tragsa and Organismo Autónomo de Parques Nacionales

[12] Financed by Ministerio de Economía y sostenibilidad. convocatoria de Retos. Programa Estatal de I+D+i. Orientada a los Retos de la Sociedad. [CSO2013-45773-R]

Appendix 2

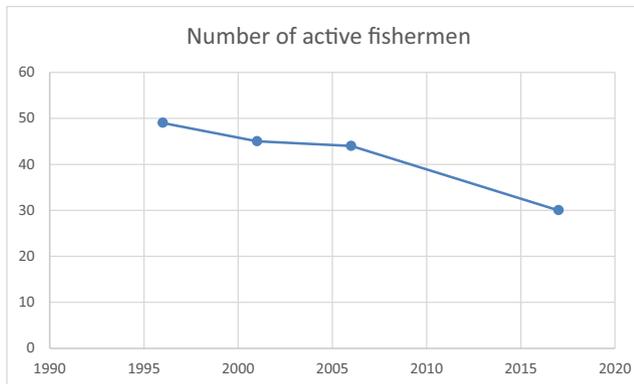


Fig. 2 Number of active fishermen. Source: Cofradía and fieldwork

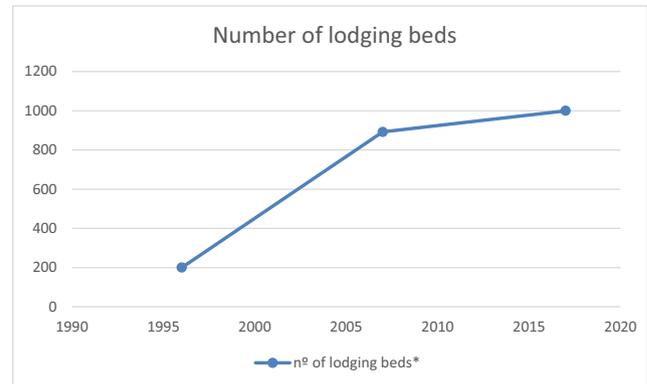


Fig. 4 Number of lodging beds. Source: fieldwork

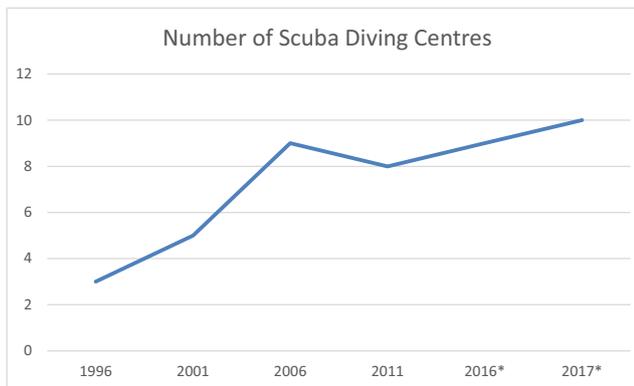


Fig. 3 Number of scuba diving centres. Source: fieldwork

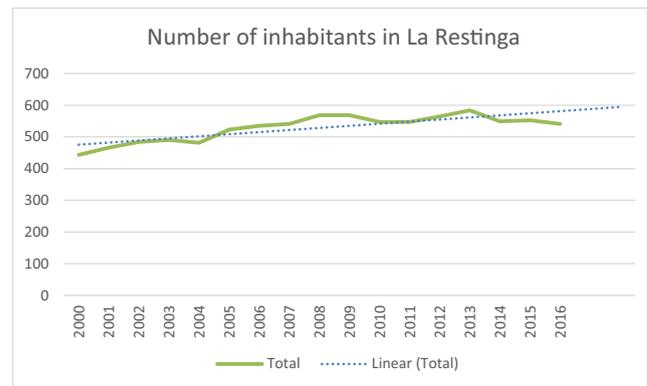


Fig. 5 Number of inhabitants in La Restinga. Source: Instituto Canario de Estadística

References

- Bavinck, Maarten, Ratana Chuenpagdee, Svein Jentoft, and Jan Kooiman. 2013. *Governability of fisheries and aquaculture: theory and applications*. Dordrecht: Springer.
- Bennett, Nathan J., and Philip Dearden. 2014. Why local people do not support conservation: community perceptions of marine protected area livelihood impacts, governance and management in Thailand. *Marine Policy* 44: 107–116. <https://doi.org/10.1016/j.marpol.2013.08.017>.
- Biggs, Duan, Francisca Amar, Abel Valdebenito, and Stefan Gelcich. 2016. Potential synergies between nature-based tourism and sustainable use of marine resources: insights from dive tourism in territorial user rights for fisheries in Chile. *PLoS One* 11 (3): e0148862. <https://doi.org/10.1371/journal.pone.0148862>.
- Buanes, Arild, Svein Jentoft, Geir Runar Karlsen, Anita Maurstad, and Siri Soreng. 2004. In whose interest? An exploratory analysis of stakeholders in Norwegian coastal zone planning. *Ocean & Coastal Management* 47 (5–6): 207–223.
- Chadwick, Clint. 2010. Theoretic insights on the nature of performance synergies in human resource systems: toward greater precision. *Human Resource Management Review* 20 (2): 85–101. <https://doi.org/10.1016/j.hrmr.2009.06.001>.
- Christie, Patrick. 2004. Marine protected areas as biological successes and social failures in Southeast Asia. *American Fisheries Society Symposium* 42 (42): 155–164.
- Christie, Patrick, and Alan T. White. 2007. Best practices for improved governance of coral reef marine protected areas. *Coral Reefs* 26 (4): 1047–1056. <https://doi.org/10.1007/s00338-007-0235-9>.
- Chuenpagdee, Ratana, Jose J. Pascual-Fernández, Emese Szeliánszky, Juan Luis Alegret, Julia Fraga, and Svein Jentoft. 2013. Marine protected areas: re-thinking their inception. *Marine Policy* 39 (0): 234–240. <https://doi.org/10.1016/j.marpol.2012.10.016>.
- Coser, Lewis A. 1956. *The functions of social conflict: an examination of the concept of social conflict and its use in empirical sociological research*. Glencoe, Ill. Florence: Free Press.
- Couce-Montero, Lorena, Villy Christensen, and José J. Castro. 2015. Effects of small-scale and recreational fisheries on the Gran Canaria ecosystem. *Ecological Modelling* 312: 61–76. <https://doi.org/10.1016/j.ecolmodel.2015.05.021>.
- De la Cruz Modino, Raquel. 2012. *Turismo, pesca y gestión de recursos. Aportaciones desde La Restinga y L'Estartit*. Madrid: Ministerio de Educación, Cultura y Deporte.
- De la Cruz Modino, Raquel, and José J. Pascual-Fernández. 2005. Mujeres, diversificación económica y desarrollo del turismo marino.

- En torno a la Reserva Marina Punta de la Restinga-Mar de las Calmas (El Hierro - Islas Canarias). In *AKTEA conference: women in fisheries and aquaculture: lessons from the past, current actions and ambitions for the future*, ed. Katia Frangoudes and José J. Pascual-Fernández, 263–275. La Laguna, Tenerife: Asociación Canaria de Antropología.
- De la Cruz Modino, Raquel, and Jose J. Pascual-Fernández. 2013. Marine protected areas in the Canary Islands: improving their governability. In *Governability of fisheries and aquaculture: theory and applications*, ed. M. Bavinck, R. Chuenpagdee, S. Jentoft, and J. Kooiman, 219–240. Dordrecht: Springer.
- Fabinyi, Michael. 2008. Dive tourism, fishing and marine protected areas in the Calamianes Islands, Philippines. *Marine Policy* 32 (6): 898–904.
- Fenberg, Phillip B., Jennifer E. Caselle, Joachim Claudet, Michaela Clemence, Steven D. Gaines, Jose A. García-Charton, Emanuel J. Gonçalves, et al. 2012. The science of European marine reserves: status, efficacy, and future needs. *Marine Policy* 36 (5): 1012–1021. <https://doi.org/10.1016/j.marpol.2012.02.021>.
- Galván Tudela, Alberto. 1990. 'Pescar en grupo': De los azares ambientales a los factores institucionales (La Restinga, El Hierro). *Eres (Serie de Antropología)* 2: 39–60.
- Galván Tudela, Alberto. 1997. *La identidad herreña*. La Laguna: Centro de la Cultura Popular Canaria-Cabildo de El Hierro.
- Gonzalez, Clarence, and Svein Jentoft. 2011. MPA in Labor: securing the Pearl Cays of Nicaragua. *Environmental Management* 47 (4): 617–629. <https://doi.org/10.1007/s00267-010-9587-y>.
- Granovetter, Mark S. 1973. The strength of weak ties. *American Journal of Sociology* 78 (6): 1360–1380.
- Gustavsson, Madeleine, Lars Lindstrom, Narriman S. Jiddawi, and Maricela de la Torre-Castro. 2014. Procedural and distributive justice in a community-based managed marine protected area in Zanzibar, Tanzania. *Marine Policy* 46: 91–100. <https://doi.org/10.1016/j.marpol.2014.01.005>.
- Halpern, Benjamin S., and Robert R. Warner. 2002. Marine reserves have rapid and lasting effects. *Ecology Letters* 5 (3): 361–366.
- Hassanali, Kahlil. 2013. Towards sustainable tourism: the need to integrate conservation and development using the Buccoo Reef Marine Park, Tobago, West Indies. *Natural Resources Forum* 37 (2): 90–102.
- Hoffman, David M. 2014. Conch, cooperatives, and conflict: conservation and resistance in the Banco Chinchorro Biosphere Reserve. *Conservation & Society* 12 (2): 120–132. <https://doi.org/10.4103/0972-4923.138408>.
- Jentoft, Svein. 2017. Small-scale fisheries within maritime spatial planning: knowledge integration and power. *Journal of Environmental Policy & Planning* 19: 1–13. <https://doi.org/10.1080/1523908X.2017.1304210>.
- Jentoft, Svein, and Ratana Chuenpagdee. 2009. Fisheries and coastal governance as a wicked problem. *Marine Policy* 33 (4): 553–560.
- Jentoft, Svein, and Cato Wadel. 1984. *I samme båt: sysselsettingssystemer i fiskerinaeringen*. Stavanger: Universitetsforlaget.
- Jentoft, Svein, Ratana Chuenpagdee, and Jose J. Pascual-Fernandez. 2011. What are MPAs for: on goal formation and displacement. *Ocean & Coastal Management* 54: 75–83. <https://doi.org/10.1016/j.ocecoaman.2010.10.024>.
- Jentoft, Svein, Jose Pascual-Fernandez, Raquel De la Cruz Modino, Manuel Gonzalez-Ramallal, and Ratana Chuenpagdee. 2012. What stakeholders think about marine protected areas: case studies from Spain. *Human Ecology* 40 (2): 185–197. <https://doi.org/10.1007/s10745-012-9459-6>.
- Kooiman, Jan. 2003. *Governing as governance*. London: Sage.
- Kooiman, Jan, Maarten Bavinck, Svein Jentoft, and Roger Pullin. 2005. *Fish for life: interactive governance for fisheries*. Amsterdam: Amsterdam University Press.
- Lopes, Priscila F.M., Eliezer M. Rosa, Svetlana Salyvonchik, Vinicius A. Nora, and Alpina Begossi. 2013. Suggestions for fixing top-down coastal fisheries management through participatory approaches. *Marine Policy* 40: 100–110. <https://doi.org/10.1016/j.marpol.2012.12.033>.
- Lopes, Priscila F.M., S. Pacheco, Mariana Clauzet, Renato A.M. Silvano, and Alpina Begossi. 2015. Fisheries, tourism, and marine protected areas: conflicting or synergistic interactions? *Ecosystem Services* 16: 333–340. <https://doi.org/10.1016/j.ecoser.2014.12.003>.
- McClanahan, Tim, Jamie Davies, and Joseph Maina. 2005. Factors influencing resource users and managers' perceptions towards marine protected area management in Kenya. *Environmental Conservation* 32 (1): 42–49. <https://doi.org/10.1017/s0376892904001791>.
- Micheli, Fiorenza, and Federico Niccolini. 2013. Achieving success under pressure in the conservation of intensely used coastal areas. *Ecology and Society* 18 (4): 19. <https://doi.org/10.5751/es-05799-180419>.
- Milgrom, Paul R., and John F. Roberts. 1992. *Economics, organization and management*. London: Prentice-Hall.
- Oyanedel, Rodrigo, Andrés Marín, Juan Carlos Castilla, and Stefan Gelcich. 2016. Establishing marine protected areas through bottom-up processes: insights from two contrasting initiatives in Chile. *Aquatic Conservation: Marine and Freshwater Ecosystems* 26 (1): 184–195. <https://doi.org/10.1002/ajqc.2546>.
- Pascual Fernández, José J., Inés Chinea Mederos, and Raquel De la Cruz Modino. 2015. Marine protected areas, small-scale commercial versus recreational fishers: governability challenges in the Canary Islands, Spain. In *Interactive governance for small-scale fisheries: global reflections*, ed. Svein Jentoft and Ratana Chuenpagdee, 397–412. Dordrecht: Springer.
- Pascual-Fernández, José. 1999. Participative management of artisanal fisheries in the Canary Islands. In *Southern Waters: Issues of management and practice*, ed. David Symes, 66–77. London: Blackwell's Science, Fishing News Books.
- Pascual-Fernandez, Jose J., and Raquel De la Cruz Modino. 2011. Conflicting gears, contested territories: MPAs as a solution? In *World small-scale fisheries contemporary visions*, ed. Ratana Chuenpagdee, 205–220. Eburon: Delft.
- Pérez de Paz, Pedro Luis, Carlos Sangil, Natacha Aguilar de Soto, José Carlos Hernández, Sabrina Clemente, and Pedro A. Hernández. 2013. *El Hierro: nacimiento de un volcán*. Puerto de La Cruz: Instituto de Estudios Hispánicos de Canarias.
- Pomeroy, Robert S., Michael B. Mascia, and Richard B. Pollnac. 2007. Marine protected areas: the social dimension. In *Report and documentation of the expert workshop on marine protected areas and fisheries management: review of issues and considerations*. Rome, 12–14 June 2006. *FAO Fisheries Report No. 825*, ed. FAO, 149–181. Rome: FAO.
- Porter, Michael E. 1998. Clusters and the new economics of competition. *Harv Bus Rev* 76 (6): 77–90.
- Revenga, Silvia. 2003. Las Reservas Marinas Canarias (España). In *Actas de las I Jornadas sobre Reservas Marinas y I Reunión de la Red Iberoamericana de Reservas Marinas (RIRM)*. Cabo de Gata, Almería 17–23 de Septiembre de 2001, ed. Diego Moreno and Antonio Frías, 101–111. Madrid: Publicaciones del MAPA, Secretaría Técnica.
- Rittel, Horst W.J., and Melvin M. Webber. 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4 (2): 155–169. <https://doi.org/10.1007/BF01405730>.
- Segi, Shio. 2014. Protecting or pilfering? Neoliberal conservationist marine protected areas in the experience of Coastal Granada, the Philippines. *Human Ecology* 42 (4): 565–575. <https://doi.org/10.1007/s10745-014-9669-1>.
- Sønvisen, Signe A., Jahn P. Johnsen, and Jostein Vik. 2011. The Norwegian coastal employment system: what it was and what it is. *MAST* 10 (1): 31–56.

- van der Have, Robert P., and Luis Rubalcaba. 2016. Social innovation research: an emerging area of innovation studies? *Research Policy* 45 (9): 1923–1935. <https://doi.org/10.1016/j.respol.2016.06.010>.
- Voyer, Michelle, William Gladstone, and Heather Goodall. 2014. Understanding marine park opposition: the relationship between social impacts, environmental knowledge and motivation to fish. *Aquatic Conservation-Marine and Freshwater Ecosystems* 24 (4): 441–462. <https://doi.org/10.1002/aqc.2363>.
- Wood, Louisa J., Lucy Fish, Josh Laughren, and Daniel Pauly. 2008. Assessing progress towards global marine protection targets: short-falls in information and action. *Oryx* 42 (3): 340–351. <https://doi.org/10.1017/s003060530800046x>.