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MARINE PROTECTED AREAS IN COLOMBIA: RE-CONNECTING SOCIAL, ECOLOGICAL, AND POLICY ASPECTS THROUGH A GOVERNANCE PERSPECTIVE

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by

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Statement of Contributions

I am the sole author of Chapters 1, 2, 3, 4 and Chapter 7 of this dissertation. Chapters 4, 5 and 6 are based on manuscripts. Chapter 5 was co-authored with Scott Slocombe. Chapter 6 was co-authored with Scott Slocombe and Derek Armitage.

I was the lead author for all three manuscripts. Bibliographic citations for the co-authored chapters have been included below.

Chapter 5. Territorial Rights in the Seascape: Implications for the Governance of Marine Protected Areas.

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Chapter 6. Institutional arrangements for marine protected areas in Colombia: Insights for improving governance.

Ramírez, L.F., Slocombe, D.S., and Armitage, D. Institutional arrangements for marine protected areas: Insights for shifting top-down approaches. *Manuscript.*

Abstract

The purpose of this doctoral research is to examine opportunities and constraints for integrating key aspects of governance into marine conservation strategies and for shifting top-down approaches toward collaborative and integrative forms of governance that enhance conservation and social outcomes in marine protected areas (MPAs).

Although there is evidence that demonstrates that MPAs are an effective tool for marine conservation, shortcomings in addressing ecological characteristics and particularly in addressing social factors in the design and planning of MPAs often constrain achieving conservation and sustainability goals. These shortcomings are particularly acute in MPAs implemented through top-down governance approaches that overlook stakeholder participation in planning and management decision-making and in assuming responsibilities. As an alternative to better integrate social and ecological characteristics, hybrid governance has gained prominence in the last decades; yet, the transition from a top-down towards a hybrid MPA governance model is not straightforward and mechanisms for sharing marine and coastal access rights, authority, and power are not well understood.

Based on the multiple-site case study in the Caribbean of Colombia, this research synthesizes and examines historical and development aspects under which top-down marine protected areas are established and explores the role of different components and attributes of the governance system in MPA performance. Specifically, this research analyses barriers and opportunities for moving towards shared-governance approaches and for improving MPA governance.

The multiple-site case study includes four MPAs—National Natural Park Corales del Rosario and San Bernardo, Regional Natural Park Boca Guacamaya, Regional Integrated Management District Ciénaga de la Caimanera, and Private Natural Reserve Sanguare—sharing similar bio-geographical and socio-economic characteristics, but operating at different jurisdictions (regional and national) and under different categories of management and use restrictions.

The data collection methods included: review and analysis of documents, semi-structured interviews (n=69) with key informants from the communities within or near the selected MPAs and from environmental authorities, NGOs, and the private sector; focus groups (n=6) with community representatives; and direct observation of activities carried out by locals focused on social and environmental interactions. Inductive-deductive content analysis was used for finding the main elements of governance and key interactions underpinning the overall MPA governance system.

The findings show that MPA system development in Colombia has been considerably influenced and supported by international mandates and agreements and some national policies. However, governance barriers related to government and community spheres still constrain conservation outcomes. To overcome these barriers there is a need for bringing together efforts and capacities from different actors (community, government, NGOs, academia, private sector) and recovering trust among them. A policy reform stating clear ocean management directions and allocating sufficient resources to reinforce the capacity and coordination of environmental agencies and other key actors is also needed.

One of the key opportunities that comes from this analysis, and is explored in detail through the case of the afro-descendant communities within and around the National Natural Park Corales del Rosario and San Bernardo Archipelagos, is the recognition of community territorial rights as a legal mechanism for including local communities in making decisions and assuming responsibilities in relation to MPAs.

Community territorial rights provide mechanisms (use rights, responsibilities) to support the transition from top-down toward shared governance. Rights recognition gives a voice to ethnic communities as political actors and recognizes ethnic minority communities as key stakeholders in the MPA planning and management decision-making process.

Furthermore, the assessment of governance principles in different MPA management scenarios indicates that less hierarchical institutional arrangements that facilitate interactions among stakeholders and provide livelihood opportunities increase accountability, legitimacy, participation, and knowledge exchange. These types of arrangements are more flexible to adapt to local socio-ecological characteristics.

Ultimately, this thesis provides insights for using a governance perspective to examine the dual social-ecological nature of MPAs through the understanding of governance processes, interactions, and components. The analysis of afro-descendant territorial rights implications for MPA governance contributes to understanding the underlying aspects for the application of territorial rights in MPA governance, while the assessment of MPA institutional arrangements points out the need to move beyond governance paradigms towards tailored approaches that keep the balance between social and ecological objectives.

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My dear husband Felipe Gómez, he has been my constant ally, companion, and inspiration. Felipe also had a crucial role in this research as map maker, field assistant, and references editor. Felipe with F, thanks for believing in me even when I did not, for making me laugh when I did not find reasons to do so, and for sharing my dreams.

The main lesson I have learnt during the years of my doctoral studies is that only love can save humankind. Only through empathy we humans are able to make things happen. My family started teaching me that since I was born. Their endless love and unconditional support have given me the strength for pursuing my dreams and life ventures. There are not words to thank and to express the infinite love I have for them.

Dedication

To my beloved dad, Oscar, mom, Luz Helena, sister, Lina, and life partner, Felipe.

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List of Acronyms

AK	Afrika Kontakt
ANH	Agencia Nacional de Hidrocarburos (National Hydrocarbon Agency)
AUNAD	Autoridad Nacional de Pesca (National Fisheries Authority)
BR	Biosphere Reserve
Cardique	Corporación Ambiental Regional del Canal del Dique (Regional Environmental Authority of Canal del Dique)
Carsucre	Corporación Ambiental Regional del Departamento de Sucre (Regional Environmental Authority of Sucre)
CBD	Convention on Biological Diversity
CCO	Comisión Colombiana del Océano (Colombian Ocean Commision)
CI	Conservation International
CM	Customary Management
COP	Conference of the Parties
Coralina	Corporación Ambiental Regional de Archipiélago de San Andrés, Providencia & Santa Catalina (Regional Environmental Authority of the San Andres, Providencia, and Santa Catalina Archipelago)
CRSB	Corales del Rosario & San Bernardo
CRSBIFB	Corales del Rosario, San Bernardo, Isla Fuerte & Barú
DIMAR	Dirección General Marítima (The Colombian Maritime Administration)
DRMI	Distrito Regional de Manejo Integrado (Regional Integrated Management District)
FAO	Food and Agriculture Organization of the United Nations
Funsabanas	Fundación Sábanas
GDP	Gross Domestic Product
INCODER	Instituto Colombiano de Desarrollo Rural (Colombian Institute of Rural Development)
INDERENA	Instituto Nacional de Recursos Naturales Renovables y del Ambiente (National Institute of Environment and Renewable Natural Resources)
Invemar	Instituto de Investigaciones Marinas y Costeras José Benito Vives de Andreis (Institute of Marine and Coastal Research José Benito Vives de Andreis)
IUCN	International Union for the Conservation of Nature
LAC	Latin-America and the Caribbean
LMMA	Locally Managed Marine Areas
ME	Ministry of Environment
MPA	Marine Protected Area
NGO	Non-Governmental Organization
NNP	National Natural Park
PA	Protected Area

PNAOCI	Política Nacional Ambiental para el Desarrollo Sustenible de las Zonas Costeras (National Environmental Policy for the Sustainable Development of Coastal Zones)
PNR	Private Natural Reserve
RESNATUR	Asociación Red Colombiana de Reservas Naturales de la Sociedad Civil (Colombian Association of Natural Reserves of the Civil Society)
RNP	Regional Natural Park
RQDA	R Qualitative Data Analysis
SES	Social-Ecological System
SILAP	Sistema Local de Áreas Protegidas (Local System of Protected Areas)
SINA	Sistema Nacional Ambiental (National Environmental System)
SINAP	Sistema Nacional de Áreas Protegidas (National System of Protected Areas)
SIRAP	Sistema Regional de Áreas Protegidas (Regional System of Protected Areas)
TNC	The Nature Conservancy
TNI	Transnational Institute
TURFs	Territorial User Rights in Fisheries
UAESPNN	Unidad Especial del Sistema de Parques Nacionales Naturales de Colombia (Special Unit of the System of National Natural Protected Areas)
UJTL	Universidad Jorge Tadeo Lozano (University Jorge Tadeo Lozano)
WFFP	World Forum of Fisher People

Chapter 1 Introduction

This chapter includes five sections covering first, the research context and scope; second, the research goal and objectives; third, the introduction to the literature that supports this research; fourth, a brief introduction to the research methods; and fifth, a final section provides a short description of the following six chapters of the thesis.

1.1 Research Context and Scope

Marine protected areas (MPAs) (Box 1) and networks of MPAs are increasingly being promoted around the world as a strategy to reverse marine degradation and biodiversity loss (Boonzaier and Pauly 2016). Given the role of biodiversity in maintaining ecosystem functions and services, marine biodiversity loss affects millions of people depending directly on marine resources and ecosystem services worldwide (Worm 2006, Cardinale et al. 2012).

Box 1.1 Marine Protected Area
A marine protected area is a clearly defined geographical space that is recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Dudley 2008, p. 8).

MPAs well designed and managed can be an effective tool to preserve ecosystems, to increase fish stocks, and to avoid ecosystem degradation and biodiversity loss (Lubchenco et al. 2003, Roberts 2012). However, shortcomings in addressing ecological characteristics, and more often in addressing social factors (e.g., property rights conflicts, lack of compliance, and lack of local participation) in the design and planning of MPAs undermine the achievement of conservation and sustainability goals (Christie et al. 2003, Cicin-Sain

and Belfiore 2005; Pollnac and Seara 2011). Different worldviews, expectations and needs among managers, conservationists, and users of marine resources in MPAs and surrounding areas have often led to lack of congruence among socioeconomic and ecological objectives and in consequence to poor outcomes (Weigel et al. 2014).

Modern paradigms in resource management claim that many of the conservation flaws could be avoided if the linkages within and between social-ecological systems and their role in conservation outcomes were recognized and included in the planning and management of marine conservation strategies (Mascia 2004; Leslie and McLeod 2007; Christie et al. 2009; McClanahan et al. 2009; Pollnac and Seara 2011; Voyer et al. 2012). The modern paradigm in protected areas (PA), for example, points out the role of people in improving biodiversity conservation and sustainability, and promotes partnerships and collaborative management to enhance the performance of PAs (Phillips 2003). Yet, regardless of the numerous claims and proposals for recognizing the social-ecological linkages in resource systems, there are still failures in taking this perspective into MPA design and implementation (Ban et al. 2015).

Governance in PAs refers to the processes and interactions that take place and define the participation of stakeholders in making decisions, and sharing power and responsibilities (Borrini-Feyerabend et al. 2003). PA governance acknowledges the role of power issues, policy, institutions, and human behavior for achieving effective conservation (Borrini-Feyerabend 2003; Phillips 2003; Borrini-Feyerabend et al. 2013). Although governance and management are often interchanged in the PA literature, there is a clear distinction between them. Governance refers to how decisions are made, who takes part in those

decisions and who acquires responsibilities, while management is related to the actions/operations and means for achieving the PA objectives (Salm et al. 2000; Armitage et al. 2012; Borrini-Feyerabend et al. 2013). Government and governance are also terms often interchange in the literature. Government is associated with 'coercive power' exerted by the State (Paavola 2007, p. 94). In this research government refers to the form of management exclusively dictated and executed by the state.

The inclusion of governance insights together with empirical findings demonstrating that community-based initiatives may be useful for achieving conservation and sustainability outcomes has promoted changes in traditional PA governance approaches in the last decades (Johannes 2002; Pomeroy 1995). Thus, a governance perspective (see chapter 2, section 2.3.1) and experience in PA have led to a shift from the classic top-down model of central government-led governance to the implementation of hybrid governance approaches (shared governance and public-private partnerships) and revitalization of community-based initiatives (Borrini-Feyerabend 2003; Borrini-Feyerabend et al. 2013; Afflerbach et al. 2014). These governance approaches are more coherent with social-ecological linkages in protected areas, recognizing customary management practices, stakeholder rights, and the role of non-government actors in resource management and facilitating the balance between conservation and socio-economic objectives.

Regardless of the conservation paradigm shift, government-led governance continues to be the dominant approach in the majority of countries of Latin America, the Caribbean, and elsewhere (Bustamante et al. 2014) restricting conservation outcomes and exacerbating socio-economic conflicts. Although some hybrid governance initiatives have been reported

in these regions (Pomeroy et al. 2004; Gelcich et al. 2008; McConney and Pena 2012; Gray 2016), the transition from government–led toward more flexible MPA governance approaches has been generally slow (Fernandez and Castilla 2005; Christie and White, 2007; Diegues 2008; Bown et al. 2013). Moreover, the mechanisms for sharing marine and coastal access rights, authority and power have not been well defined or understood (Barragán 2001), limiting the opportunities to improve MPA governance.

There is no unique type of governance that fits well in all contexts (Ostrom 2007). Different governance approaches and hybrid arrangements are needed in different circumstances to achieve MPA goals (Jones 2001; Jentoft et al. 2007; Jones et al. 2011). Empirical comparisons among MPA governance approaches suggest that the combination of incentives or elements (formal and informal institutions such as laws, norms, traditions, codes; rights; participation; diverse knowledge approaches; market incentives, etc.) related to different approaches helps to better achieve social and conservation goals (Jones et al. 2011). Yet, the literature offers little guidance about how elements from different governance approaches can be combined, and how they can be balanced and integrated to improve MPA performance. Consequently, research that examines how governance occurs in marine protected areas and supports performance is a niche still to be explored. Even more, getting a better understanding about the key components and attributes that interplay in the governance system (Box 1.2) may shed light on how

Box 1.2 MPA governance system definition.

Governance system is understood here as a dynamic arrangement where interactions among system components such as MPA actors (authorities, resource users, NGOs, among others) and institutions (formal and informal rules) take place (Young et al. 2008).

traditional top-down government-led approaches can be shifted towards inclusive and participatory modes of governance where appropriate.

1.2 Research problem, questions, goal and Objectives

No-take MPAs established through top-down governance approaches pursue achieving conservation goals and often overlook stakeholders and the need to take them into account in marine resource planning and management. In contexts where communities highly rely on marine resources for livelihoods, top-down MPA approaches often lead to lack of compliance with MPA rules, conflict among communities and park authorities, and poor achievement of conservation outcomes. Given the worldwide efforts to establish MPA networks representing at least 10% of the marine ecosystems by the year 2020 (Spalding et al. 2013) it is expected that the number of MPAs continue increasing in the following years. Accordingly, achieving conservation and social outcomes will require finding means through which ecological and socio-economic aspects can be better incorporate in MPA planning and management. This is particularly relevant in the case of top-down government-led MPAs lacking effective mechanisms for integration and collaboration of stakeholders in making decisions and assuming responsibilities in MPAs. Thus, there is a need to find mechanisms to facilitate the change from top-down governance approaches towards more collaborative and participative modes of governance that integrate social-ecological characteristics and help achieving conservation and social goals.

Colombia provide an interesting case study as it represents many of the realities and challenges that most countries in Latin America are currently facing to achieve marine resources sustainability and biodiversity conservation.

This research is guided by the following questions: What are the main drivers influencing marine conservation efforts in Colombia and particularly the creation of MPAs? How does governance take place in MPAs established and managed through a top-down government-led approach in the Colombian context? What are the main factors supporting or limiting effective governance in MPAs in Colombia? How can barriers for effective governance be overcome to facilitate the transition towards a more participatory and collaborative mode of governance? Particularly, how can participation of stakeholders in making decisions and assuming responsibilities regarding the management of the MPA be legally incorporated and implemented? Could TURF work as a means to facilitate a more participative and effective approach to MPA governance in Colombia? How can different types of institutional arrangements contribute to governance in MPAs?

The purpose of this research is to identify and analyze opportunities and constraints to integrate key aspects of governance in marine protected areas, and to shift top-down approaches toward more collaborative and integrative forms of governance that support conservation and social outcomes in MPAs of Colombia.

To achieve the research purpose four specific objectives were sought:

1. To characterize MPA governance systems and examine key elements of governance (formal and informal rules, participation mechanisms, organization capacity, and territorial rights, among others attributes) and interactions among them (Chapter 4);
2. To identify barriers and opportunities for MPA governance and to make recommendations for improving governance (Chapter 4);
3. To explore the implications and opportunities of territorial rights for improving marine protected areas (MPA) governance (Chapter 5); and
4. To examine key principles and aspects of governance in different MPA institutional arrangements and assess conditions that facilitate or prevent their occurrence (Chapter 6).

This thesis contributes to better understanding the role of governance attributes and interactions among them in the performance of MPAs and achievement of conservation and social outcomes (Figure 1.1). The characterization and analysis of the governance system and its interactions provide a baseline for further analysis and comparison.

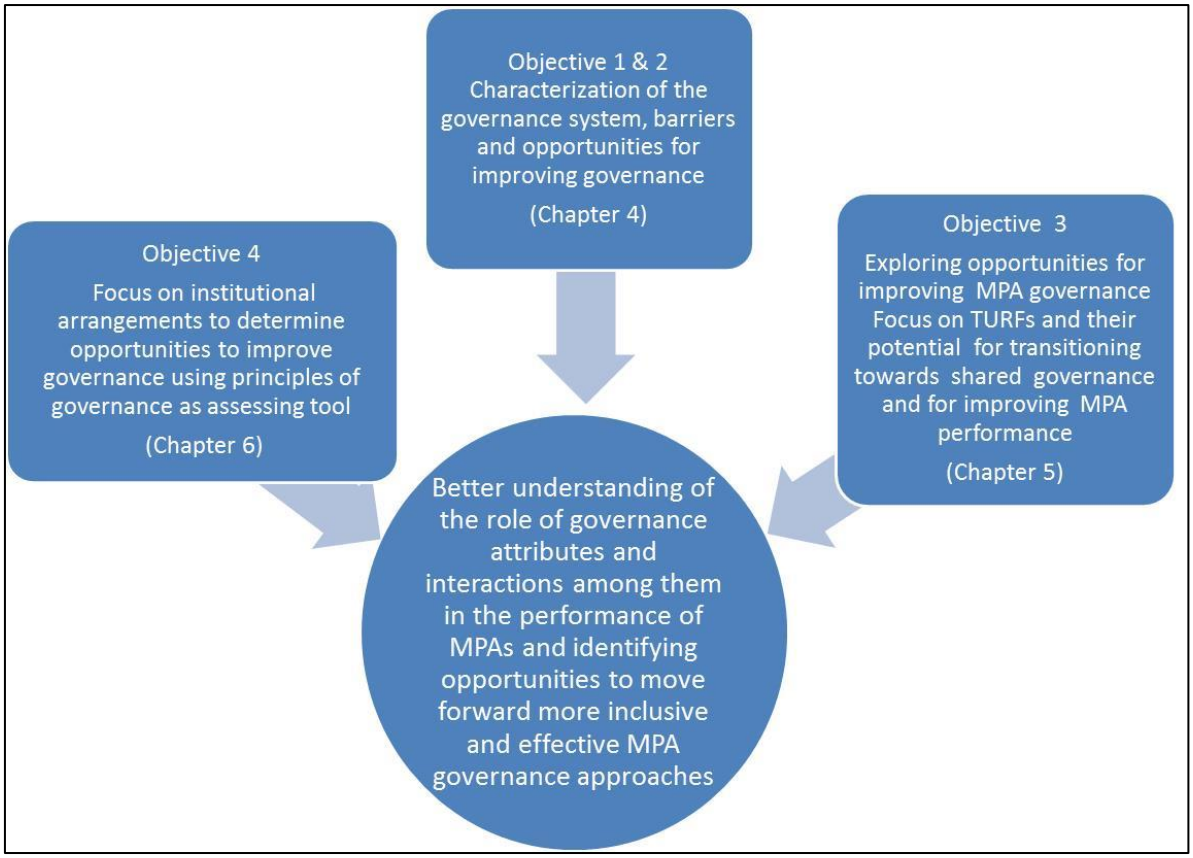


Figure 1.1 Relationship between research purpose, objectives, and chapters

This analysis is the first of this kind carried out in Colombian MPAs and provides valuable insights for improving MPA governance in Colombia and other countries in Latin America, and elsewhere, with similar characteristics. Through the empirical examination of governance principles and issues in MPAs (Graham et al. 2003; Lockwood et al. 2010; Lockwood 2010; Armitage et al. 2012; Borrini-Feyerabend et al. 2013; Jones et al. 2013;), this research provides insights to advance the understanding of governance dynamics in MPAs and to facilitate a better MPA implementation.

1.3 Introduction to the Literature

As discussed previously, it is widely recognized that the social dimension of marine protected areas has a fundamental influence on their performance. Some authors even define MPAs from a social perspective highlighting the role of rules and interactions to guide actors' behavior and compliance. For instance, Mascia and Claus (2009, p 17) define PAs as "socially constructed sets of rules that collectively govern human interactions within a specified area and, thus, allocate access to and use of natural resources among stakeholders", whereas Jentoft et al. (2012) see MPAs as a social intervention that affect natural resource availability and social dynamics while aiming to regulate human behavior. Social aspects are inextricable from MPAs and the achievement of ecological and social goals largely depends on how social aspects are addressed and incorporated. The governance system in which MPAs are embedded shapes how stakeholders, their worldviews, and interests are integrated and taken into account to define rules, make decisions, and share responsibilities regarding MPAs. So MPA performance is underpinned by the governance systems and interactions among components. MPAs with governance systems that are more inclusive and involve stakeholders may better incorporate conservation and socio-economic objectives and be more successful in achieving MPA goals.

Getting a better understanding of the critical aspects that facilitate or limit governance processes in MPAs contributes to elucidating ways to shift ineffective MPA governance approaches and facilitate the development of more inclusive and participatory modes of governance.

This research takes an interdisciplinary approach drawing on governance theory as well literature in the fields of marine protected areas and marine conservation, resource management, social-ecological systems, institutions, and territorial rights. The governance literature provides the ground to explore and analyze fundamental aspects of MPAs such as institutions --formal and informal rules, norms, rights, stakeholders' participation, and principles for effective governance, among others. The other literature fields taken into account are used to gain a thorough understanding of MPA governance. A synthesis of the literature reviewed is presented in chapter 2, and in chapters 4, 5, and 6.

1.4 Introduction to the Research Methods

This research follows a qualitative approach based on a critical realism perspective with the purpose of examining governance processes and interactions in Colombian MPAs. A critical realism perspective combines elements from soft constructivism and objective reality.

This research uses a multi-site case study approach in the Caribbean of Colombia. This case study provides the opportunity to explore MPA governance in a context that has been little studied, but presents many of the challenges for marine conservation and resource management of coastal developing countries. The case-study includes four marine protected areas: 1) National Natural Park Corales del Rosario and San Bernardo, 2)

[1]Regional Natural Park Boca Guacamaya, 3) Regional Integrated Management District Ciénaga de la Caimanera, and 4) Private Natural Reserve Sanguare. While the four MPAs share similar bio-geographical and socio-economic characteristics, they operate at different jurisdictions (regional and national) and have different categories of management and use restrictions (See chapter 3, Table 3.1). Differences among selected MPAs are useful to identify patterns and characteristics of the MPA arrangements that might facilitate or constrict governance processes and interactions. Details about the MPA system in Colombia and the study sites are discussed in section 3.3.3 and 3.3.4.

The data collection methods included: (1) review and analysis of documents related to MPA planning and governance such as management plans, ecological and socio-economic studies of the MPAs and nearby villages, newspapers, NGO reports, academic papers, and theses, among others; (2) semi-structured interviews (n=69) with key informants from the communities within or near the selected MPAs and from environmental authorities, NGOs, and the private sector; (3) focus groups (n=6) with community representatives; and (4) direct observation of activities carried out by locals focused on social and environmental interactions (e.g., fishing practices, interactions among fishers and other members of the community, tourism services provided by locals, and community meetings). Details about the data collection methods and analysis are provided in section 3.5.

[1] Regional refers to the subnational jurisdictional level.

1.5 Organization of the Thesis

This thesis follows a manuscript format organization. Although each of the three manuscripts (chapter 4, 5 and 6) presented here can stand independently, the three manuscripts are linked and complement each other to provide a coherent conceptual explanation. In addition to the manuscript chapters this thesis includes other chapters (chapters 1, 2, 3, and 7) designed to discuss and develop key concepts and methodological elements.

Chapter one is an introductory chapter, followed by the core literature review in chapter two. Additional literature review is provided in chapters 4, 5, and 6. Chapter three describes the research case study as well as the data gathering and analytical methods. Chapter four, the first manuscript chapter, presents a synthesis and examination of the history and development of the system of marine protected areas in Colombia and an empirical analysis of barriers and opportunities for improving the governance of MPAs. This manuscript is currently published in *Ocean and Coastal Management* (Ramírez LF, 2016). Chapters five and six provide insights on how to improve current governance approaches. Specifically, Chapter five encompasses an analysis of the implications and opportunities of community territorial rights for including local communities in making decisions and assuming responsibilities in relation to MPAs. This manuscript has been submitted for publication. In Chapter six, a conceptual framework based on the synthesis of both old and modern concepts of governance is used for analyzing how different MPA institutional arrangements support or limit key aspects and principles of governance in MPAs. This manuscript has been submitted for publication.

Finally, Chapter seven provides conclusions, recommendations, contributions, research limitations, and opportunities for future research. Supplementary information is included in appendices at the end of the document. Appendix A corresponds to the information letter provided to participants; Appendix B is the informed consent statement, Appendix C the interview questions guide; Appendix D the focus group questions guide; and Appendix E presents the manuscript copyright waiver.

Chapter 2 Literature Review

This research is mainly framed within governance and marine protected areas literatures. Governance is used as a lens to examine interactions and social-ecological linkages taking place in MPAs. Social-ecological systems, institutions, and territorial user rights literatures provide additional theoretical support to this research.

2.1 Marine protected areas

In 2004, the Convention on Biological Diversity (CBD) set the goal of establishing by the year 2012 a network of effectively conserved marine areas representing at least 10% of each of the ecological regions of the world (Toropova et al. 2010). In 2010, this goal was deferred to the year 2020 and reinforced through the Aichi Targets. The Aichi Targets emphasized and introduced aspects such as conservation of special areas for biodiversity and ecosystem services, equitable management, and inclusion of other effective area-based conservation strategies that facilitate landscape and seascape management integration (Spalding et al. 2013). Moreover, during the World Conservation Congress in September 2016, IUCN members adopted a resolution recommending an increase to 30% of the oceans protected worldwide through a network of highly protected MPAs by the year 2030. Although this initiative is not obligatory, the IUCN encourages the parties of the CBD to adopt this initiative which will certainly influence the negotiation of the next CBD conservation targets (IUCN 2016).

As a result of the efforts to achieve the CBD goals, MPA coverage has significantly increased in recent years (Boonzaier and Pauly 2016; Spalding et al. 2013, 2016). Figure 2.1 illustrates how marine protected area has seen a notorious increase in the last decades worldwide.

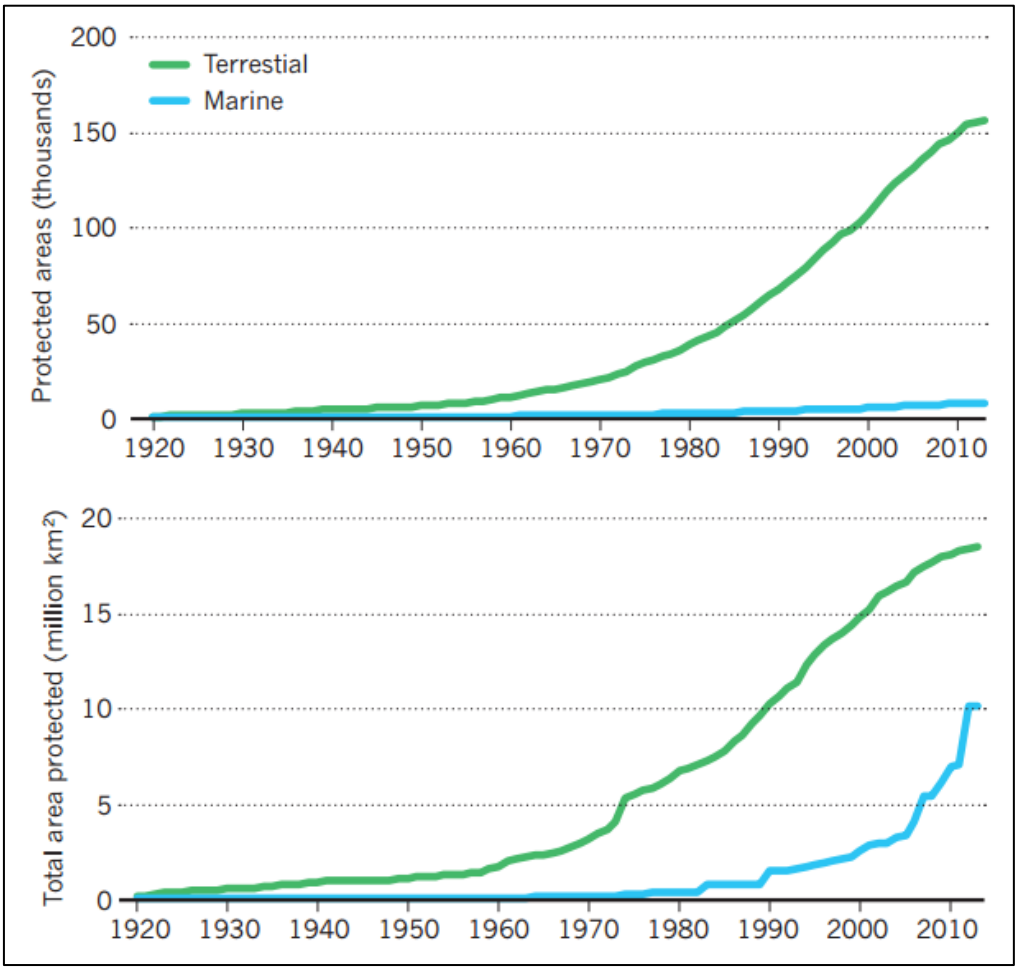


Figure 2.1 Growth of terrestrial and marine protected area worldwide. (Taken from Watson et al. 2014).

Yet, the effectiveness of MPAs for accomplishing conservation and social goals has been limited by planning and management issues such as lack of protection of critical habitats (i.e., spawning areas), lack of integration of different stakeholders' perspectives and needs,

development activities, conflicts in the use of marine resources, lack of compliance, and threats occurring outside MPAs (Mora and Sale 2011).

Effectiveness of MPAs is one of the major concerns for planners and managers, and it is a priority in the international agenda for marine conservation (i.e., Aichi Targets) as well as for the consolidation of a sub-system of MPAs in Colombia (Invemar 2010). However, in many cases it is still unclear whether or not MPAs are effectively or equitably managed or how successful they are in achieving conservation (Spalding et al*,* 2016). In part, the problem derives from the diverse interpretations of MPA effectiveness, as the effectiveness concept varies depending on the worldviews, perceptions, expectations, and needs of stakeholders and managers (Dahl-Tacconi 2005; Himes 2007; Pajaro et al. 2010; Jentoft et al*.* 2012). The effectiveness of protected areas is often defined in terms of management objectives for the administration of the protected areas (Pomeroy et al. 2004). This means that the effectiveness measures may record that the MPA is effective if the administrative objectives are achieved; even though conservation, sustainability, and socio-economic goals are not accomplished.

In MPAs, effectiveness has been generally linked with the achievement of conservation objectives (Jones et al*.* 2011) measured through ecological/biological indicators. However, in many cases, the achievement of ecological conservation goals contrasts with social and economic failures as well as with conflicts with stakeholders, particularly local communities affected by resource use restrictions (Christie 2004). Social and economic shortcomings affect the long-term performance of MPAs, diminishing levels of compliance and exacerbating environmental problems (Christie 2004; McClanahan et al. 2009; Pollnac et al.

2010; Mora and Sale 2011). Accordingly, recognizing the social-ecological nature of MPAs is crucial to planning and managing them from a comprehensive perspective that harmonizes social and ecological goals.

A significant evolution of ideas in protected areas has taken place in the last decades. This evolution has gone from an exclusionary protected areas approach based on command and control management exerted exclusively by governments to an approach that recognizes the role of society in achieving conservation and calls for the adoption of partnerships as well as for the inclusion of social considerations in the planning and management of terrestrial and marine conservation strategies (Phillips 2003; Hutton et al. 2005). Yet, regardless of this paradigm shift many MPAs around the world still follow a top-down and exclusionary approach characteristic of the old protected areas paradigm (Bustamante et al. 2014). In consequence, while acknowledging the role of human dimensions in conservation and resource sustainability has opened new opportunities for marine resource management, challenges regarding property rights definition, coordination among different management jurisdictions, and stakeholder participation still need to be addressed to enhance MPA effectiveness.

Various categories of management, determined mainly by conservation objectives and national policies, are applied worldwide. No-take MPAs, also known as marine reserves, are the most highly protective strategy of management and have been found to be effective for achieving conservation goals in places with high levels of compliance and enforcement (Lubchenco et al. 2003; Mora and Sale 2011). There are also multiple-use MPAs which combine zones with different levels of restrictions, including no-take zones and areas

where subsistence fishing is allowed. Multiple-use MPAs play a significant role in resource regulation and contribute to decreasing conflicts among resource users and reconciling conservation and sustainability goals (McClanahan et al. 2006). In the IUCN protected areas classification system (Table 2.1) no-take MPAs align mainly with category I and II while multiple-use MPAs may be linked to category III, IV, V, or VI (Dudley 2008; Day et al. 2012).

Table 2.1 IUCN Protected areas categories of management

Category	**Management objectives**
I	Protected area managed mainly for science or wilderness protection (I(a) Strict Nature Reserves and I(b) Wilderness Areas)
II	Protected area managed mainly for ecosystem protection and recreation (National Park)
III	Protected area managed for conservation of specific natural features (Natural Monument)
IV	Protected area managed mainly for conservation through management intervention
V	Protected area managed mainly for landscape/seascape conservation and recreation (Protected Landscape/Seascape)
VI	Protected area managed mainly for the sustainable use of natural ecosystems (Managed Resource Protected Area)

The combination of both types of MPAs, no take and multiple-use, facilitates the protection of marine biodiversity, ecosystem functions and resource sustainability (McClanahan et al. 2006). Yet because the success of the MPAs (no-take or multiple-use) in achieving ecological and social goals is highly driven by social and ecological interactions, a better understanding of the linkages and relationships between both systems is essential.

Although research addressing both ecological and socio-economic considerations for marine conservation strategies has increased in the last decade (Ban et al. 2009; Cinner et al. 2009; McClanahan et al. 2009; Pollnac et al. 2010; Ban et al. 2015); few studies have

applied a governance perspective, particularly in Latin America, to examine how social issues and processes underpin MPA implementation. In Colombia, regardless of the efforts to strengthen and expand the system of MPAs, there is little understanding of how biophysical and socio-economic aspects interplay and shape MPAs performance.

2.2 Social-ecological systems (SES) perspective to marine protected areas

The SES perspective is consistent with modern ideas of protected areas that recognize the role of humans for achieving conservation and sustainability goals, and the need to include people as active partners in planning and management (Phillips 2003; Ban et al. 2009; Fox et al. 2012; Ban et al. 2015). The SES perspective emphasizes the idea of humans-in-nature as part of the same system (Berkes et al. 2003).

SESs are linked systems where biophysical and social components are affected by each other (Anderies et al. 2004). The SES perspective is grounded in systems theory, which highlights the need for understanding all parts of the system (social and biophysical) as well as the interactions and dependence among them.

SESs are complex systems characterized by uncertainty, multiple stable states, openness, connectedness, multiple scales and self-organization properties (Berkes et al. 2003). These characteristics are useful to examine the interactions among systems and their relationship with conservation outcomes. For instance, scale analysis in SESs aids understanding spatial, temporal, and organizational interactions as well as the linkages between ecological and social subsystems and management institutions.

A social-ecological systems perspective on MPAs is useful for assessing the interrelation between the social and ecological systems within different spatial levels (i.e., among local, regional, national, or international jurisdictions) and the links to conservation outcomes (Adger 2000). This perspective provides analytical elements (e.g., relationships among actors, formal and informal institutions, as well as worldviews and needs) to look at social and ecological interactions and to identify possible mismatches (e.g., between the jurisdictional level or management scale and the ecological system, lack of congruence between conservation strategy and socio-economic reality) that may constrict MPA performance. Analytical elements provided by an SES perspective are useful to identify opportunities and limitations for bridging the gap between management goals and management scales (McCay and Jones 2011).

Given the influence of human interactions on MPA performance (Mascia 2004; Cinner et al. 2009; McClanahan et al. 2009; Pollnac et al. 2010), a governance approach that integrates human and ecological links is desirable to improve MPA performance. This is particularly important in the case of coastal MPAs where human-nature interactions are more intense (Toropova et al. 2010). Thus, examining MPAs from an SES perspective helps to understand the complex socio-economic and ecological interactions associated with MPAs and how those interactions underpin conservation and social outcomes.

In recent decades research applying a SES perspective to MPA planning and performance evaluation has provided analytical frameworks and tools to examine both social and ecological aspects and linkages in MPAs. Those studies have empirically demonstrated the influence of social factors (e.g., population density and socio-economic

characteristics in rule compliance) in MPA ecological performance (e.g., fish biomass) (Cinner et al. 2009; Pollnac et al. 2010; Pollnac and Seara 2011) and have provided analytical and conceptual frameworks for studying social-ecological linkages and conducting comparative analysis in MPAs (Ostrom 2007; Ban et al. 2013; Mills et al. 2013), and to develop and test indicators to examine the adaptive capacity of local communities (Lopez-Angarita et al. 2013). Regardless of the increased recognition of the social-ecological nature of MPAs, research in this field has mainly focused on characterizing socio-economic and ecological correlations, but few studies have explored the underlying issues and context-linked processes underpinning those correlations and their implications for achieving conservation. Using a governance perspective, this research examines processes and underlying issues underpinning social-ecological relationships and their implications for the governance of MPAs in Colombia.

2.3 Governance and Institutions in MPAs

2.3.1 Governance

Governance in protected areas is defined as "*the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken and how citizens or other stakeholders have their say"* (Borrini-Feyerabend et al. 2013, p 10). Current PAs ideas recognize aspects of governance such as the interrelation between different social actors (public, private), institutions, and networks, and the inclusion of formal and informal rules; integrating concerns; and sharing responsibilities to achieve common objectives (Kjaer 2004; Pavlova 2007; Dwivedi 2010).

Different conceptual models have been proposed for advancing the understanding of natural resource system governance. For instance, the interactive governance framework proposed by Kooiman (2003) has been applied in the context of marine resource systems and marine protected areas (Jentoft et al. 2007, Song and Chuenpagdee 2013, Chuenpagdee 2011). Interactive governance underscores interactions between public and private actors in solving societal problems and creating opportunities (Kooiman 2003, Kooiman and Jentoft 2009, Chuenpagdee 2011). The interactive governance framework highlights three major components: the system to be governed, the governing system, and interactions. The framework is conceptually divided into three components: elements, modes of governance (self, co, and hierarchical governance), and orders (problem solving and opportunity for creation; design, care and maintenance of governance institutions; and the formulation and application of norms and principles for all other governance activities) (Kooiman and Jentoft 2009). The theoretical focus of the framework provides a robust analytical foundation; however, the operationalization of the framework can be challenging (Symes 2006, Chuenpagdee 2011).

Adaptive governance is a conceptual framework proposed to examine complex environmental problems. Adaptive governance brings attention to social aspects underpinning adaptive management of complex ecosystems (Folke et al. 2005, Dietz et al. 2003). Adaptive governance is seen as a way to connect different actors and multiple organizations levels and to promote the appearance of key person and organizations that nurture trust and leadership. These key persons and organizations can facilitate

organizational transformations contributing to building resilience and dealing with complex environmental challenges. (Folke et al. 2005).

Environmental governance applied in the context of global environmental issues is defined as "*the interrelated and increasingly integrated system of formal and informal rules, rule-making systems, and actor networks at all levels of human society (from local to global) that are set up to steer societies …"* (Biermann et al*.* 2009, p 4). Although environmental governance deals with a broad scale of diverse environmental issues, it illustrates that governance is an intricate system of multiple interactions among stakeholders, organizations, informal rules, and other components that affect the governance process and the performance of PAs. Moreover, governance goes beyond top-down or bottom-up approaches, or "rule making systems" put in place. This perspective is useful to address the complexity of interactions in marine resource systems where diverse actors, scales, and characteristics of the resource system interact.

Governance, in addition to its role as a descriptive tool to characterize governance approaches, is also useful as an analytical lens to examine processes and interactions in PAs (Armitage et al. 2012). This research uses governance in both senses as a descriptive tool to characterize the mode of governance in place, and as a lens to examine interactions among social and ecological components (e.g., actors, institutions, ecosystems) in the governance system.

2.3.1.1 Governance approaches in MPAs

The IUCN and the CBD recognized four types of governance approaches for protected areas (Borrini-Feyerabend et al. 2013). These types of governance are: government-led or top-down; shared-governance or co-management, also referred to hybrid governance in the environmental governance literature, including a variety of stakeholders (e.g., government, private organizations, local communities); community-based or bottom-up governance, and private governance. These types of governance differ mainly in who leads the establishment of the protected area, who makes decisions, and is responsible for the area (Borrini-Feyerabend et al. 2013), and each of them provides different incentives (Jones et al. 2013). A comparison between governance approaches strengths and weakness is presented in table 2.2.

Government-led or top-down governance approaches are usually led by one or more government bodies (i.e., Ministries and conservation authorities: national, regional or local levels). In those cases the authority in charge takes the initiative to establish MPAs and assumes all responsibility, makes decisions, and controls the MPA (Borrini-Feyerabend 2003; Jones et al. 2011). Usually, under this governance approach the legal framework, management objectives, and restrictions are clearly defined. In some contexts, the legal framework includes mechanisms for community participation and the authority in charge has the obligation to inform or consult the stakeholders in the identified area (Borrini-Feyerabend 2003). However, this practice does not always result in meaningful participation and stakeholder integration in the decision-making process.

Table 2.2 Summary of protected areas governance approaches and their main strengths and weaknesses

Governance approach	**Strengths in relation to MPAs**	**Weaknesses in relation to MPAs**
Government-led or top-down	• Provides a clear management framework (objectives, rules, responsibilities, roles) and has capacity (at least in theory) to dictate and enforce regulations and secure funding [1,2].	• Coordination among environmental authorities at different jurisdictions may be challenging [2] and may lead to spatial misfits. • Burocracy may undermine the government capacity [2] • Management is based on command and control practices which often lead to disempowering communities/stakeholders • Power imbalance between authorities and resource users [2] • Limited possibilities for community participation
Private governance	• Provide economic incentives [1, 2] • Land ownerships and granted rights diminish complexity to make and adjust decisions [2]	• Difficult to apply given that marine areas are usually owned by the State and are their sole responsibility [1] • Enforcement may be challenging without government or community support and participation.
Community led or bottom-up	• Management regulations fit better with the context [1] • Sense of ownership, community self-organization	• Vulnerable to outside poachers (lack of legal support as well as lack of secure tenure for some rights holders may affect perceived legitimacy)[1] • Requires a strong community's sense of place and local knowledge [1]
Shared governance, co-governance or co-management	• Management regulations can be adjusted/adapted to the context and conservation needs • Support from different partners strengths MPA management capacity and increase legitimacy [1]. • When shared-governance includes government partners it increases legal support [1].	• Risk of being a continuation of government-led governance • Difficulty to meaningful engagement of key stakeholders • Risk to favor elites • As this approach requires high levels of trust among stakeholders, this approach may counter big challenges in places with high levels of corruption or a history of conflict among park authorities and communities. • Requires high level of negotiation capacity from all the parts

([1]Borrini-Feyerabend, et al. 2013; [2] Jones et al. 2011).

Government-led governance, the predominant governance mode during the 20th Century (Borrini-Feyerabend et al. 2013), was adopted by post-colonial countries in the Caribbean, Central and South America. The applicability of this approach and effectiveness in this context has been questioned, due to the dependence of communities in coastal areas on natural resources for livelihood as well as the financial and technical restrictions on MPA monitoring and patrolling (Pomeroy et al. 2004). A comparative MPA governance analysis undertaken by Jones et al. (2011) supports this idea, showing that government-led approaches have been more successful in developed countries where dependency on marine resources for subsistence is low and the enforcement and coordination capacity among jurisdictions is higher.

With the intention to improve protected areas performance, decentralization of responsibilities has become a common practice in the last decades (Borrini-Feyerabend et al. 2013). Delegation of protected areas responsibilities, however, usually does not come with financial or technical support, further reducing PA management capacity (Borrini-Feyerabend et al. 2013). Decentralization, on the other hand, regardless of being a top-down approach may facilitate collaboration with NGOs, private organizations, or local communities through partnerships (Jones et al. 2011). These partnerships can help to fill the financial and technical gaps and enhance the performance of MPAs.

Private governance approaches in MPAs have limited applications in the management of marine resources as marine waters are usually owned by the State and are their sole responsibility (Borrini-Feyerabend et al. 2013). In other circumstances, there is a lack of clarity in the distribution of property and access rights regarding marine waters and

resources restricting the opportunities for non-state actors to participate in private governance (Jones 2001). In some cases, property or management rights are granted by the government to private organizations or NGOs. In these cases, responsibilities, management and enforcement are assumed by private organizations. An example of this approach is the Chumbe Island Coral Park in Tanzania, where MPA responsibilities were awarded to a private organization by means of a renewable lease. As Jones et al. (2011) mention, private governance is usually driven by economic incentives, and the lack of legal framework and enforcement can restrict its effectiveness.

Community-led or bottom-up governance refers to a mode of governance where local communities or indigenous peoples are responsible for making decisions on governing MPAs using "customary or legal, formal or informal, institutions and rules" (Dudley 2008, p 26). Frequently, NGOs or government organizations facilitate the process and help to verify that local efforts are coherent with national conservation policy (Jones et al. 2011). Communal property or access rights and governance are not always recognized by the state, thus limiting the effectiveness of this approach. For instance, in the Gulf of Mexico, California, the collective conservation achievements of local fishermen disappeared when outsiders started to fish in no-take areas ignoring local communal rules (Cudney-Bueno and Basurto 2009). This might have been avoided if communal rights were recognized by the state giving power to the community to exclude intruders. Customary approaches are often challenged by centralized planning and top-down approaches, in addition to population growth, migration, market influence, and loss of local ecological knowledge (Ferse et al. 2010).

Examples of marine community-led governance initiatives based on traditional or customary management have been documented in Oceania (Johannes 2002) and other areas such as Southeast Asia (Pomeroy 1995). In some of these regions, customary management practices have been debilitated by colonialism, modernization, population growth, and environmental pressures (Pomeroy et al. 1995). In the last decade, however, locally-managed-marine areas (LMMA) based on customary management practices have seen a revitalization becoming a tool to achieve effective MPA governance (Govan et al. 2008). Although there are some known examples of customary management in Central America (e.g., the indigenous cultures of Miskitos in Nicaragua, Nietschmann 1997; Garifunas in Honduras, Bown et al. 2013; and Cunas in Panama, Hoehn and Thapa 2009; among others, community-led MPAs have not been as common in Latin America and the Caribbean. This might be explained, in part, by the rigid policy and national legal frameworks in place that restrict property/access rights or allocation to local communities/indigenous peoples and a relatively less strong fisheries tradition and customary management practices (Borrini-Feyerabend et al. 2013).

Christie and White (2007) indicate that LMMAs fit better in places with small communities and low development intervention. Those are characteristics difficult to meet in most of the Caribbean region and South/Central America countries.

Shared governance (co-governance or co-management) refers to the mechanism where authority and responsibility are shared by different actors[2] (Berkes et al. 1991). Shared governance is similar to the idea of hybrid governance used in the environmental governance literature where participation of state and non-state actors in sharing power for making decisions is recognized. Yet, hybrid governance not only refers to power sharing, it also includes other mechanisms such as markets, incentives, certification schemes in public-private partnerships, payment for ecosystem services, among others that may be used to facilitate governance (e.g., (Armitage et al. 2012).

In the context of protected areas governance arrangements under this approach are usually between government and local communities/indigenous peoples; but can also include private actors. Shared governance is frequently described in the literature as collaborative management or co-management (Borrini-Feyereband et al. 2013). Borrini-Feyerabend et al. (2000) refers to co-management as a situation where two or more actors negotiate a fair sharing of management, powers, and responsibilities for a defined resource system. Berkes (2007) clarifies that co-management can be applied in different ways such as power sharing, institution building, trust building, processes, social learning, problem solving, and governance.

Although shared governance or co-management has been historically applied in natural resources management, this approach has only been acknowledged in the context of

[2] In this case, "actors" reflects that stakeholders not only have an "interest or claim" in relation to the MPA, but also play an active role.

protected areas after the 5th World Parks Congress in 2003, with the adoption of a new conservation paradigm (Phillips 2003). The new paradigm recognizes the role of humans in conservation and sustainability and introduces shared governance approaches to pursue principles of good governance: legitimacy through participation and consensus; accountability through informative and transparent communication processes; and fairness in the distribution of costs and benefits of conservation (Borrini-Feyerabend 2003). Since then much attention has been paid to shared governance as the solution to overcome the flaws of top-down and bottom-up governance approaches (Jones et al. 2011).

Although positive results have been achieved through shared governance, the results are context-dependent and cannot be generalized. For instance, Pomeroy et al. (2004, p 443) point out some of the limitations found in co-management arrangements in the Caribbean: "inflexibility of management arrangements, lack of leadership, weak cohesion between fishers, lack of trust between authorities and fishers, low organizational capacity, lack of property rights, and fishers' over dependence on government". Bown et al. (2013) review the work of different authors and identify some criticisms to shared governance approaches, including the risk of hiding top-down and bottom-up power asymmetries and being promoted as "panacea" ignoring context limitations. Other authors have found that shared governance approaches driven by neoliberal reforms (austerity measures, deregulation, and free market approaches) can have counterproductive results (exacerbation of conflict an distrust) due to incomplete devolution of power and rights (Fortwangler 2007; Levine 2007)

Shared governance can take many forms depending on who is defining it and how much authority/responsibility is shared (McConney et al. 2007; Borrini-Feyerabend et al. 2013). Types of shared governance include: (1) collaboration when government and resource users share decisions, (2) consultation when there is high interaction among government and users but decisions are still made by the government, and (3) delegation when the government recognizes user's rights and let them make decisions (McConney et al. 2007). Similarly, Pomeroy (1995) (Figure 2.2) has described how co-management can take different forms starting with simplistic approaches that do not include sharing authority and responsibility, and going through different levels of sharing authority, from consultation to community control. The author advises that in any circumstance, a truly shared governance approach should not be limited to informing, instructing or persuading people.

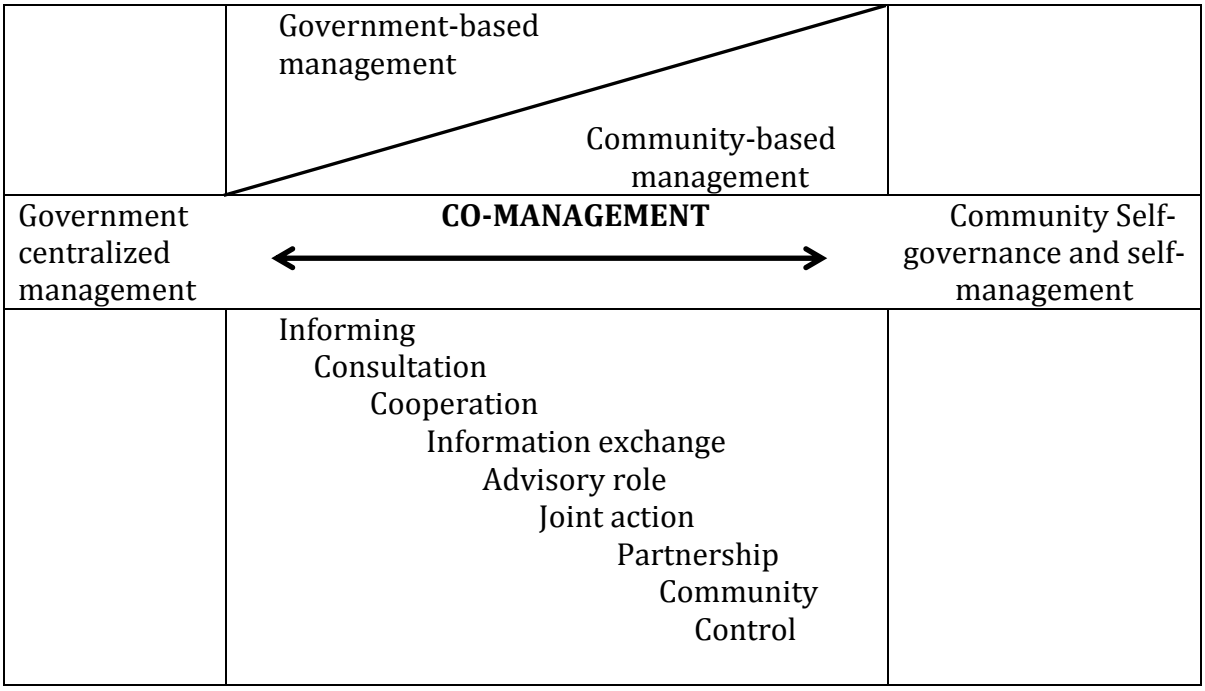


Figure 2.2 A hierarchy of co-management arrangements (Pomeroy 1995)

Shared governance or co-management conceptualizations are often challenged by the dynamic and iterative nature of the social-ecological system and associated complexity of the actors and changing conditions of the system (e.g., different state agencies involved and having different type of agreements with stakeholders; community complexity related to worldviews, interests, ethnicity, or socioeconomic group; natural resource system changes) (Carlsson and Berkes 2005).

Although the shared governance approach poses challenges for participation and true sharing of authority and responsibilities, it also may provide a suitable arena for deliberation, coordination and negotiation among government, stakeholders, and actors (Pinkerton 1989).

According to Jones et al. (2011) the existence of a clear and strong legal framework, clear property/access rights, coordination among different levels of government and other organizations are the most critical aspects for achieving effective governance. As different authors have stated, there is no unique type of governance that fits well all contexts. The role of the state to provide a legal framework and assign or delegate property/access rights cannot be replaced (Jones et al. 2011). Instead, the combination of governance approaches may be necessary to achieve MPA goals (Jones 2001; Jentoft et al. 2007; Jones et al. 2011).

Given the limited results of the traditional top-down governance arrangements in stopping environmental degradation, and the high socio-economic costs that stakeholders relying on natural resources have to bear under this approach, hybrid governance modes among government, private actors, and local communities have become a recurrent theme in environmental management and conservation (Armitage et al. 2012). Many authors

agree that hybrid approaches promise better results than a single mode of governance, suggesting that the regulation and structure from top-down forms together with the agency brought from the bottom up or other sectors involved, and market incentives from the private sector, all contribute to the achievement of ecological and social goals (Jones 2001; Jentoft et al. 2007; Jones et al. 2011; Armitage et al. 2012; Jones 2013).

However, how to bring together key aspects of governance (regulation, structure, agency, and incentives) in a coherent and effective manner in my particular context is not yet clear. Accordingly, this research examines governance aspects and interactions in MPAs as well as possibilities for and implications of transitioning towards hybrid governance modes.

2.3.2 Institutions or key elements of governance

Institutions can be understood as "The humanly devised constraints that structure political, economic, and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)" (North 1991, p 97). They provide direction and boundaries for the decisions made in the governance process (Paavola et al. 2009). In that sense, institutions become useful for understanding governance interactions and possible linkages with conservation and sustainability outcomes.

Institutions are integral to human-environment interactions and are key elements for governance (Imperial 1999; Young 2008). Although there are diverse definitions, many authors agree that institutions are related to formal and informal constraints (rules, norms,

rights) or features that influence how humans make decisions and how humans behave (North 1991; Ostrom 1990; Prato and Frage 2005; Hodgson 2006).

North (1991) refers to institutions as formal and informal rules that determine social interactions that define how humans (as individuals or as groups) relate to nature. Formal institutions or elements of governance refer to written rules such as laws, regulations, policies, and property rights; while informal institutions refer to unwritten rules such as norms, codes, taboos, traditions, beliefs, and social conventions that determine behavior and influence decisions (Ostrom 1990; North 1991; Prato and Frage 2005). Formal and informal institutions not only interact, they are also interlinked and can be influenced by each other. Changes in formal/informal institutions (e.g., recognition of community rights) may drive changes in behavior or perceptions influencing the whole institutional arrangement (Prato and Frage 2005) and opening windows of opportunity to shift governance.

The role of institutions in environmental management and conservation outcomes is widely recognized. For instance, Imperial (1999) states that understanding institutional interactions becomes fundamental to success in the adoption of ecosystem-based management and other approaches that recognize social-ecological interactions.

Folke et al. (2005) and Galaz et al. (2008) observe that the interactions between formal and informal institutions increase the opportunities to adapt and enhance effective governance. Furthermore, these authors emphasize that a deeper understanding of institutions and their interactions contributes to solving mismatch problems of scale between governance and ecosystems. Although the role of institutions in environmental

management is unquestionable, governance interactions are also influenced by context characteristics, ecological attributes of the system (e.g., biological diversity, boundaries of the system, state of the resources), social values and ethical principles, and actors' management capabilities (Jentoft et al. 2007, Chuenpagdee 2011, Bennet and Dearden 2014).

Although in the last decade institutional research has received more attention, there are still gaps in addressing multilevel institutional analysis and institutional diversity as an alternative for effective governance (Paavola 2007). In the case of marine conservation, institutional analyses are useful for understanding social-ecological linkages and feedbacks, and for finding how multilevel and hybrid governance approaches may contribute to achieving effective marine conservation.

Different configurations of institutional arrangements provide particular scenarios for interactions among institutions facilitating or constricting the occurrence of principles of governance and other key aspects such as scale and fit, and knowledge integration, associated with contemporary governance perspectives (Lockwood et al. 2010, Lockwood 2010; Armitage et al. 2012). Ultimately, these configurations lead to different interactions among formal and informal institutions and underpin governance outcomes.

Institutions are used in this research as the analytical unit for examining governance interactions and processes in MPAs. The characterization of institutions is used to assess whether or not and how Colombian MPA arrangements facilitate or limit governance.

2.3.2.1 Territorial user fishing rights

Territorial rights represent a type of formal institution that may guide human's behavior and decision-making processes (North 1991). In that sense, territorial rights have a key role in governance.

Territorial user rights in fisheries (TURFs) are defined as the privileges through which some people, individually or collectively, get exclusive access to use/manage resources in a defined area (Christy 1982, Nguyen Thi Quynh et al. 2017). TURFs may also be simply defined as area-based management systems where through the allocation of rights individuals not only have access to the area, but control access to the resource, fishing intensity, and in some cases may have rights for selling or leasing the resource rights (Nguyen Thi Quynh, et al. 2017). As TURFs are recognized as an effective strategy to control resource overexploitation, their use in fisheries management has increased in the last decades (Nguyen Thi Quynh, et al. 2017).

In some cases TURFs are related to customary management (CM) systems where community-oriented rights-based fisheries are used to regulate the use, access to, and transfer of marine resources (Aswani 2017; Cinner and Aswani 2007). CM may include practices such as limited entry, closed areas or seasons, gear restrictions, and size limits (Cinner and Aswani 2007). These practices have been used in some places for centuries (Johannes 1978, 2002), but only in the last decades has the clear definition and formalization of fishing rights linked to these practices been recognized as a strategy for fisheries sustainability. Some examples of places where governments have legally recognized informal rights include Japan, Sri Lanka, India, Peru, Mexico, and Indonesia

(Basurto et al. 2012, Nguyen Thi Quynh et al. 2017). In other areas without previous formal rights or long CM history (e.g., Chile, Brazil, Korea, Vietnam, Spain, Ecuador, among others) TURFs systems have been introduced with the purpose of replacing command and control approaches with arrangements where power, rights and responsibilities are shared between governments and resource users (Castilla and Defeo 2001; Armitage et al. 2011; Nguyen Thi Quynh et al. 2017). The assumption is that such changes will facilitate management and improve resource sustainability.

Yet, the success of TURFs in resource sustainability is constrained by multiple factors including among others community collective action capacity, social capital, and leadership as well as government capacity and willingness to enforce rights. As found in the U.S., Australia, and Brazil poor enforcement of rights in terrestrial systems often led to conflict (Alston et al. 2009).

Historical and social-ecological characteristics also influence the effective implementation of TURFs. For instance, the implementation of territorial rights in systems that do not depend on collective action may be more susceptible to conflict and may be more difficult to enforce (Alston et al. 2009). In contrast, communities sharing cultural views and having a common interest in a resource system may deal better with resource use disputes and have an incentive to cooperate (Alston et al. 2009). Characteristics of the ecosystem and resource system (location, boundary definition, type of resource) also determine the success in implementing territorial rights (Pomeroy 1995; Johannes 2002, Nguyen Thi Quynh et al. 2017). Thus, regardless of the potential of TURFs for improving resource sustainability, there is no guarantee of their success (Aburto and Stotz 2013).

Although TURFs have been mainly implemented as a tool for fisheries management, they have been progressively used as a strategy for marine conservation (Afflerbach et al. 2014). When sufficient incentives for self-governance and for controlling resource access and over-exploitation are in place, TURFs can effectively support marine conservation (Aswani 2017; Basurto and Stotz 2012; Castilla and Defeo 2001; Ostrom and Schlager 1996). Yet, what the potential of TURFs is in better supporting (or challenging) MPA governance is still an understudied field. The examination of TURF attributes in the context of MPAs in Colombia and their implications for governance help to understand what is the potential and implications of using TURFs for supporting a shared-governance approach to MPAs and for improving governance quality and conservation outcomes.

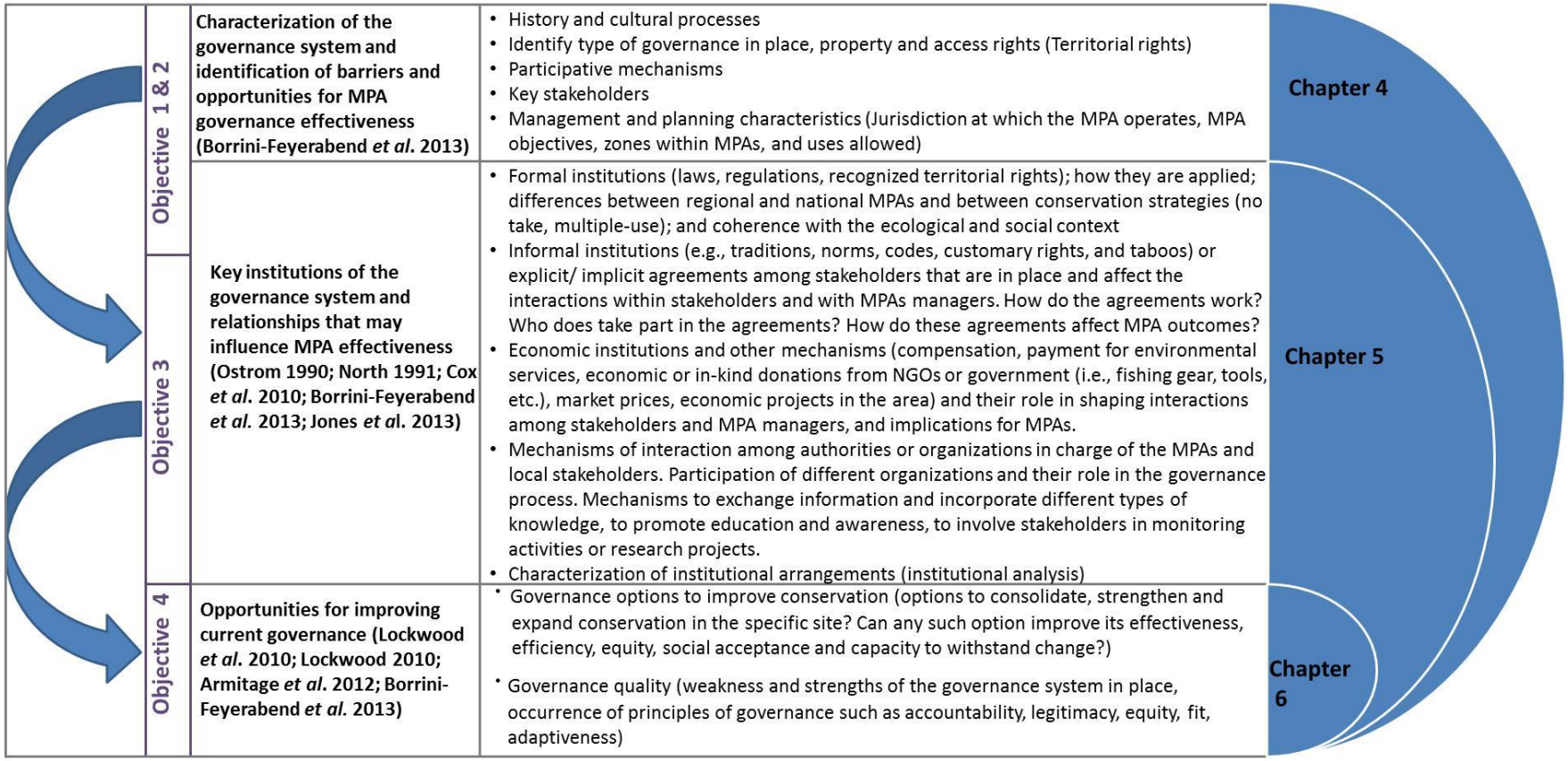
2.4 Analytical Framework

An analytical framework (Figure 2.3) based on core concepts discussed in previous sections as well as key insights extracted from frameworks proposed by Borrini-Feyerabend et al. (2013) and Jones et al. (2013) for assessing governance in protected areas was used to guide the data collection and the data analysis. The analytical framework is divided into three parts. The first part is focused on characterizing the governance system from a descriptive perspective taking into account historical and cultural context characteristics; identifying stakeholders within the protected area; and describing the processes or interactions through which planning and management decisions are made. Although the characterization of the governance system in the MPAs studied set the basis

for the development of the thesis, it was primarily used to achieve the first objective of the thesis and develop chapter 4.

The second part of the analytical framework for this research draws on Jones et al.*'s,* (2013) framework for assessing governance effectiveness in MPAs. Jones et al.*'s* (2013) framework associates incentives (economic, interpretive, knowledge, legal, and

Figure 2.3 Analytical Framework for examining governance in the MPAs



participatory) with different governance approaches (top-down, bottom-up, and market-based) providing key ideas to examine governance interactions and to look at the role of those incentives and combinations of them to achieve conservation outcomes in MPAs.

Jones et al.'s (2013) incentive categories are taken into account for reference in this research, but they are interpreted as types of institutions. The analytical framework also integrates North's (1991) understanding of institutions complementing the categories of incentives proposed by Jones et al. (2013). The analytical framework pays particular attention to informal institutions that are not clearly defined or acknowledged.
Hence, this part of the framework provided direction for identifying key institutions and other elements of governance underpinning the MPA performance. For instance, territorial user rights for afro-descendant communities were identified as a novel institution not previously linked to MPA governance in the Caribbean of Colombia. Thus, the second part of the framework facilitated achieving the second and third research objectives (Chapter 4 and 5).

Finally, the third part of the framework refers to Borrini-Feyerabend et al.'s (2013) PA governance evaluation framework which brings attention to the analysis of opportunities for improving conservation and governance quality. In addition to PA principles of governance discussed by Borrini-Feyerabend et al. (2013), the analytical framework incorporates key concepts and ideas of governance associated to the complexity of the social-ecological systems where MPAs are immersed such as adaptiveness, fit, equity, legitimacy, and accountability (Lockwood et al. 2010; Lockwood 2010; Armitage et al. 2012). The third part of the framework is then used to assess the quality of governance in

different types of MPA institutional arrangements in Colombia helping to achieve objective 4 (Chapter 6).

Chapter 3 Methodology and Methods

This Chapter is divided into eight sections as follows: first, the epistemological perspective used in this research; second, the methodological approach; third, the case study sites rationale and description; fourth, the methods for data gathering; fifth, data analysis approach; sixth, ethical considerations, seventh, researcher's positionality, and eighth, a chapter summary.

3.1 Epistemological perspective

The design and implementation of qualitative research, as well as the data interpretation and writing are inextricable from researchers' philosophical assumptions and worldviews. For this reason, it is important to identify these assumptions and paradigms and acknowledge how they influenced research procedures and findings interpretation (Cresswell 2007).

This research follows a critical realism perspective. This perspective integrates elements from social constructivism and positivism (Fletcher 2017). This means a perspective that accepts that an objective social reality may exist even though it is not generally reflected in humans' ideas and instead those ideas often reflect social constructions (Bryman et al. 2009). Under a critical realism perspective things exist apart from our experience and knowledge of those things (Easton 2010). Thus, social constructions are shaped by real entities/structures whether or not we can objectively define them.

While, positivism assumes that an objective and measurable reality exists, constructivism sees reality as detectable in the form of multiple mental constructions (Lincoln and Guba 2000). The constructivist paradigm assumes that knowledge is a social construction resulting from active interaction among humans and the surrounding environment. Humans translate experience in concepts, models, frameworks, theories that are continuously modified in accordance with new interactions and experience (Lincoln and Guba 2000).

This research relies on both formal and informal social structures and interactions among them. Formal and informal elements of governance interacting in marine protected areas, particularly institutions (i.e., laws, rules, norms, codes, and taboos) are shaped by and at the same time shape human behavior affecting conservation outcomes. Because social constructivism is interested in understanding social behavior (Lincoln and Guba 2000), recognizing the constructivism side of knowledge is useful for inquiring about social processes and interaction occurring in MPAs. Yet, the recognition that social structures may exist on their own (as a real objects) provides direction to the research.

Under a critical realism approach that recognizes that "a real world exists and it is theory-laden, but not determined by theory" all explanations of reality, including explanations from participants, researchers and theorists, are assumed as imperfect (Fletcher 2017, p 188). That means that the researcher is open to new ideas and constantly cross-examines data preventing to take participants sides. It does not mean that analysis and interpretation of data is free of bias, but the recognition of the existents of an objective reality demands researcher's self-reflection and questioning.

In this research data provided by research participants was treated as individual perceptions (social constructions). Comparison of participants 'perceptions and triangulation among different data sources (semi-structured interviews, focus groups, documents, direct observation) were used to identify common patterns and verify information validity. Discussions with participants during dissemination of results activities were used to verify whether or not research findings reflect a shared understanding of MPA governance aspects. While this research explored diverse participants' views (or constructions of reality) related to MPA governance, it relied on theory for informing and guiding data collection and analysis. Thus, through a critical realism perspective this research although primary relying on social perceptions as primary source of evidence to characterize and understand governance interactions (Bennet 2016), was continuously revising, inquiring, and being informed by theory.

3.2. Methodological approach

This research uses a qualitative, multi-site case study methodology to characterize formal and informal attributes of governance and interactions in marine protected areas. Qualitative research is useful to inquire about 'relationships between phenomena and places' and how they are influenced by social, cultural, economic, political, or environmental settings (Winchester and Rofe 2010). Qualitative research aids not only in understanding the phenomenon of the study but the context where it takes place and the relationship among them (Baxter 2010).

A case study is defined by Yin (2003, p 13) as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident". Yin (2003) argues that a case study approach is useful for circumstances when research is related to "how" and "why" questions, context characteristics are key for the research and the investigator has no control over them, and when the context and the situation of study are linked. Case studies can be used for exploratory (descriptive) or explanatory purposes, or both of them. Therefore, a case study approach is adequate for examining contemporary phenomena and answering explanatory questions (Yin 2003; Bryman et al. 2009) which are characteristics of the proposed research.

Two main criticisms are frequently made of the case-study approach. One is related to the lack of precision and possible bias in conducting research, and the second is related to the restrictions for making generalizations (Baxter 2010; Bryman et al. 2009; Yin 2003). Conducting rigorous data collection and using triangulation, identifying the investigator's position (where the investigator is coming from), and being careful to keep generalizations in the theoretical plane aid in overcoming possible flaws of the case study approach (Yin 2003).

According to Yin (2003) three data collection principles should be taken into account in order to maximize the quality and reliability of data. First is the use of multiple sources of evidence to provide more relevant and reliable results; second is to create a database to facilitate the analysis and use of the information for future research; and third is to maintain the sequence of evidence through logical coherence among the research question,

the evidence provided, and the conclusions made. This procedure increases the consistency and validity of the research (Bryman et al. 2009). In addition, the use of various sources of information allows verification of information through triangulation of data.

A multi-site case study allows analysis within sites and between sites, providing a robust understanding. The qualitative multiple-site case study approach used in this research is useful to assess formal/informal institutions as elements of governance and the interactions taking place under a primarily top-down governance approach, and allows exploring institutional interactions under private arrangements. Overall, this methodological approach facilitates gaining an in depth understanding of fundamental issues of governance in MPAs and the intricacies associated with the Colombian context.

3.3 Case-Study Rationale and Description

This section explains the reasons for choosing the case study sites, provides an overview of the system of marine protected areas of Colombia and describes the four case study sites selected to carry out the research.

3.3.1 Case-Study Rationale

Colombia is one of the countries with the highest biodiversity on the planet (UNEP-WCMC 2004) and has one of the most progressive constitutions in Latin America. In 1991, Colombian's constitution introduced changes such as decentralization, participatory democracy, and recognition of ethnic and cultural diversity as well as political, legal, and cultural rights for minority groups. Yet, regardless of such inclusive constitution, the

involvement of local communities in natural resource management and particularly in sustainability and conservation initiatives is negligible (Durán 2009). This is mostly due to a rooted command and control authorities' mindset, lack of community organization and empowerment, poverty and high dependency on resources in combination with resources degradation, and lack of participatory mechanisms. Lack of equity, and poverty, together with the pressure of pursuing international marine conservation goals such as the Aichi Targets is a scenario that warrants attention to minimize biodiversity loss while devising opportunities for a governance transformation.

A multi-site case study in the Caribbean of Colombia is ideal for accomplishing the research objectives proposed in this research given four main characteristics: (1) the MPA system in Colombia follows a dominant top-down government-led governance approach, (2) MPA conservation strategies are highly restrictive, (3) coastal communities rely on marine resources, and (4) currently, there is a high commitment of government and non-governmental agencies to achieve the CBD Aichi targets; particularly to increase MPAs coverage and their effectiveness. These characteristics reflect current marine conservation and MPA governance challenges common among developing countries providing a good opportunity to examine governance aspects in complex scenarios.

The multiple-site case study used here included four MPAs and informants from five villages that interact directly with the areas. Although the MPAs studied here operate under different jurisdictions and categories of management, they have similar socio-economic, cultural, and ecological characteristics. Three of the MPAs were established through top-down government-led approaches, operate at national and regional jurisdictions, and have

different use restrictions (no take and multiple-uses MPA). The fourth MPA in this case study corresponds to a multiple-use coastal reserve established under a private governance and management approach.

While biogeographic and socio-economic similarities among sites helped to diminish context-related bias, differences in jurisdiction levels, categories of management, and use restrictions facilitated the analysis and comparison of governance characteristics and processes (e.g., stakeholder diversity and level of participation, type of institutions in place, and governance quality) among MPA arrangements.

Overall this multi-site case study approach facilitates gaining a better understanding of the influence of governance attributes and interactions (see analytical framework in Figure 2.3) in conservation and resource sustainability outcomes, and how the integration and coordination of diverse governance attributes may facilitate shifting current governance towards more effective modes.

3.3.2 Colombia Marine Protected Areas System Overview

Colombia, located in the most northwestern corner of South America is one of the countries sharing the Caribbean Sea Basin. The Caribbean Sea region supports large areas of sea grasses and coral reefs representing 14% of the total coral reefs of the world (Spalding et al. 2013). Colombia has around 892,102 square kilometers of marine waters representing almost 44% of Colombia's territory (Alonso et al. 2015) (Figure 3.1). Colombia has 3,531 km of coastline, and it is the only country in South America with shorelines along both the Tropical Pacific Ocean and the Caribbean Sea (Alonso et al. 2015).

Figure 3.1 Map of Colombia and territorial limits. (Modified from commons library).

Offshore islands in both oceans (Pacific and Caribbean) extend the boundaries of the Colombian Economic Exclusive Zone in the eastern Pacific and south-central Caribbean waters (Alonso et al. 2015). Colombian marine waters include ecosystems and habitats of high biodiversity, such as coastal lagoons and wetlands, coral reefs, sea grasses, mangroves, rocky and sandy coastlines, deep coral reefs, upwelling zones, and various types of sea bottoms (Diaz and Acero 2003). Although the Caribbean Sea alone represents around 16% of the GDP of the country, the population distribution (2.0% in the Pacific, 12.5% in the Caribbean, in total 15% of Colombian population) along both coasts is relatively low in comparison with most coastal countries in the world (Alonso et al. 2007).

Colombia has adopted and included the Convention on Biological Diversity (CBD) mandates and decisions as a part of their environmental legislation. Thus, Colombia is committed to the COP VII and Aichi targets of the CBD which aim for the creation of regional and national systems of MPAs ecologically representative and effectively managed covering at least 10% of the marine and coastal areas by the year 2020 (Alonso et al. 2015).

The National System of Protected Areas in Colombia includes 31 coastal-marine areas (23 in the Caribbean and 8 in the Pacific), representing around 8% of the country's marine territorial waters. Two percent of the total MPA coverage (1/4 of the 8%) corresponds to no-take and limited-take MPAs while six percent is represented by two large multiple use MPAs (Alonso et al. 2015). These two multiple use MPAs are located in the Caribbean encompassing the largest coral reef extension in the continental platform and insular territory of Colombia. Almost half of the total Colombian MPAs have been created in the last decade responding to the goals set by the CBD.

Despite Colombia's remarkable efforts for achieving conservation and sustainability of marine biodiversity, the effectiveness of MPAs is limited by factors such as coastal development, overexploitation of resources, pollution, destruction of habitats, the high reliance of local communities on marine resources, and deficient institutional frameworks (Invemar 2010; Alonso et al. 2015).

The government-led approach applied to marine protected areas in Colombia has traditionally placed the power for planning and managing protected areas exclusively in the central government, excluding stakeholders from the decision-making process and having low acceptance by coastal communities relying on marine resources (Durán 2009; Matera 2016). This approach restricts the capacity of the legal, operational, and institutional framework to promote coordination among national, regional and local conservation authorities; and reduces the overall conservation capacity (Durán 2009). Moreover, most of the MPAs in Colombia correspond to no-take areas limiting the uses to recreation and subsistence while local communities rely on marine resources not only for nourishment but in many cases as the only source of income.

The integration and coordination of different jurisdictional levels and strategies of management are important steps for achieving marine conservation and enhancing governance in MPAs. Yet the role of stakeholders, social-ecological linkages, informal institutions, and interactions among them as well as their influence in conservation and sustainability outcomes continue to be overlooked under the top-down approach applied to Colombian MPAs.

3.3.3 Case-study Description

The case study includes four different sites located in the Caribbean of Colombia, each one representing a different institutional arrangement: Corales del Rosario and San Bernardo National Natural Park (NNP), Boca Guacamaya Regional Natural Park (RNP), Ciénaga de la Caimanera Regional Integrated Management District (DRMI), and Sanguare Private Natural Reserve (PNR) (Figure 3.2). Five villages associated with the study sites were included in this research: Ciénaga de la Caimanera, Boca Guacamaya, Berrugas, Rincón, and El Islote. The users of resources in Corales del Rosario and San Bernardo NNP are mainly from El Islote, Rincón, and Berrugas. Sometimes users also come from Boca Guacamayas. Resource users in Sanguare NPR are mainly from Berrugas while in Boca Guamaya and Ciénaga de la Caimanera resource users live next or within the area.

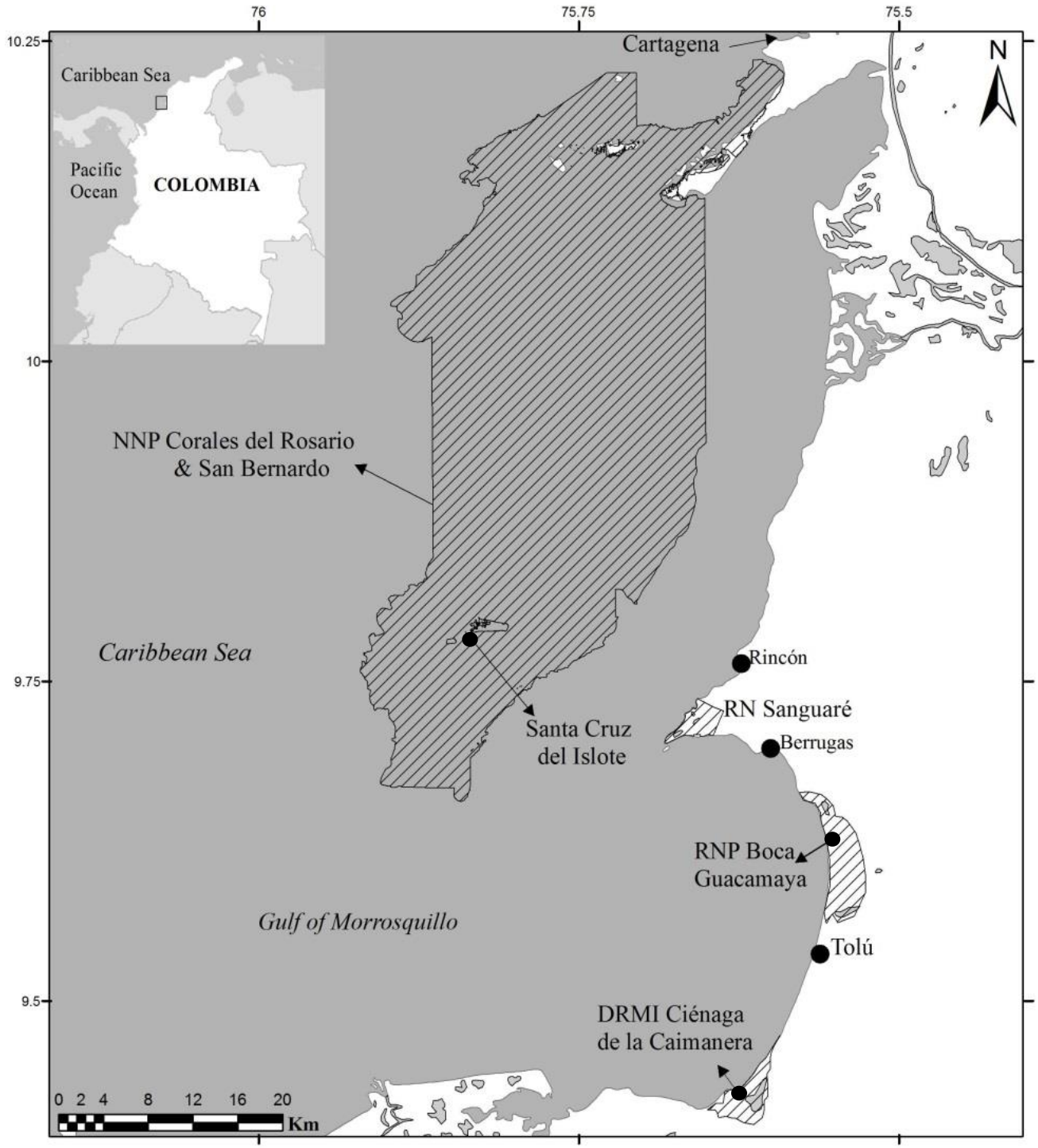


Figure 3.2 Study sites, Caribbean of Colombia.

The four study sites are located in the same biogeographic region sharing similar physical and ecological features. The population is mainly afro-descendant people and "mestizos" (European and indigenous mixed, the dominant ethnic group in Colombia). Ecological and social similarities among study sites facilitated comparisons among different governance approaches, as well as research logistics.

No other place in the Caribbean coast of Colombia presents a similar mosaic of diverse jurisdictional and management approaches within the same region. Moreover the reliance on marine resources for livelihoods in the selected sites is higher in comparison to other MPAs in Colombia which tend to have greater diversification of economic activities. In addition, the study sites are crucial to preserving marine biodiversity and fisheries in this region which are highly threatened by the increase in population density, touristic activities, industrial fishing, and development processes. Although a case study in the Pacific coast of Colombia was considered for this research, MPAs in that region are located far apart from each other which implies additional logistic challenges (e.g., the lack of roads in the Pacific region increases transportation costs and the time in the field for data gathering) and exhibit major physiographic and ecological differences among them restricting comparison of governance interactions (García 2010; Díaz and Galeano 2016).

A multi-site case study including various strategies of management of marine/coastal areas is useful to comprehensively assess different governance approaches (private-led and government-led), different jurisdictional levels of management (national and regional), and different categories of resource uses (no-take and sustainable use) (Table 3.1). It is also

useful to examine the interactions between formal and informal institutions under different scenarios.

The use of marine resources is restricted in these areas with the exception of the Regional Integrated Management District (DRMI in Spanish) Ciénaga de la Caimanera where sustainable use of resources is allowed. The main economic activities in the region are fishing and tourism. The number of fishers in the provinces of Sucre and Bolivar where the study sites are located is around 2,161 and 2,653 respectively. This area has the second largest population of fishers and the greatest fishing intensity in the Caribbean of Colombia (Rueda, 2011). Selected MPAs combine diverse habitats—coral reefs, beaches, mangroves, sea grasses, lagoons—and high biodiversity and ecosystem services with local communities culturally attached and economically dependent on marine and coastal resources.

Table 3.1 Characteristics of the Study Sites.

Study Site	**Governance approach**	**Jurisdictional Level**	**Areas under jurisdiction**	**Uses allowed**
Corales del Rosario and San Bernardo National Natural Park	Centralized government-led	National	Marine (near shore)	No-take, restoration, recreation, subsistence fishing
Boca de Guacamayas Regional Park	Decentralized government-led	Regional	Coastal (mangroves, coastal lagoons)	No-take, restoration, recreation, subsistence fishing
Ciénaga de la Caimanera Regional Integrated Management District	Decentralized government-led	Regional	Coastal (mangroves, coastal lagoons)	Conservation, restoration, sustainable use
Sanguare Private Natural Reserve	Private	Local	Coastal (mangroves, coastal lagoons)	Conservation, restoration, sustainable use, ecotourism

The similarities in contextual characteristics among the four sites help to reduce the influence of externalities at the moment of comparing governance approaches,

jurisdictional levels of management, and conservation strategies. Because local communities in the study sites share a similar cultural background, it is likely that informal institutions and interactions will reflect particularities associated with the governance system in place.

The four case studies represent the range of possible conservation management strategies for marine and coastal ecosystems currently available in Colombia. A description of each of the case studies is presented below.

3.3.4 Study sites

National Natural Park (NNP) Corales del Rosario and San Bernardo

The NNP CRSB is located in the Caribbean Region, 45 km from main land. CRSB NNP protects 120,000 ha of the most diverse and large coral reef formations in the continental Colombian shelf (Invemar 2003). Seventy-two percent of the coral reefs in the Caribbean of Colombia (191.68 km^2) are in Corales del Rosario and San Bernardo Archipelagos (UAESPNN, 2006).

The NNP CRSB is formed by the archipelagos of Corales del Rosario and San Bernardo. Corales del Rosario Archipelago includes 30 islands, islets, and keys while San Bernardo Archipelago has 12 islands and 4 islets. The NNP CRSB includes mainly submarine areas and the islands of Isla Tesoro, Isla Rosario and surrounding keys, Isla Maravilla, and Isla Mangle. The park protects other habitats such as sea grasses, mangrove, and coastal lagoons (UAESPNN 2006).

The NNP CRSB was created in 1977 and extended to its current area in 1997 when San Bernardo Archipelago was included as part of the park. The park was created following a top-down governance approach that still remains, and was established as a no-take area with the purpose of protecting the largest coral reef in the continental Colombian Caribbean. The park corresponds to category II in the International Union for Conservation of Nature (IUCN) protected areas classification. The park is managed by the Administrative Unit of the Protected Areas System of Colombia (UAESPNN) which is a central government agency. The park is classified into three management zones: no-take, restoration, and recreation. Activities such as diving, hiking, swimming, and subsistence[3] fishing (only with hooks) are allowed (UAESPNN 2006).

The park's objectives are preserving habitats for biodiversity and maintaining the natural landscape and ecosystem services.

Given the high biodiversity and scenic quality of the area, the park has become an important natural attraction for tourism, exceeding the park's carrying capacity. The proximity of coastal areas with important economic development (i.e. Cartagena City) and the influence of the Magdalena River (the largest river in Colombia) sediment discharge affect the ecological integrity of the area (UAESPNN 2006).

The main population within the park is located in Sta Cruz del Islote in San Bernardo (n≈800) (Duque-Rico and Torres-Gomez 2011) followed by the population of Isla Grande (n=532) in Corales del Rosario (UAESPNN 2006). The islands of Ceycen, Múcura, and

[3] Subsistence fishing: Fishing that does not provide any type of income and is only used as food for the fisher and his/her family.

Tintipán are also inhabited; however, the population oscillates between only 20 and 200 people depending on the fishing and tourism season.

Photo 3.1 National Natural Park Corales del Rosario & San Bernardo. This picture shows Santa Cruz del Islote in the front and Tintipan Island in the back (Photo credit Luisa Ramírez).

Subsistence and commercial fishing are the main economic activities in Corales and San Bernardo archipelagos. Other job opportunities in Corales are related to tourism, housekeeping, and maintenance. The main fishing techniques are handline, diving with harpoon, and nets (UAESPNN 2006). According to the fish inventory of 2003, fishers from Sta Cruz del Islote, Múcura and Ceycen as well as from Tolú, Rincón and Berrugas fish within the San Bernardo archipelago.

Regional Integrated Management District (DRMI) Ciénaga de la Caimanera

The DRMI Ciénaga de la Caimanera is located in the Gulf of Morrosquillo, province of Sucre, Caribbean continental coastal zone of Colombia. The DRMI Ciénaga de la Caimanera

was created in 2008 (Acuerdo 011) by the Regional Environmental Authority Carsucre (Corporación Ambiental Regional del Departamento de Sucre in Spanish) which is also the authority in charge of the management of the area.

Photo 3.2 DRMI Ciénaga de la Caimanera (Photo credit Luisa Ramírez).

The creation of the DRMI Ciénaga de la Caimanera responds to the need to protect one of the most important relicts of mangrove forest in the province of Sucre and to regulate the use of mangrove and hydro-biological resources. This area encompasses 2,125 ha of mangroves, mud plains, beaches, and coastal lagoons that provide important habitat for biodiversity (Tavera et al. 2004). Ciénaga de la Caimanera has a population of approximately 630 people (DANE 2005). Subsistence fishing, mangrove harvesting, and tourism are the main economic/livelihood activities carried out by the community. The community of Ciénaga de la Caimanera is settled in the main access to the area, where the coastal lagoon meets the sea. Access to the DRMI is facilitated by a main road that connects major cities and coastal towns important for tourism and commerce. The location of the DRMI facilitates tourism access which represents the main revenue for locals.

The DRMI combines conservation and protection actions with sustainable use. The area is divided into four management zones: preservation, protection, restoration, and production (Acuerdo 011). DRMIs are the only category of management in Colombia that allows sustainable use of resources in marine and coastal areas and corresponds to category VI in the IUCN System.

Regional Natural Park (RNP) Boca Guacamaya

The RNP Boca Guacamaya corresponds to a coastal area encompassing 3,759 ha of mangroves, mud plains, and coastal lagoons. The largest mangrove forest in the province of Sucre and the least disturbed is in Boca Guacamaya. This area provides important habitat for terrestrial and marine species (birds, mammals, reptiles, and marine species). Boca Guacamaya is located 11 km north of the town of Tolú. The RNP-Boca Guacamayas was created in 2008 by the regional environmental authority Carsucre.

Photo 3.3 Regional Natural Park Boca Guacamaya (Photo credit Luisa Ramírez).

RNP Boca Guacamaya corresponds to category II in the IUCN system. The main management objective of the area is conservation and includes mangrove restoration activities, but extraction of resources is not permitted. Environmental education and research are also management objectives of the area. The population living around the RNP Boca Guacamaya is approximately 300 people (DANE 2005). Although fishing and mangrove harvesting are important livelihood activities for the people living in the area, the main source of income is related to jobs in construction and maintenance of cottages for recreation.

Private Natural Reserve Sanguare (PNR Sanguare).

The PNR Sanguare is located on the Caribbean coast of Colombia in the Gulf of Morrosquillo within the province of Sucre. Sanguare is located in front of the archipelago of San Bernardo and between the coastal villages of Rincón and Berrugas. The nearest town is San Onofre. The reserve is located within a livestock and fruit production farm owned by the private consortium Promociones Alejandrinas S.A. The PNR Sanguare was established as a natural reserve in 2002 when the consortium agreed to put aside part of the land for sustainability and conservation purposes. This reserve is part of the network of civil society reserves and the national protected areas system (SINAP). The area of the Reserve is 898 ha. Sanguare is a terrestrial protected area important for the conservation of tropical dry forest, grasslands, and wetlands. It is surrounded by coastal and marine ecosystems such as mangroves, sea grass beds, and coastal lagoons.

Photo 3.4 Private Natural Reserve Sanguare (Photo credit Luisa Ramírez).

Although the reserve does not have legal jurisdiction over the marine and coastal ecosystems, the reserve staff act as a custodian of these ecosystems and have a crucial role for their conservation. For instance, the reserve staff perform monitoring activities to prevent mangrove deforestation, sand removal, and overfishing within the reserve limits, and warn authorities of illegal activities. The management objectives include conservation, restoration, sustainable use of non-timber products and livestock, social empowerment and community organization, environmental education, and research. In the protected areas classification system of Colombia Sanguare PNR corresponds to a local Ecological Private Reserve, and in the IUCN classification systems to category VI.

This area is managed by an administrator and a group of five people that work as permanent staff. The reserve provides temporary jobs for local people involved in management tasks and ecotourism services. The revenue provided by ecotourism activities is used to cover the operation costs of the reserve. No people other than the manager and permanent staff live within the area; however, some locals fish and poach in the area. The

main livelihood activities for the population in surrounding areas include mangrove harvesting, fishing, agriculture, and livestock.

The reserve has developed a strong connection with the local communities in the area, working in a partnership and carrying out different activities for raising awareness and developing capabilities (Personal communication, Sanguare Manager and employees, April 2013).

3.4 Methods and Data Sources

This research included four data collection methods: document analysis, semi-structured interviews, focus groups, and direct observation. Each method is described below.

3.4.1 Document analysis

Document analysis corresponds to an organized process through which printed and electronic documents are examined (Bowen 2009). In this research documents were used as sources of information to get a better understanding of the context and history of the study site and marine protected areas establishment and development, to uncover meanings related to formal procedures, rules, and mechanisms for the governance of the MPAs, and to corroborate findings through triangulation with other methods.

Document analysis was carried out following a latent content analysis. Latent content analysis is the process through which content within documents is interpreted. Latent content analysis focuses on the ideas and concepts within documents rather than on the frequency of words or phrases (Hseih and Shannon 2005). An interpretive directed reading

approach guided by pre-identified themes from the literature review was used to conduct the analysis (Hseih and Shannon 2005).

Document review and analysis occurred before and after field work. This method involved the review and analysis of secondary data sources including research and government reports and other official documents elaborated by environmental authorities, NGOs, and research institutes (e.g., the Regional Environmental Authority Carsucre, the National Natural Parks Authority, the National Fisheries Authority (AUNAD), Conservation International, The Nature Conservancy, Ecoversa, Funsabanas, the Institute of Coastal and Marine Research (Invemar)). The search for documents was focused on the MPAs and coastal villages within the study site as well as topics related to demography, history, environmental issues, governance, and management.

MPA documents related to the creation of the marine protected areas, management plans and monitoring reports, and journal articles were also obtained. Secondary information provided insights into management arrangement characteristics such as formal rules, objectives, development, and other management activities undertaken in the areas. Historical documents and newspaper articles were used to identify key issues in marine conservation such as fishing activities, and other issues related to the study site including development projects, oil spills, meetings, and interactions among authorities, communities, and other organizations. The analysis of documents was also useful for the characterization of the governance system through the identification of historical and current interactions, agreements, or conflicts.

Secondary information was accessed through the national and regional environmental authorities with jurisdiction in the study area (Carsucre, UAESPNN, SirapCaribe), research institutions (Institute of Marine and Coastal Research - Invemar), NGOs (The Nature Conservancy and Conservation International), universities, and through online search tools.

3.4.2 Semi-structured interviews

Semi-structured interviews with key informants were used to characterize the governance system. Interviews with local stakeholders (communities and other actors depending on and interacting directly with marine resources) were useful to identify informal institutions and participation in MPA governance. Interviews with park authorities; local, regional, and national government agencies; non-governmental and research organizations helped to understand interactions among formal and informal institutions.

Informants were selected by using purposive sampling. Purposive sample was defined based on the type of interaction that participants had with the MPA. For instance, a sample of independent participants as well as local organizations members using resources from the MPA or involved in any management activity within the MPAs was included (fishers, mangrove harvesters, community members involved in snorkeling activities for tourists or mangrove restoration activities, park rangers). Although restaurant and transportation services for tourists in the MPAs involve a large part of the population in the area, these sectors were not included in the sample as their interaction with natural resources or park authorities was not direct. Participants in MPA management activities are mainly from

regional and national environmental authorities. Local or national NGOs and research institutions directly involved in research or development activities in any of the selected MPAs were also included in the sample.

Key informants were identified with the help of researchers from the regional environmental authority and through previous connections made in the study area when the author was part of the research staff at the Colombian Institute of Coastal and Marine Research (Invemar) (Segura et al. 2012; Ramírez et al. 2010). Other key interviewees were identified through a snow-ball approach and during field observations. Snow-ball sampling consisted in asking key informants to identify other members of the community related to MPAs or marine resource uses and organizations that could be interviewed (Milner-Gulland and Rowcliff 2007; Bryman et al. 2009).

Interviewees represent a diverse group of informants related to marine/coastal activities of the local community, assuring the inclusion of key women, elder informants as well as young adults over 18 years old involved in fishing, tourism, and mangrove harvesting. Although women were included, given that marine resource activities in the study area are male-dominated, the majority of the participants were men. Fifty-six (n=56) semi-structured interviews were conducted with participants from communities and thirteen (n=13) with state and non-state environmental organizations interacting with the MPAs (Table 3.2). Participants from environmental authorities at the regional and national level, government agencies, NGOs, and research institutes were chosen for their key role and/or knowledge of the MPA.

Table 3.2 Semi-structured interviews by participant groups, MPAs, and coastal towns.

Participant category	Govern.	NGOs	Private Reserve Sanguare	DRMI Ciénaga de la Caimanera	RNP Boca Guacamaya		NNP Corales del Rosario & San Bernardo			Total
			Sanguare	Ciénaga de la Caimanera	Boca Guacamaya	Tolú	Rincón	Berrugas	Sta Cruz del Islote	
Regional Env. Authority Carsucre	3									3
Park Authorities	3									3
Sirap Caribe**	1									1
Invemar		1								1
Ecoversa		1								1
Funsabanas		2								2
María Mulata		1								1
Sanguare Manager			1							1
Sanguare employees & users			3							3
Fishers, mangrove harvesters, tourism jobs				4	8	1	4	2	7	26
Community leaders*				3	3	2	3	2	3	16
Community organizations *				2			2	1	6	11
Total	7	5	4	9	11	3	9	5	16	69

*The majority of participants in the community leaders and community organizations categories are also either fishers, mangrove harvesters or are involved in tourism services. ** Sirap: Regional System of Protected Areas.

Community participants were represented by leaders from local organizations (associations of fishers, mangrove harvesters, tourism operators, community councils) as well as independent resource users (fishers, mangrove harvesters, fish sellers) selected with the purpose of incorporating other points of view.

Although the concept of sample size is highly relevant for quantitative research, it is applied in a different manner for qualitative research. In qualitative research the main goal is to understand the system in detail rather than to have a statistically representative

sample (Milner-Gulland and Rowcliff 2007; Bryman et al. 2009). Therefore, to the question of how many interviews are adequate for providing deep understanding of the system, there is no conclusive answer. Experts in qualitative research suggest that the number of interviews depends on different aspects such as the type of questions, the level of uniqueness and complexity, differences among case studies, and availability of time and funding (Baker and Edwards 2012). The number of interviews for this research was determined following the principle of information redundancy and saturation when little new information and insights were produced (Milner-Gulland and Rowcliff 2007; Newing et al. 2011) and when the majority of the key informants identified had been interviewed.

Semi-structured interviews included a set of questions prepared in advance and used as a guide; however, the questions were posed during a natural conversation allowing other valuable information to come out during the process (Bryman et al. 2009). The guided questions were based on the objectives and on the analytical framework proposed for this research (Table 2.3). Questions were posed in plain language without using jargon (see Appendix C for the interview protocol). Interviews were all conducted in Spanish which is the first language of the researcher. Interviews with community participants took place in participants' houses or public spaces in their communities. Those spaces provided a friendly and relaxed environment facilitating the interaction between the interviewee and the interviewer. Participants were contacted and asked to participate in the research by phone or in person. In many cases, interviewees agreed immediately to participate and interviews were conducted right after. Interviews started with an introduction by the interviewer where information related to the research objectives and the use of

information was provided to the interviewees. An information letter (Appendix A) was given to each participant together with a consent form to be signed (Appendix B). In some cases, participants preferred that the information letter was read/explained by the researcher and their approvals for recording interviews and using information and quotes were audio recorded.

While interviews with community participants were mostly spontaneous, interviews with environmental authorities, private companies in the marine/coastal sector, and non-governmental organizations required a lot of planning and coordination. In particular, private companies from the oil sector operating in the area were reluctant to participate in interviews and requested to follow a particular protocol before agreeing to be part of the research. Although after several months of providing information and following up an interview might be authorized, it was not always possible to set an appointment to conduct the interview. Environmental authorities, NGOs, and other stakeholders related to marine conservation were willing to be interviewed; however, in most of cases it was challenging to book an appointment. In the end, several of these interviews were conducted on Skype.

All the interviews were recorded with previous authorization of the participants using a digital voice recorder (see Appendix B). Writing notes and transcribing audio recordings were done after each interview when possible or at the end of the day with the purpose of registering key themes, perceptions, and similarities or differences between interviews. The duration of the interviews was between 30 and 50 minutes. All interviews were transcribed into MSWord by the author and later exported to qualitative data analysis software. Data analysis procedures are explained in section 3.5.

3.4.3 Focus groups

Focus groups work as spaces of discussion for the topic under research. These groups involve the participation of a few key individuals selected in accordance with both the questions and dynamic desired by the investigator (Milner-Gulland and Rowcliff 2007). Using more than one focus group is preferred for triangulation and to obtain a diverse range of answers (Milner-Gulland and Rowcliff 2007; Bryman et al. 2009).

Focus groups are useful for unveiling ideas and concepts in an interactive discussion space, offering different perspectives from those presented in official documents or surveys (Skop 2006). Ideas, beliefs, and opinions that do not appear during interviews may come out during focus group discussion. Focus groups are ideal for exploring how social context affects attitudes, worldviews, perceptions, opinions, and people relationships (Skop 2006). Moreover, because the nature of institutions is social, focus groups facilitate the identification of informal institutions that for different individuals do not always have the same meaning or importance.

Three factors are highlighted as important for obtaining better results from focus groups: 1) segmentation; 2) the role of the moderator; and 3) standardization (Skop 2006). Segmentation refers to the careful selection of participants, assuring that the group shares homogenous characteristics according to the research questions. The moderator has the role of introducing the goals and presenting the topic of discussion as well as keeping the discussion focused on the topic. Finally, standardization refers to the process of posing similar questions to all the focus groups in order to be comparable (Skop 2006).

In this research six focus groups were carried out in total. With the exception of Ciénaga de la Caimanera, where two focus groups took place, one focus group was conducted in each of the communities related to the selected MPAs (Ciénaga de la Caimanera (n=2), Boca Guacamaya (n=1), Berrugas (n=1), Rincón del Mar (n=1), and Santa Cruz del Islote (n=1)). Focus groups included some of the interview participants. The number of participants in the focus groups was between five and nine people. A description of participants of each focus group and details about how people were selected and invited as well as the dynamic of the activity is provided in table 3.3.

Table 3.3 Focus groups composition by site

Focus group by site	**Description of participants**
Focus group Ciénaga de la Caimanera_1 (n=9)	Invitations to participate in this focus group were made to leaders from all the community organizations (mangrove harvesters, tourism, and fishers associations). However, participants in this focus group were all members of the association of mangrove harvesters. Five male and four female took part in the focus group session. Leaders and representatives of the fishers and tourism organizations accepted the invitation, but the day of the meeting they said they had other compromises. The key contact in the area, the leader of the mangrove harvesters, felt responsible and to compensate the absence of the key leaders of the fishers and tourism associations invited other members of his organization.
Focus group Ciénaga de la Caimanera_2 (n=6)	This focus group was carried out with leaders and participants of the group of women that provide tourism services in the area. Some of the participants were also part of other community associations including the fishers association and "Golfo Verde" which is an organization focused on environmental issues and development activities.
Focus group Guacamayas (n=6)	Participants in this focus group were all male members of the fishers association (n=4) and mangrove harvesters association (n=2).
Focus group Berrugas (n=5)	With the exception of one independent fisher, all participants in this focus group were community leaders and representatives of the local organizations (the fishers association, the mangrove harvesters association, and the peasants association). All participants were male.
Focus group Rincón (n=6)	The participants were all involved in community organizations related to resource uses (fishers association, tourism association), community organization (local communal council, afro-descendant community council), and environmental issues (waste management and recycling initiatives). Four of the participants were fishers and two participants were teachers in the local

Focus group by site	Description of participants
	school. All participants knew well each other and collaborate together in community projects. Only one participant was female.
Focus group El Islote (n=5)	Participants in this focus group were involved in community organizations including the local communal council, the afro-descendant community council, and the tourism organization. Although El Islote had in the past an association of fishers, at the time the field work was carried out the fishers association was inactive. All participants were male and with the exception of one community leader that is also a school teacher all participants were involved in either fishing or tourism activities.

Focus groups were oriented to local communities for identifying narratives related to informal institutions such as practices, interests, agreements and conflicts in relation to marine/coastal resources. Focus groups involved a variety of key informants representing local stakeholders, e.g. fishers, women taking part in marine activities or community organizations, other people from the community involved in marine tourism activities, and community leaders, with the intention of capturing different perceptions and observing consensus or disagreement patterns. Participants were identified through interaction with local people during the interviewing process. Invitations to take part in focus groups were made through a key contact identified in each of the coastal villages. After that, communication and coordination of logistic aspects were made directly with participants. Focus group meetings took place in each of the villages in communal venues that were reserved in advance. Although no economic or in-kind compensation was provided to participants, food and beverages were offered. In all cases, focus groups were carried out after 4 pm once all participants had finished work activities. The duration of the focus groups was between two and half and three hours.

Focus groups were valuable to obtain information about the informal institutions and interactions taking place for managing marine and coastal resources (Poteete 2010). The

main topics used for guiding the discussion were related to the expectations of the participants about MPAs, perceived stakeholder roles in relation to MPA success, and general knowledge about formal and informal rules for the sustainable management and conservation of marine resources (Appendix D).

Focus groups helped to identify aspects of consensus or disagreement in the perceptions of local stakeholders with reference to MPA governance and institutions shared in the community, social interactions, and community cohesion. This tool provided useful information for examining interactions among stakeholders at the community level, addressing some of the dynamic aspects of governance that could not be observed or registered through interviews.

Focus groups provided the opportunity for community members to communicate their points of view about conservation strategies in the area and resource use. It was also an opportunity to reflect on ecosystem and resource changes as well as fishing technologies. Questions posed during the focus groups drove to the identification of present and historical causes of marine resource degradation. Collective thinking through focus groups helped to identify different perceptions among participants and to foster self-reflection on community involvement and responsibility in marine resource management.

Focus groups were conducted in Spanish and audio recorded with the authorization of participants, transcribed into MSWord, and later exported to RQDA for coding and analysis (see section 3.5 for details of data analysis).

3.4.4 Direct observation

This tool consists of a relatively unstructured method to observe routines, activities, and interactions related to social and environmental situations, behaviors, and interactions (Puri 2011; Yin 2003). By being physically in the study site, taking part in informal conversations, and spending time in the community observing fishing practices and interactions among fishers and other members of the community it was possible to perceive details of attitudes, behavior, and community dynamics. Many of these social processes are usually difficult to detect or measure without direct observation (Babbie 2012).

In this research observation was useful to get a better understanding of the context and as a complementary tool for registering and verifying information gathered through other methods in relation to informal institutions, interactions, organization patterns, and associated motivations. Observations of elements of governance (or institutions including formal regulations, economic instruments, informal rules and practices for resource management), interactions among stakeholders, organization, and participation were also observed. Particularly, observation of activities and interactions within and among stakeholders, managers, and community members were registered by observing or taking part in activities such as nearshore fishing and gathering of other marine resources in the intertidal zone, fish products processing, fish vendors on the streets, tourism services provided by community members (snorkeling and canoe tours), surveillance activities carried out by the Colombian Navy in marine waters, informal community gatherings, informal meeting between regional environmental authorities and the manager of the

Natural Private Reserve Sanguare, as well as meetings between community representatives and state actors (e.g. consultative meeting held in the village of Rincón and organized by the local NGO Funsabanas where environmental authorities, local governments, and community leaders from Ciénaga de la Caimanera, Boca Guacamaya, Berrugas, and Rincón took part) , and among community members. Observations were recorded in a journal and photographs were taken when possible.

3.5 Data Analysis

The data analysis was guided by the analytical framework (Figure 2.3) and consisted of recompilation, synthesis and critical examination of secondary information; transcription of interviews and focus groups; and observations from the field; followed by coding and analysis to find patterns and categories (Bernard and Ryan 2010).

Interviews and focus groups transcripts were coded and organized by themes according to the main topics from the analytical framework (Figure 2.3). New codes and themes were added when the ones from the analytical framework were insufficient to capture new ideas emerging from the data analysis. The software RQDA (Huang 2014) was used to organize codes and visualize themes. RQDA is free software in the R family that is useful to organize and code qualitative data. Content analysis included an inductive/deductive coding process (Bryman et al. 2009). The coding process started with open coding to identify preliminary patterns and themes (e.g., type of interactions with actors or resources, any type of institution (rules/traditions/organization/rights), economic institutions or incentives, and contextual factors affecting interactions). Open coding consisted in the identification of

repetitions of ideas in relation to guiding topics from the analytical framework (Figure 2.3) and research objectives (Bernard and Ryan 2010). Open coding was followed by axial coding helping to arrange data and identify categories (e.g., actors, interactions, institutions, opportunities, limitations, MPA perceptions, and social-ecological linkages) (Saldaña 2013). The mind-mapping software Docear (Beel et al. 2014) was used as an aid to re-arrange codes and visualize themes (Figure 3.3). Aspects of governance identified in the literature and synthetized in the analytical framework (Figure 2.3) were used to guide the coding process and to facilitate the identification of categories and themes. The interview transcripts were coded and analyzed in Spanish.

Selected quotes from interviews with participants and focus groups were used as examples to illustrate specific themes in the results chapters (chapters 4, 5, and 6). Quotes were translated by the author from Spanish to English and identified by the following codes: quotes from local community participants were identified as LC, from parks and environmental authorities as EA, from non-governmental organizations including research institutes as NGO, and quotes extracted from focus groups as FG.

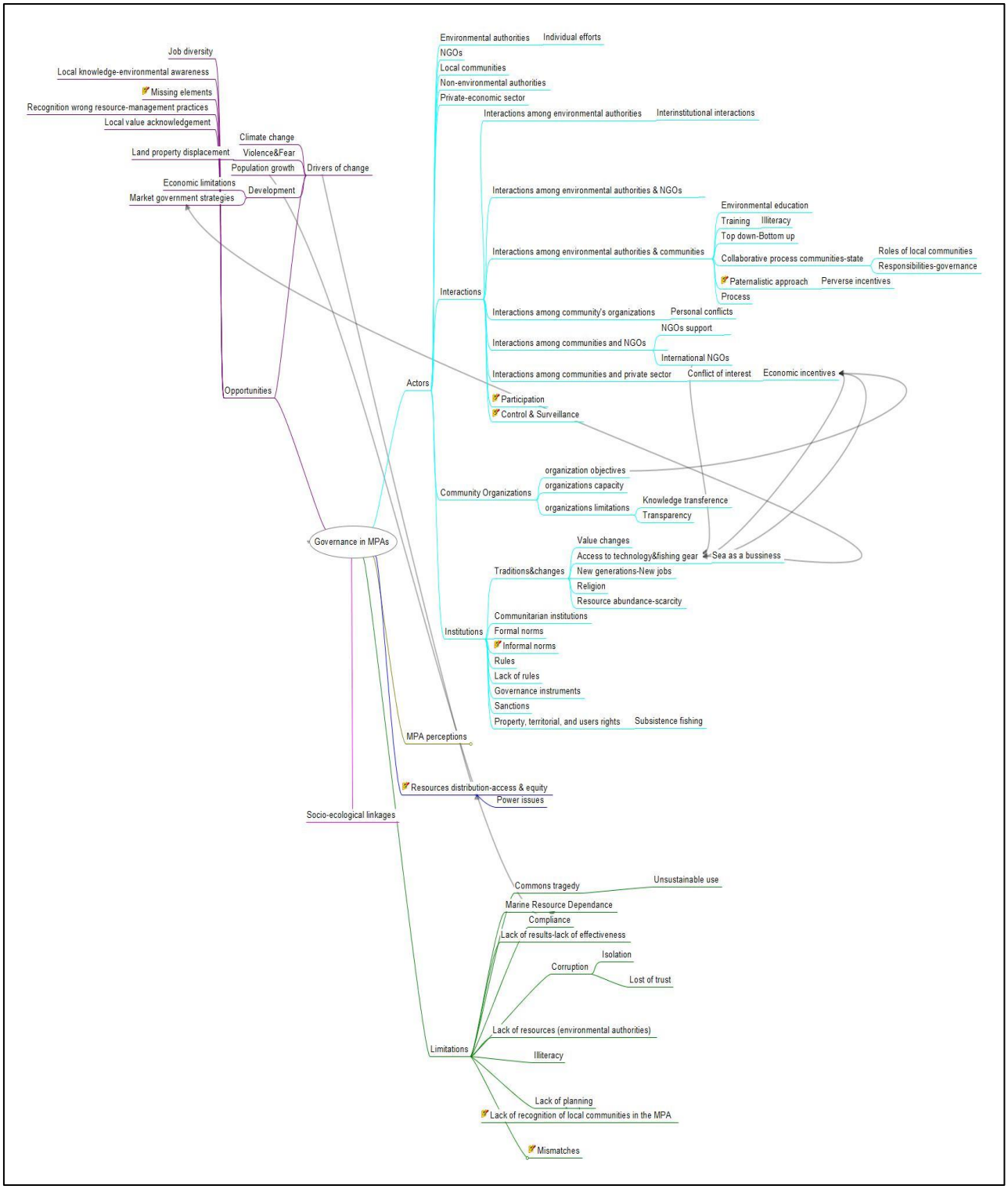


Figure 3.3 Mind Mapping elaborated with the software Docear.

3.6 Ethical Considerations

This research had ethical approval from the Wilfrid Laurier University Research Ethics Board (REB #3902) and follows the Canadian Tri-Council principles, standards and procedures for governing research involving human participants (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council Canada, 1998). This research did not raise particular ethical concerns that affect participants in physical or psychological ways. Ethical procedures sought transparency, confidentiality, respect, security and equity for all participants. Participation was always voluntary, no economic rewards were offered, and the information collected was used exclusively for the purpose of the research and with participants' approval.

Participants were informed in detail about the objectives of the research and the use of the information collected (Appendix A). Letters of consent were given or read, as appropriate, to the participants before their participation in any activity with the goal of letting them to know their privacy rights (Appendix B). Quotations from participants were used with their authorization and the main findings were shared with the majority of the community participants through dissemination meetings.

3.7 Researcher's Positionality

My interest in better understanding governance interactions in MPAs and inquiring about modes of governance that involve stakeholder participation as a means to facilitate the effective governance of marine protected areas (MPA), comes from five years of

experience as a researcher at the Institute of Marine and Coastal Research (Invemar) in Colombia. As a researcher at Invemar, I worked directly in marine biodiversity conservation planning with a team of experts in natural sciences, whose goal was to map marine and coastal ecosystems and species and conservation gaps to identify priority conservation sites. Specifically, I contributed to providing a portfolio of potential sites for new marine protected areas, which has been used to give direction to the creation or extension of new MPAs in Colombia (see Segura-Quintero et al. 2012, Ramírez et al. 2010, Alonso et al. 2008). Through this job, I also had the opportunity to attend several meetings with parks authorities, regional governments, and international NGOs, to discuss the implementation of a MPA subsystem. Indeed, I became aware of the national efforts to increase the MPA coverage to pursue international conservation goals, but I also realized that in most cases the effectiveness of MPAs for achieving conservation was diminished by the lack of compliance of resource users with MPA regulations. At the same time, I found out that although community's traditional fishing grounds often overlapped with MPAs, the participation of the communities in MPA planning and management had been almost inexistent.

My work experience and knowledge of MPAs and the socio-ecological characteristics of the Caribbean and Pacific regions of Colombia, certainly facilitated the selection of the study site. My experience in the field and previous connections with environmental authorities, NGOs and communities, represented an advantage regarding logistical aspects. Pre-established relationships with key actors in the area helped in the identification of key participants. Being Colombian and speaking Spanish as a first language facilitated the data

collection. Throughout the research, I made a conscious effort to be neutral (or unbiased), a position which my student role, I believe, helped to be perceived as such by community and government participants. Although my origins and mother tongue helped to build trust and facilitated the field work activities, being a female (particularly in a setting where resource harvesting activities are dominated by males), in addition to being from a different region in Colombia, I unquestionably remained an outsider to them and this may have influenced the participants' behaviors and responses.

Although this research is grounded in social sciences and used a qualitative research approach, my background in natural sciences and my experience as a practitioner when working at Invemar, influenced how the research problem was defined, the theoretical approach adopted, the analysis of data, and the presentation of results. This is exposed by some of the literatures used to define the analytical framework and the research problem itself, which is based on the CBC and Aichi Target conservation agreements. Thus, regardless of my genuine interest for fostering stakeholder's participation in MPA governance, I am conscious of the strong normative component in this research.

Finally, this research is not about whether or not MPAs are needed, or whether they are an effective means for marine biodiversity conservation. I am neither advocating for establishing MPAs or for MPAs shared-governance approaches as perfect solution. My only intention is to contribute to improving MPAs performance in complex contexts such as Colombia for achieving conservation and social outcomes.

3.8 Chapter Summary

This chapter presented key aspects of the research's philosophical and methodological approach. This research adopted a critical realism perspective to examine through a qualitative case study approach governance aspects and interactions in marine protected areas. Justification for the selection of four case study sites was presented as well as an overview of each of them. Data gathering methods included document analysis, direct observation, six focus groups, and 69 semi-structured interviews with key informants from the communities within the study sites, national and regional environmental authorities, and non-governmental organizations. A full description of methods and data analysis procedures is provided in this chapter as well, with more details as appropriate in chapters 4-6. Ethical considerations followed in this research are also explained.

Chapter 4 Marine protected areas in Colombia: Advances in conservation and barriers for effective governance

This is the first of three manuscripts prepared for this thesis. This manuscript has previously been published and should be cited as:

Ramírez, L.F. (2016). Marine protected areas in Colombia: Advances in conservation and barriers for effective governance. *Ocean & Coastal Management*, 125, 49-62.

A copyright waiver has been obtained from the publisher and can be found in Appendix E. Slight spelling, grammar, formatting, and citation changes may have been made to this manuscript to meet the author's university and thesis standards and requirements.

4.1 Chapter summary

Attention to marine protected areas (MPA) for conservation and sustainability purposes has increased in Colombia in recent decades. This shift is a result of the commitment of Colombia to international conventions and treaties (e.g., CBD, Aichi Target 11) and the realization by public and private research organizations of the fast rate of marine biodiversity loss and fisheries decline. This paper presents an examination of the situation of MPAs in Colombia and identifies barriers and opportunities to improve MPA governance. The analysis of documents, semi-structured interviews with environmental organizations (n = 13) and community representatives (n = 56), and focus groups (n = 6) provides a comprehensive understanding of the Colombia MPA system and the challenges for improving its governance. The adoption of international conservation policies and planning

tools is driving the increasing numbers of MPAs. Yet, the governance effectiveness of the MPAs, particularly under the current top-down approach, deserves consideration. Barriers and opportunities for improving MPA governance are related to both government and coastal community stakeholders, and include lack of implementation of participatory policies, limited institutional and community organization capacity, loss of self-regulatory fishing practices, and violence among others. Partnerships among NGOs, private organizations, communities, and government, together with recent afro-descendant community organization and leadership represent key opportunities for fostering meaningful participation of communities in MPA planning/management and for improving MPA governance.

4.2 Introduction

Marine waters in Colombia represent almost 50% of the national territory and provide critical habitats for marine biodiversity in the Caribbean Sea and the Pacific Ocean (Diaz and Aceros 2003; Alonso et al. 2007). Yet, as in many other countries of the world, marine biodiversity and fisheries in Colombia are increasingly being threatened by climate change, development projects, population growth, introduction of invasive species (i.e., lion fish, tiger shrimp), overfishing, oil and gas exploration, among many others (Guarderas et al. 2008; Paramo et al. 2009). In consequence, marine protected areas (MPAs) have received more attention in recent decades as a strategy for overcoming marine degradation and preserving biodiversity (Bustamante et al. 2014). A protected area, terrestrial or marine, is defined by the Convention on Biological Diversity (CBD) as "a geographically defined area,

which is designated or regulated and managed to achieve specific conservation objectives". Colombia as a signatory country of the CBD follows the goals proposed in the COP VII/2004 and Aichi Target 11 to increase the representativeness and coverage of marine ecological systems of the world by at least 10% by the year 2020.

Efforts to achieve the CBD goals in Colombia have included adopting an ecological and systematic approach for selecting and designing MPAs and working towards the consolidation of a system of MPAs - conceived as a subsystem of the National Protected Areas System-to coordinate stakeholders, resources, and initiatives (Invemar 2010). While Colombian developments in marine conservation are significant, conservation actions need to move beyond MPA number and area statistics and focus more on strategies to enhance MPA effectiveness.

The meaning of MPA effectiveness varies among different stakeholders (e.g., parks authorities, resource users) depending on their interests and worldviews. In that sense, MPA effectiveness is a social construction (Gray 2008). MPA effectiveness is understood in this paper as the convergence of multiple and interlinked aspects (ecological, socio-economic, and cultural) that underpin MPA performance perceptions of involved actors (park authorities, coastal communities, NGOs). A balance among ecological and socio-economic outcomes should encourage actor agreement on MPA effectiveness. How those actors interact, negotiate MPA management objectives, and reach agreement shapes MPA governance and its effectiveness.

The protected areas literature often interchanges governance and management, but there are some differences not always clear in practice (Borrini-Feyerabend et al. 2013).

Management explicitly refers to the "operational decisions" and actions (e.g., conservation practices such as defining fishing/mangrove quotes/closures, maintenance and budget needs) taken to achieve conservation objectives (Armitage et al. 2012), while governance entails coordination of stakeholder thinking in accordance with behavior, interests, perceptions, formal and informal institutions (Biermann et al. 2009). Borrini-Feyerabend et al. (2013, p 19) state that governance in protected areas is about "who decides what to do, how those decisions are made, who holds power, authority and responsibility and who is or should be held accountable".

In the Colombian context governance is usually associated with the central government and its capacity for governing or controlling (Castro-Buitrago 2011; Durán 2009). However, in this paper, governance in MPAs is understood as the process through which stakeholders within and around MPAs (park authorities, regional environmental authorities and other government agencies, local communities, non-governmental organizations, and private companies), formal and informal rules (MPA regulations, community traditions and behaviors), perceptions, and interests, interact to drive decisions and choices that determine the performance of MPAs. This governance perspective recognizes the shift from government to governance where the State is not anymore the only actor in charge of making decisions and assuming responsibility (Paavola 2007). Concerns regarding MPA governance effectiveness have been previously recognized by researchers and international organizations (Ferse et al. 2010); yet, MPA governance has been little examined in the Latin America context and even less in Colombia.

This paper uses a qualitative analysis to examine MPA development in Colombia and to identify barriers and opportunities for moving toward more effective MPA governance. This paper focuses on aspects of governance that influence MPA performance in Colombia and provides insights for MPA governance improvement.

4.3 Methods

4.3.1 Study site background

Colombia is located in the northwestern corner of South America with 928,660 km^2 of marine waters representing 45% of the Colombian territory (CCO, 2012). Colombia is the only country in South America with shorelines and offshore oceanic islands in both the tropical Pacific Ocean and the Caribbean Sea (Alonso et al. 2007). Marine waters in the tropical Pacific and the Caribbean offer a variety of habitats including shallow and deep coral reefs, sea grasses, mangroves, coastal lagoons, cliffs, soft and hard sea bottoms, and beaches that provide refuge for a large biodiversity.

Regardless of the high marine biodiversity, the contribution of marine commercial fishing for the Colombian economy represents only 0.36% of the gross domestic product (GDP) (Robles 2008; Wielgus et al. 2010). Fishing, however, is the main source of jobs and in many cases the only source for thousands of people inhabiting small towns and villages along both coastal shores. Although the total number of fishing communities in Colombia is unknown, Beltrán (2001) estimated around 24,000 coastal fishing communities distributed along both coasts in 1997, and more recently Colombian fisheries experts have suggested a number of 40,000 fishers similarly distributed in the Pacific and Caribbean coasts

(Saavedra-Diaz et al. 2015). Thus, regardless of the low contribution of the fisheries sector to the GDP, subsistence fisheries largely support local economies and underpin coastal community wellbeing. Small-scale artisanal fishing in the Caribbean coast of Colombia takes place mainly in near-shore areas. The main fishing techniques include hand-lines, nets, and diving with harpoon. Species caught include mullet, jack, snapper, mackerel, parrot fish, lobster, and queen conch.

Data collection in this research is focused on five coastal villages (Ciénaga de la Caimanera, Guacamayas, Berrugas, Rincón, and Santa Cruz del Islote) located near or within selected MPAs (Corales del Rosario & San Bernardo National Park, Ciénaga de la Caimanera Regional Integrated Management District and Boca Guacamayas Regional Park) located in the Gulf of Morrosquillo in the Caribbean of Colombia (Fig. 4.1). The MPAs selected cover regional and national jurisdictions and have different management objectives (no-take and sustainable use), thereby representing the main management categories of MPAs used in Colombia. MPAs may include marine and/or coastal areas. Social and biogeographical chracteristics are similar across the selected MPAs reducing bias associated with context differences.

The population inhabiting the coastal areas and islands within the selected MPAs is mainly afro-descendant. A mixed population (afro-descendant, indigenous, and 'mestizo' half-blood) is found in Boca Guacamayas and Ciénaga de la Caimanera. No other place in the Caribbean coast of Colombia offers a similar mosaic of jurisdictional and management approaches within the same region.

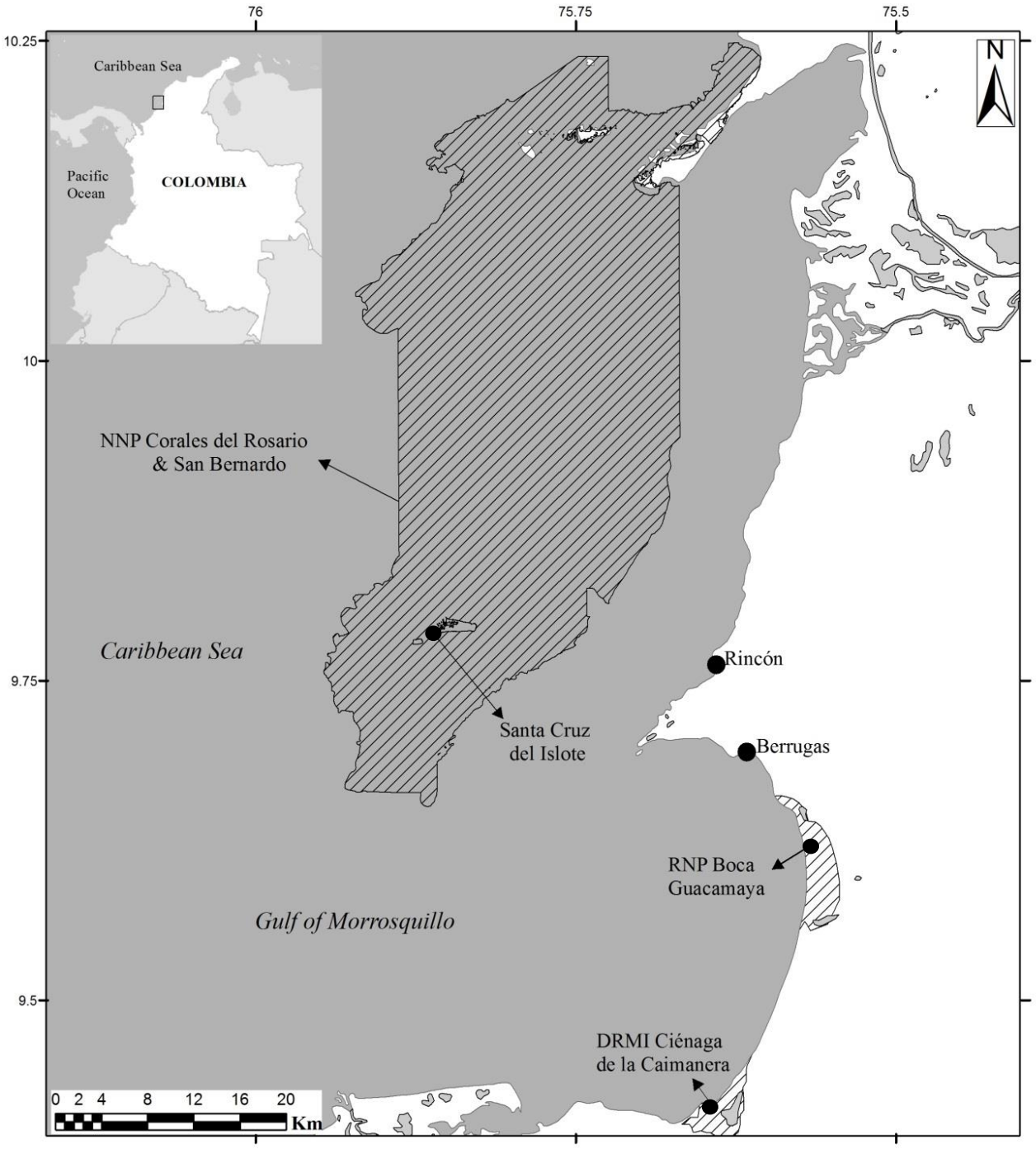


Figure 4.1 Map of the study area. NNP: National Natural Park, RNP: Regional Natural Park, DRMI: Regional Integrated Management District.

4.3.2 Data sources and analysis

This research uses a qualitative, comparative, multi-site case study approach. The information compiled and analyzed in this paper comes from primary and secondary data sources. Primary information was obtained through semi-structured interviews, focus groups, and field observation designed specifically for this research and conducted between April and July of 2014. Secondary data was extracted from reports and official documents previously prepared by organizations such as the Marine and Coastal Research Institute (Invemar), National Natural Parks, national and international agencies (e.g., FAO) and non-governmental organizations (NGOs) (e.g., CI, TNC) for purposes different from this research. This paper is also supported with information and experience acquired between 2006 and 2010 by the author when participating in several research projects related to planning the system of MPAs in Colombia (Alonso et al. 2007, 2008; Ramírez et al. 2010; Segura et al. 2012) while at Invemar in Colombia.

Analytical frameworks from Borrini-Feyerabend et al. (2013) and Jones et al. (2013) for governance were used as a guide to define questions for semi-structured interviews, focus groups, and document analysis (Appendix C & D). The guiding topics include existence of community territorial/access rights in marine and coastal resources, knowledge of formal regulations in MPAs and other informal strategies of management or implicit practices at the local level, authorities and community expectations from the MPAs, community organization and relationships with environmental authorities and NGOs, community conflict resolution strategies, community knowledge and perceptions about MPAs, and community participation in MPA planning and management.

Thirteen semi-structured interviews were conducted with key informants from environmental authorities (National Natural Parks authority at the regional office as well as personnel working on the field), Regional Environmental Authority (Carsucre), Invemar, Caribbean Regional System of Protected Areas (Sirap-Caribe), and the NGOs Ecoversa and Funsabanas. Key informants from organizations were selected based on experience and long-time involvement in planning/managing MPAs in the Caribbean of Colombia.

Those interviewed were selected because they were the most experienced with MPAs within their organization or, in some cases, solely responsible for MPA issues. Fifty-six semi-structured interviews and six focus groups took place during the same period of time with community participants (fishers, mangrove harvesters, tourism operators, and community leaders). Participants from the communities were initially identified through contacting leaders from community organizations and, later, through a snowball approach. Other participants were chosen during field observations given their involvement in marine resource harvesting or in community activities. Interviews and focus groups were audio recorded, transcribed, and analyzed through content analysis that included inductive/deductive coding (Bryman et al. 2009). Interview and focus group transcriptions were coded using the free software RQDA (Huang 2014). The mind-mapping software Docear (Beel et al. 2014) was used to re-arrange codes and visualize patterns and categories. Initial codes were defined based on key topics from the guiding questions. Once all interviews and focus groups were coded, codes were re-arranged and the main categories emerged.

Secondary information was found through a database of organizations. The search for documents was focused on the MPAs and coastal villages within the study site as well as topics related to demography, history, environmental issues, governance, and management. Such secondary information provided a better understanding of the history and context of the study sites and a means for triangulation with primary data sources. Document content analysis consisted of searching for key terms and ideas related to the guiding questions. MPA governance barriers and opportunities were organized in government, community and cross-cutting categories to facilitate their description and analysis. Findings reliability was verified through data triangulation (Bryman et al. 2009). Quotes from interviews and focus groups are used to support aspects of the analysis and help to highlight themes. Quotes were selected from the data analysis based on their clarity to illustrate a theme or common thought. Quotes are identified with the following codes: Parks and Regional Environmental Authorities (EA), non-governmental organization including research institutes (NGO), local community including participants from all the sites and MPAs (LC), focus group (FG). This research had ethics clearance from the Wilfrid Laurier University Research Ethics Board. The information and quotations are used with the consent of participants.

4.4 Results

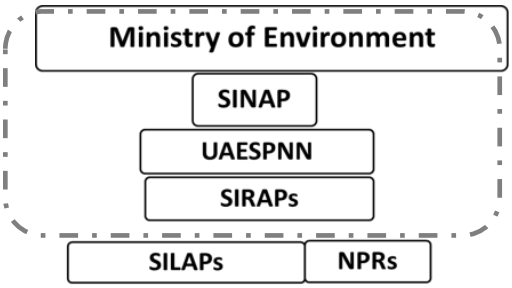
4.4.1. History, current state, and development of MPAs in Colombia

Systematic efforts to protect biodiversity in Colombia started in 1968 with The National Institute of Renewable Natural Resources (Instituto Nacional de Recursos Naturales

Renovables, INDERENA, in Spanish), the government agency in charge of terrestrial and marine protected areas until 1993. In 1991, Colombian constitutional change recognized the relevance of environmental reform driving changes such as the creation of the Ministry of Environment (ME), the National Environmental System (SINA), and the Special Administrative Unit of the System of National Natural Parks (Unidad Administrativa Especial del Sistema de Parques Nacionales Naturales, UAESPNN, in Spanish). Colombia became part of the signatory countries of the Convention of Biological Diversity (CBD) in 1994 and since then has incorporated the CBD concept of protected area (PA) into the national legislation (Ponce de Leon 2005).

The Constitution of 1991 also provided instruments for environmental management decentralization, creating regional environmental autonomous corporations (Corporación Ambiental Autónoma Regional, CAR, in Spanish) and delegating continental land management responsibilities.

The National System of Protected Areas (SINAP) is complemented by national, regional, and local PAs (Fig. 4.2). Until 2011 National PAs were the only kind with jurisdiction over marine areas. Since 2011 regional environmental authorities have jurisdiction over marine areas on the coast line and out to 12 nautical miles offshore (Law 1450 Art. 208/2011).



SINAP: The National System of Protected Areas of Colombia acts to coordinate protected areas of different categories and under various jurisdictions, bringing together government and non-government agencies and stakeholders and providing tools to develop a participatory and inclusive system (Invemar, 2010).
UAESPNN (Special Administrative Unit of the System of National Natural PA) provides guidelines for the integration and connectivity of protected areas and is the authority in charge of terrestrial and marine protected areas at the national level.
SIRAPs: Regional Systems of protected areas are managed by regional environmental authorities known as CARs (Corporaciones Autónomas Ambientales Regionales as in Spanish).
SILAPs: Local Systems of protected areas are managed by local authorities.
NPR: Natural Reserves of the Civic Society are private protected areas established by landowners and dedicated to conservation. Activities such as ecotourism, environmental education, and sustainable use of resources may take place in these areas. NPRs are coordinated by the Network of Natural Reserves of the Civil Society (Red Colombiana de Reservas Naturales de la Sociedad Civil-Resnatur as in Spanish).

Figure 4.2 Hierarchy and organizational structure of protected areas in Colombia. The dashed line indicates the government levels involved in the declaration, planning, and managing of MPAs.

4.4.1.1. MPA governance in Colombia

In Colombia, as well as in most of the countries in Latin America and the Caribbean, the sea is in the public domain and the central government is in charge of its administration and control (Barragán 2001; Pomeroy et al. 2004). All the decisions regarding MPAs in continental shelf waters have traditionally been made by the central government represented by the Ministry of the Environment or the UAESPNN. Colombian MPAs follow a top-down management approach where decisions and responsibilities as well as management procedures are made by the UAESPNN in representation of the Ministry of Environment.

4.4.1.2. MPA categories and jurisdiction of management

In seeking to achieve the CBD goals adopted as a part of Colombian environmental legislation, particularly the ones established in the COP VII/2004 and Aichi Target 11, special efforts have been made to consolidate a system of MPAs. As a result the number of MPAs has doubled in the last ten years. Colombia currently counts 31 coastal-marine areas including all categories at national and regional jurisdictions (23 in the Caribbean and 8 in the Pacific) (Table 4.1). Most of these MPAs correspond to strict national categories of management. Colombian MPAs classification is comparable to categories (Ia) Strict Nature Reserve, (II) National Park, and (III) Natural Monument, in the system of the International Union for the Conservation of Nature (IUCN) (Dudley 2008). A few Colombian MPAs are comparable to category VI in the IUCN system where sustainable use activities are allowed. Sustainable use is understood as "use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity …" (CBD, Article 2).

Different types of MPA are useful to address different conservation objectives and accommodate socio-economic community needs. Although the Marine Protected Area (MPA) designation is used in Colombia and in this paper as a generic term to refer to all categories of management that protect marine and coastal resources, there are two protected areas, both of them archipelagos, officially designated as MPAs: 1) Seaflower MPA, and 2) Corales del Rosario, San Bernardo & Isla Fuerte MPA (CRSBIF). Both MPAs are multiple use including some national no-take areas and encompassing the larger extents of coral reefs in Colombia. Although both areas are inhabited by ethnic minority communities, the way in which communities have been involved in MPA governance and management

differs between them. In the case of Seaflower MPA, decentralization and autonomy of the regional environmental authority to make decisions have greatly facilitated stakeholder participation (national and international NGOs, community members, authorities) in the MPA planning process (Mow et al. 2007)

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Table 4.1 Marine protected areas in Colombia (Modified from Invemar (2010)). All areas are for marine and near-shore area only. BR: Biosphere Reserve, RS: Ramsar Site, DRMI: Regional Integrated Management District. Coastal MPAs refers to areas that include ecosystems such as beaches, cliffs, mangroves, and coastal lagoons.

Marine and Coastal Protected Areas		Authority	Type	IUCN category	International Status	Area (ha)	Creation date
Caribbean	Los Flamencos Fauna and Flora Sanctuary	National	Coastal	II		7,682	1977
	Sierra Nevada de Santa Marta National Park		Coastal	II	BR	3,240	1964
	Tayrona National Park		Marine-coastal	II		15,000	1964
	Ciénaga Grande de Sta Marta Fauna and Flora Sanctuary		Coastal	II	BR & RS	23,000	1977
	Isla de Salamanca Road Park		Coastal	III	Part of the RS	56,200	1969
	Corales del Rosario and San Bernardo National Park		Marine	II		120,000	1977
	Mono Hernández Fauna and Flora Sanctuary		Coastal	II		3,850	2002
	Corales del Rosario, San Bernardo & Isla Fuerte MPA		Marine-coastal	VI		558,610	2005
	Acandi, Playón y Playona Fauna and Flora Sanctuary		Coastal	II		26,232	2013
	Corales de profundidad National Park		Marine	I		142,192	2013
	Bahía Portete National Park		Marine-coastal	II		14,079	2014
	Bahía Cispata DRMI	Regional	Coastal	VI		27,171	2006
	Boca de Guacamayas Regional Park		Coastal	II		3,578.80	2008
	Ciénaga de la Caimanera DRMI		Coastal	VI		2,125	2008
	Ensenada de Rionegro, los Bajos Aledaños, las Ciénagas de Marimonda y el Salado DRMI		Coastal	VI		30,760	2009
	Musichi DRMI		Coastal	VI		1,494.4	2011
	La Playona-Loma de la Caleta DRMI		Coastal	VI		8,730.28	2012
	Humedales del Río Léon y Suriquí Regional Park		Coastal	II		6,182	2011
	Lago Azul-Los Manatíes DRMI		Coastal	VI		30,000	2013
Insular Caribbean	Old Providence-McBean Lagoon National Park	National	Marine-coastal	II	Part of BR Seaflower	995	1995
	DRMI Seaflower (before known as Seaflower MPA)	Regional	Marine-coastal	VI	Part of BR Seaflower	6,500,71	2005
	Johnny Cay Regional Natural Park		Marine-coastal	II	Part of BR Seaflower	4.6	2001
	Old Point Mangrove Natural Regional Park		Marine-coastal	II	Part of BR Seaflower	92.33	2001

Table 4.1 Marine protected areas in Colombia (Modified from Invemar (2010)). All areas are for marine and near-shore area only. BR: Biosphere Reserve, RS: Ramsar Site, DRMI: Regional Integrated Management District. Coastal MPAs refers to areas that include ecosystems such as beaches, cliffs, mangroves, and coastal lagoons.

Marine and Coastal Protected Areas		Authority	Type	IUCN category	International Status	Area (ha)	Creation date
Pacific	Sanquianga National Park	National	Coastal	II		80,000	1977
	Utria National Park		Marine-coastal	II		18,511.5	1986
	Gorgona National Park		Marine-coastal	II		61,687.5	1984
	Malpelo Fauna and Flora Sanctuary		Marine	II		974,474	1995
	Uramba Bahía Malaga National Park		Marine	II		47,094	2009
	La Sierpe Natural Regional Park	Regional	Coastal	II		25,178	2008
	La Plata DRMI		Coastal	VI		6,791	2008
	Golfo de Tribuga-Cabo Corrientes DRMI		Marine-coastal	VI		60,138.6	2015

In contrast, CRSBIF MPA, the responsibility of the central government represented by the Ministry of Environment and UAESPNN, was designated without community participation. Only recently, the Ministry of Environment is leading an MPA management plan consultation process with communities within the MPA. Seaflower MPA was re-assigned to the category of Regional Integrated Management District (DRMI) in 2014 as a result of the revision of categories of protected areas in Colombia (Resolución 977, 2014).

National "Marine" Protected Areas (PA): National PAs such as National Natural Parks and Fauna and Flora Sanctuaries are all no-take areas included under the generic name of MPAs when marine and/or coastal habitats are within their limits. Most of them are mainly coastal PAs that may include marine ecosystems. National PAs are established and managed by the central government. The declaration and planning process of PAs is carried out by UAESPNN, the national park authority, following a strict top-down approach. However, when ethnic minority (legally recognized) groups are within or near the PA a consultation process usually takes place.

Community territorial rights are granted only over terrestrial areas; as a consequence the declaration of PAs that encompasses marine habitats does not necessarily require a consultation process. This is particularly relevant for afro-descendant and indigenous peoples who are recognized as minority ethnic groups in the Colombian Constitution, and other stakeholders in the Caribbean (e.g., peasants) who regardless of their interaction and dependency on marine and coastal ecosystems have had limited participation in the design and implementation of MPAs (Durán 2009).

Regional "Marine" Protected Areas: Regional Natural Parks (RNP) and Regional Integrated Management Districts (DRMI) are also categories of management used to protect marine and coastal biodiversity and regulate activities. In addition to the protection of mangroves and coastal lagoons among other coastal habitats, the management and protection of coral reefs and sea grass ecosystems located between the shoreline and 12 nautical miles off shore are part of regional jurisdiction since 2011 (Law 1450, Ministry of Environment).

Given that DRMIs are the only category where sustainable use of resources in marine/coastal areas is allowed, they become particularly important for active involvement of local communities in management activities. This approach requires, at least in theory, community participation in various aspects of planning and managing.

Among the MPAs recently established in Colombia, DRMIs have been the most common category of management assigned. DRMIs are used together with National PAs (i.e. Natural Parks and Fauna and Flora Sanctuaries) to complement strict protection in the marine portion with sustainable use activities on the coastal portion. Thus, community territorial/use rights and use agreements can be recognized and community participation encouraged.

Regardless of the top-down approach, efforts made by regional environmental authorities to develop participatory mechanisms (i.e., mangrove restoration and consultation processes) have given a more active role to local communities in the management of the areas. For example, mangrove restoration programs led by the regional environmental authority in the RNP Boca Guacamaya and DRMI Ciénaga de la Caimanera,

but executed by community members, have been successful in promoting collaborative work among the environmental authority and the community.

4.4.1.3. Marine protected areas development

Conservation trends in Colombia are strongly influenced by international agreements and guidelines provided by IUCN, as well as by global environmental and economic policies (i.e., UN Earth Summit, CBD, Specially Protected Areas and Wildlife Protocol of the Cartagena Convention) (Bustamante et al., 2014). Coastal and marine policies and the Colombian Parks and People Policy together with MPA planning tools and MPA management decentralization have shaped recent developments in Colombian MPAs (Fig. 4.3). These aspects are examined in this section.

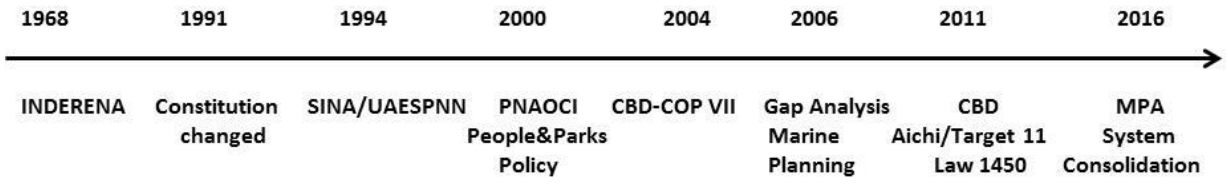

Figure 4.3 Key aspects influencing marine protected areas development in Colombia (PNAOCI: National Environmental Policy for the Sustainable Development of Coastal Zones).

Marine and Coastal National Policies. A growing interest in the sea and the adoption of new policies for marine and coastal areas started in the late 1990s in Colombia. The creation of the Ministry of Environment and the National Environmental System (SINA) in 1994 opened a new window of opportunity to develop research and create policies in

relation to marine and coastal topics. For instance, the National Environmental Policy for the Sustainable Development of Coastal Zones (PNAOCI), approved in 2000, represents an important milestone for the management of coastal and marine areas in Colombia. PNAOCI brought the attention of environmental agencies and authorities to marine and coastal waters not only for national defense or economic development purposes, but also for their importance for long term sustainability (Barragán 2001). PNAOCI provides guidelines for planning, managing, restoring, and protecting coastal and marine ecosystems and recognizes MPAs as the primary tool in this endeavor. PNAOCI adopts an integrated coastal zone management approach promoting the participation of all stakeholders (government and nongovernment agencies, local communities). As the following quote shows PNAOCI has encouraged the involvement of regional governments in coastal environmental planning:

> "Based on PNAOCI several regional environmental corporations have advanced in the formulation of regional integrated coastal zone management plans …" (NGO1).

The "Parks and People" Policy was introduced in 2001 to promote social participation and institutional coordination (MMA-UAESPNN 2001; Durán 2009). In some parks, this policy has brought PA authorities closer to local communities, decreasing conflict, while increasing environmental awareness among the communities and social sensibility among the authorities. This policy has been most effective in places inhabited by minority groups whose territorial rights have been legally recognized. In those cases, agreements have been designed to allow sustainable use of resources. However, other coastal communities not recognized as minority groups and without legal territorial-marine user rights, but highly

dependent on fishing grounds near or within the parks, have minimal and mainly conflicted interactions with parks authorities due to highly strict regulations and lack of communication with communities (Camargo et al. 2009). The following quote shows the lack of communication among parks authorities and communities.

> "For some people the park doesn't exist. Parks wanted to enforce the law only recently. The park was there, but it was as if it didn't exist … sometimes park authorities came and said that we weren't allowed to fish here, but they didn't explain why not"(LC4).
>
> "… we haven't been trained to be aware that there are things that cannot be done…the community does not have that sense of place and awareness of living near a coral reef that is a park" (LC8).

Although the Parks and People Policy has promoted environmental education, community research, and some resource use agreements, the integration and participation of stakeholders in the MPA planning and management and the recognition of their role in the governance of PAs is limited.

Adoption of planning and management tools for marine conservation. Historically, protected areas in Colombia, as in many other places of the world, have primarily been based on and applied to terrestrial ecosystems, and their establishment guided by opportunity rather than by comprehensive ecological analysis and biodiversity priorities (Dudley et al. 1999). In the last decade, however, the selection of protected area sites in Colombia, in both marine and terrestrial cases, has followed a comprehensive ecological analysis resulting in the identification of priority conservation sites and ecological representative gaps (Alonso et al. 2007; Segura et al. 2012). These processes have involved the participation of environmental authorities, research institutes, universities, and non-

governmental organizations. The identification of priority conservation sites and gap analysis of marine biodiversity have guided the establishment of new marine protected areas in Colombia at the regional and national level guaranteeing representativeness and ecological integrity.

The adoption of an integrated ecological approach in the identification of marine areas for protection has fostered research development; partnerships among researchers, scholars, national and international NGOs; and significant international funding and capacity, thereby improving the country management capacity. Yet, this approach does not incorporate economic and social indicators for the identification of priority conservation sites. This lack of integration of socio-economic factors in the planning of MPAs overlooks essential aspects for effective governance. For instance, estimation of community reliance on marine resources, traditional knowledge, and community resource management capacity are aspects missing in the design and planning of MPAs (Lopez-Angarita et al. 2014). The following quote by an NGO participant supports this argument:

> "People depend on goods and services from the territory and obviously when a management category is selected it has to recognize those dependence relationships … the management plan is where we should define how to harmonize people's livelihood needs and conservation goals. The problem is that in many cases those dependence relationships are not recognized" (NGO3).

Incorporating socio-economic aspects in the early stages of the planning of MPAs and understanding socio-ecological linkages would increase the opportunities for an integrated governance approach that results in more effective MPAs (Bustamante et al. 2014).

Decentralization of marine/coastal resource management. The government-led approach applied to MPAs in Colombia restricts the capacity of the legal, operational and institutional

framework to promote coordination among national, regional and local conservation authorities. This shortcoming reduces the overall conservation capacity and exacerbates conflicts with local communities depending on marine resources as livelihoods (Durán 2009). Moreover, most of the MPAs in Colombia correspond to no-take areas limiting the uses to recreation and subsistence, while in many cases coastal communities rely on marine resources as the single source of income.

> "We always want to use the more strict categories, but there are more flexible categories that help to achieve the management goals faster. The strict categories don't work, they are just on paper" (NGO3).

Recently, however, important advances have been made in Colombia to improve the performance of MPAs. For instance, decentralized mechanisms such as the Law 1450/2011 delegating environmental responsibilities of marine ecosystems located between the shoreline and 12 nautical miles off shore to coastal regional environmental authorities facilitate the integration of national and regional authorities in the protection of marine biodiversity. This new law has brought opportunities for institutional reform, for the creation of multiple-use marine protected areas at regional jurisdictions, and for reconciling social and conservation objectives.

In this case decentralization provides tools to deal with scale issues at the jurisdictional and ecosystem levels (Galaz et al. 2008). For instance, having the same environmental authority in charge of the habitats that are part of the life cycle of marine species (i.e., mangroves, sea grasses, and coral reefs) should facilitate effective management and conservation. Decentralization also creates opportunities for interaction among coastal communities and environmental authorities. The downside of decentralization in this case

is financial limitations and low capacity to carry out management and control activities in marine ecosystems (Rivas 2006; Cohen and McCarthy 2014). These aspects have delayed the implementation of Law 1450 by regional environmental authorities in Colombia. In an interview a community leader from the DRMI Ciénaga de la Caimanera mentioned his concern about the lack of capacity of the regional environmental authority to invigilate illegal fishing to 12 miles offshore, now within its jurisdiction.

4.5. Barriers and opportunities to improve marine protected area governance in Colombia

As described before, important progress has been made in recent years in marine protected areas. However, the effectiveness of MPAs to achieve ecological and social outcomes is still limited in Colombia. Through the qualitative analysis of interviews and focus groups, key ideas and categories emerged, highlighting some of the barriers restricting the effectiveness of MPAs. These barriers are varied in nature; some of them are related to policies and institutional capacity, while others are associated with characteristics and dynamics of coastal communities. An analysis of barriers as well as opportunities for pursuing effectiveness in MPAs is presented in this section. Barriers and opportunities are differentiated into government, community and cross-cutting issues to facilitate their analysis (Table 4.2).

Table 4.2 Barriers and opportunities for the effectiveness of MPAs in Colombia

	Barriers/challenges	Opportunities
Government	-Lack of consensus and coordination among organizations -Lack of institutional capacity (financial, technical, control and surveillance, environmental authorities instability) -Lack of participatory mechanisms	-Partnerships among NGOs and government organizations -Better relationship among park authorities and communities -Recognition of collective territorial rights
Community	-Resource dependency -Erosion of self-regulation fishing practices -Lack of organization and information transference mechanisms	-Partnership among NGOs/private sector and communities -Existing social capital (organizations experience and community identity around afro-descendant collective rights)
Cross-cutting issues	-Current state of resources -Paternalistic approaches -Market system drivers -Violence and illegal actors	-Resource crisis perception/realization -International funding and technical support

4.5.1. Barriers at the government level

One of the most evident barriers in the governance of MPAs in Colombia, as elsewhere, is the lack of harmonization among environmental and economic development policies. The economic and environmental sectors in Colombia are polarized, and institutions often fail to mediate and bridge interests from both sectors. In particular, it is this *lack of consensus among government agencies* that drives inefficient planning and contradictory decisions. For example, in 2010 the Colombian National Hydrocarbons Agency (ANH) leased two exploration blocks within the Seaflower MPA to two Latin-American oil companies. This happened without any consultation with the regional environmental authority (CORALINA) in charge of Seaflower MPA. To stop the oil exploration CORALINA led a 'Popular Action' that temporarily suspended the oil exploration. A Popular Action is a mechanism created by the Colombian Constitution to protect collective rights or interests (Sarmiento 1994). In 2011, the National Controller recognized that the oil leases were a violation of several

international treaties including the CBD responsibilities agreed by Colombia and led the president to ban oil exploration in the MPA Seaflower (Taylor et al. 2013). This event made evident the vulnerability of MPAs in Colombia, the contradictions among different government agencies, and the urgent need to integrate environmental and development policies in a consistent manner.

Environmental Institutional capacity. Environmental government organizations have had several institutional reforms since their creation in the 1990s (Ministry of Environment, Fisheries Authority). These reforms have implied in some cases downsizing and merging the responsibilities of various agencies, decreasing their management capacity. For instance, in the last 20 years five different agencies have been in charge of Colombian fisheries administration (Wielgus et al. 2010; Saavedra-Diaz et al. 2015). The fisheries authority is responsible for the enforcement of fishing regulations within regional MPAs as well as in artisanal and industrial fishing areas. Parks authorities, although responsible for national MPAs regulations, rely on the fisheries authority and the navy for their enforcement.

The instability in the fisheries authority has limited operational resources (personnel, equipment) and coordination with parks and regional authorities to enforce marine resource and fishing regulations. The following quote exemplifies a shared feeling among regional environmental authorities, parks, community leaders, and fishers regarding the need for a clear fisheries management plan and a stronger environmental authority to stop illegal practices:

> "There is no authority. There is only a paper with the fisheries agency's name, but there is only one employee…Fishing here is not allowed, but the law does not act

> here. They don't make people respect the law. If the authority was here, it would control trammel nets, we would always have fish" (LC4).

Interviews and field observation confirm that highly destructive artisanal and industrial fishing techniques such as dynamite and gillnets are used around and within CRSBIF MPA, while Boca Guacamaya and Ciénaga de la Caimanera MPAs are threatened by mangrove swamps destruction.

Environmental authority instability and low institutional capacity have not only affected enforcement of marine resources regulations, but, as indicated in the following quotes, have also eroded the trust of the communities on government institutions.

> "… for the environmental authority is difficult to work with communities because they don't trust government institutions …" (EA2). "We, the community organizations, have lost credibility in our government institutions" (LC5).

The communities' negative perception of environmental authorities diminishes institutional credibility, compliance, and interest in park activities.

Lack of participatory mechanisms. According to the classification of participatory processes proposed by McConney et al. (2007), participatory processes in Colombia may be classified as consultative which means that there are mechanisms that facilitate interactions among government and communities, but decisions are still made by the government. Information meetings, environmental education, short-term mangrove restoration projects, and ecotourism activities represent opportunities for community participation in MPAs; however, these opportunities are sporadic and limited to stakeholders living within MPAs. As such, key stakeholders that come from the coastal villages of Rincón and Berrugas to fish in the MPAs and surrounding areas are excluded.

Often the first time communities hear about the MPAs is through unofficial means or when they are caught fishing with prohibited techniques or in no-take zones. From interviews with community members, a lack of clarity about the meaning, purpose, and rules of the MPAs was evident. In some cases people interviewed were not aware that places where they obtain their livelihoods are now MPAs.

4.5.2. Barriers at the community level

Resource dependency. The majority of the people in the coastal villages and islands in this case study rely on marine resources as a source of self-employment and in some cases as their only means of subsistence. While jobs in tourism are important for local communities, they are mainly seasonal and restricted to some specific areas where infrastructure and access are adequate (i.e., Ciénaga de la Caimanera DRMI, CRSB NNP). Moreover, most tourism revenue is captured by non-locals (owners of hotels, restaurants, and other businesses offering tourism services). Small-scale agriculture is also a livelihood option in Berrugas and Rincón, but very few people have land access or ownership. In some cases landowners allow peasants to work the land in exchange for maintaining the land clear of weeds. This is shown in the following quote:

> "Fishing and farming are the only two activities here. We have been 280 peasants working in the same farm for ten years now, but this year we had to beg the owner to allow us to work there. The land is ready, but there hasn't been any rain. Fishing is not good any more. Fishers make about a dollar/day. What else can we do? There is no alternative. I have four kids at home. If I don't have a job I have to fish. The only income here is from fishing" (LC4).

Thus, competition for marine resources among fishers is high and fishing practices are intense. As a result many artisanal fishers adopt non-selective and destructive fishing practices such as use of dynamite, harpoons, cast nets, and purse seines to maximize the yield.

Conflicts among industrial and artisanal fishing sectors are common and often artisanal fishers blame industrial fisheries for the loss of habitats and reduction of fish in the Gulf of Morrosquillo and archipelagos (Fig. 4.1). However, as the following quote shows, in some cases artisanal fishers depend on the bait from industrial fishing ships, making them tolerant of the presence of industrial fishers within artisanal fishing areas:

> "It is a complex situation because some people disagree with the industrial ships fishing here, but there are fishers that get bait from the industrial ships so they cannot disagree with their activities" (LC2).

Photo 4.1 Industrial Fishing Ship in the Village of Rincón (local fishermen approach the ship to get bait) (Photo credit Luisa Ramírez).

Loss of traditional self-regulating fishing practices. The acquisition of goods in coastal villages and towns in Colombia was traditionally based on sharing fish or vegetables and other goods exchange. Without refrigeration facilities and electricity fish have to be consumed quickly or dry salted. These practices were common and helped to prevent overfishing and competition for resources among fishers. Technological innovations in fishing equipment (manufactured gillnets, diving equipment, GPS to locate fishing grounds), transportation (oil-motor boats), fish storage (ice factories and styrofoam), and mangrove harvesting (chainsaws) brought major changes transforming subsistence activities into commercial ones.

> "Traditions are lost. Before people were more humble and generous, but not since the changes brought by development…Development made things worse in our community. This was a culture of many values and principles" (FG6).

Fishers used to be very selective in the type of species and sizes of fish. These selective practices indirectly worked to keep top predators such as sharks in the food chain; however, given the scarcity of marine resources, fishers are now less selective.

> "We didn't catch small fish. We used to release them. We only caught big fish, but now they catch the small ones too (LC4). "…We didn't use to eat barbudo, toyo [small shark] or any kind of those fish before, [fishers eat sharks now]" (LC3).

Photo 4.2 Undersize and illegal species (Parrotfish, lisa, and sharks) caught within the NNP Corales del Rosario & San Bernardo (Photo credit Luisa Ramírez).

In addition to the changes in fishing practices, competition for resources also affects interactions among community members weakening the community safety net, respect for community leaders, and the organizational capacity of the community.

Lack of organization and information transfer mechanisms. Community organization and local resource management approaches in the Colombian context are scarce. Associations of fishers and Communal Action Boards are the most common type of organization in coastal areas. Communal Action Boards are the institutions through which communities can get organized to lead and drive communal processes in neighborhoods and villages (Mininterior 2015). Although they were created several decades ago, these organizations have not always been active nor do they necessarily represent the community point of view. Community organization in Colombia is not often the result of grassroots efforts; instead it follows external (government or NGOs) initiatives. The main motivation for community organization has been to get access to financial and in-kind aid from government, NGOs, and industry. The majority of the community organizations identified in the field were created

for economic purposes, so that the main motivation for organization, access to aid, constrains their capacity and leadership.

The new afro-descendant community councils, recently organized in the villages of Santa Cruz del Islote, Berrugas and Rincón with the main purpose of claiming territorial rights, represent a powerful initiative which should open opportunities for communities to participate meaningfully in MPA planning and management. However, tools to facilitate community organization and leadership capacity still need to be provided.

Poor organizational capacity limits the opportunities to disseminate information among community members and their engagement in participatory processes. Often, meetings organized by environmental authorities take place only with leaders who do not always represent the voices of the community, and frequently information is not widely shared among community members or organizations.

> "We would like to have representatives from all the community, but it doesn't always happen. Even with the community councils … sometimes the leader does not really represent all the community. We always try to follow institutional rules and the leaders represent that, although it doesn't mean that the leaders represent the entire community vision" (NGO1).

> "… the information that is given to members of the association is not always disseminated" (NGO2).

4.5.3. Cross-cutting barriers

In interviews with community members, authorities, and NGOs, other types of barriers were identified. These barriers have the characteristic of affecting both government and community decisions and behaviors crucial for the governance of MPAs.

The current state of marine resources, for example, becomes a limitation for maintaining community traditional resource regulation strategies and MPA restrictions. If resources outside the MPAs were in a better state, MPA restriction compliance might be higher.

Paternalistic approaches also represent an obstacle for changing current management of MPAs. Paternalistic approaches refer here to "government interventions in the life of people who are considered not to be able or willing to assume responsibility for their own wellbeing" (Aycan 2006, p 448). Local communities rely on government decisions and subsidies to cover basic needs. Paternalistic approaches are in many cases historically embedded in the mindset of communities. Under the top-down government-led approach, it is expected that the government provides all the solutions, resources, and assumes all responsibilities for the achievement of conservation and sustainability goals. Economic incentive programs to alleviate poverty, for instance, have perpetuated the idea that the government is responsible to resolve all community problems. Paternalistic approaches are assumed by government and communities. This is evident in the following quotes from community leaders:

> "Parks agreed to help us with some projects … they came once with the marine turtle project. Parks bought turtles caught by fishers and released them right there on the beach. The government is able to do things, but they have to provide us with an alternative and help the fishers" (LC4). "Regarding the mangroves, we have the lagoon, but the national government has abandoned it" (LC3).

Another barrier is *market-system drivers* embedded in Colombia environmental and development policies and society mentality. Market drivers not only favor unsustainable economic development but also re-configure social values and interests. For instance, the fishers association of Rincón sells its catch for a fair price in the market. However, as the

following quote shows, in order to satisfy the demand and keep customers, fishers are pressed to catch large amounts of fish.

> "The traditional practices are lost. Fishers used to catch only what they needed because there was no commercialization. Now, the fishery is commercialized in advance. For example, our client is asking for an amount of fish that we haven't caught yet" (FG6).

Finally, Colombia has a long history of violence that reflects on all institutional spheres (government and community), decisions, and actions. Degradation of resources, compliance with community and government rules, displacement, local organization, corruption, among others have all been affected at some point by violence. The presence of illegal actors in the study sites has had a major impact on social capital, organization, community cohesion and trust affecting interactions, decisions, and the overall governance process. For instance, community leaders from Berrugas and Rincón mentioned in interviews and focus groups that in the late 1990s and early 2000s, when the area was under the control of paramilitary forces, fishers associations and Communal Action Boards among other community groups were not allowed to hold meetings. The fishers association in Berrugas lost half of its members and the fisher association in Boca Guacamayas was disintegrated as a result of the displacement of some of its members.

> "When we started there were 41 members in the association, but with the violence we had to move to other cities. So only 20 people stayed …" (LC4).

4.5.4. Opportunities for improving the governance of MPAs in Colombia

Regardless of the barriers that constrict MPA governance, there are important opportunities that could strengthen governance and overcome the current obstacles. For

instance, through the Parks and People Policy parks authorities have paid more attention to connecting with communities and developing awareness through environmental education and supporting community organization initiatives. Park rangers living in remote MPAs become part of the local community, getting a better understanding of the cultural dynamic and everyday struggles. In that sense, they have a key role connecting Parks (as organization) and locals. This is the case in the National Park CRSB where the empathy and relationship among parks and the community has improved after several years of close interaction.

> "At the beginning it was difficult because the people didn't know what parks were. People started to know about the park when park officials were permanently on the islands. Parks means prohibition. If you are doing conservation people shouldn't be in the park. The park was created with the community within so from than moment there is a contradiction and we start to shape that, to help the community to see the park's friendly side …"(EA3).

Among the opportunities at the community level are the *partnerships among NGOs, the private sector, and communities* which have facilitated organization capacity, leadership development, economic opportunities, environmental awareness, and social capital capacity. Partnerships between NGOs and government organizations play an important role in facilitating interactions with communities. For instance, the local NGO Funsabanas has facilitated the coordination of mangrove restoration programs and community consultative meetings in Ciénaga de la Caimanera, Guacamayas, Berrugas, and Rincón. Funsabanas provides advice, support and fosters leadership in communities with low organization capacity. This is an example of how NGOs work as a bridge to connect and build trust among environmental authorities and communities (Crona and Parker 2012).

Social capital is related to community cohesion and the existence of norms, trust, and organizational capacity (Pretty 2003). Although the levels of social capital are highly variable among communities in the study area, communities with a strong network of organizations present more opportunities to coordinate efforts between such communities and environmental authorities and to strengthen community organization capacities and environmental awareness. For instance, the existence of a great diversity of community organizations and leadership in Ciénaga de la Caimanera and Rincón has facilitated interactions with regional environmental authorities, NGOs, and private industries, enhancing community capacity through training, equipment, and financial aid.

The recognition of collective territorial rights for afro-descendant communities represents another opportunity for community organization and mobilization towards active participation in the MPA planning and management. Even more important, conceding territorial rights implies that communities have to assume responsibilities for the sustainable management of their territory.

The recent formation of afro-descendant councils and processes for claiming territorial rights has helped to develop community identity and empower coastal communities attached to MPAs in the Caribbean. For instance, afro-descendant community councils in Santa Cruz del Islote, Berrugas, and Rincón are currently in the process of defining the long-term community objectives and interests that will guide planning decisions in their territories.

Circumstances such as the *perception/realization of resource crisis, international funding, and technical support* represent further opportunities for improving MPA governance. For

instance, in the following quote a community member recognized that anthropogenic factors are currently driving environmental degradation: “Fishing stocks in this zone are depleted due to our unsustainable fishing” (LC6).

The perception and realization of marine biodiversity loss and a resource crisis can be used as an opportunity to mobilize conservation efforts from different sectors (communities, NGOs, government agencies, society) while international funding and technical support are useful in promoting and accelerating the declaration of new MPAs. The participation of international agencies and NGOs has also mobilized attention to the effectiveness of the MPAs concerning conservation and social outcomes. All these efforts and funding have considerably strengthened the technical capacity of the country.

4.6. Discussion

International treaties, NGOs, and cooperative agencies have promoted and supported conservation efforts in Colombia that otherwise probably would not be a priority for the State. However, the fact that changes in the MPA approach in Colombia follow international initiatives and mandates brings questions about the real impact of these shifts in the planning and management system of protected areas in Colombia. International mandates such as the Aichi Targets have been criticized previously for being a global imposition that does not necessarily match local and national interests and approaches (Fox et al. 2012).

The rapid increase of MPAs in Colombia in the last decade following international conservation goals regardless of numerous barriers for governance needing to be overcome

serves as an example. Colombia needs to take a critical approach and translate international policies into the national context to design suitable marine conservation strategies.

MPA planning tools incorporated in the last decade in Colombia have been instrumental for guiding conservation efforts; yet little priority has been given to socio-economic aspects and social-ecological linkages. There is evidence that the inclusion of social costs of conservation in the MPA planning process can clearly influence conservation priorities (Ban et al. 2009). Including socioeconomic aspects and socio-ecological linkages in the planning process would help to anticipate social costs and approaches to establish successful MPAs. The use of socio-economic information (e.g., community cohesion, organization capacity, traditional ecological knowledge, job diversity, fishing effort, enforcement capacity) in MPA planning may provide more acute marine conservation priorities (Ban et al. 2009). The framework for evaluating linked socio-ecological systems in MPAs proposed by Lopez-Angarita et al. (2014) provides useful insights for including socioeconomic information in MPA planning.

Although local community involvement in MPA planning and management is recognized as one of the key ingredients for improving MPA performance, top-down governance is still widely applied in the Caribbean and Latin-American among other regions (Camargo et al. 2009; Ferse et al. 2010; Pollnac et al. 2010; Bustamente et al. 2014). In Colombia the top-down governance approach restricts opportunities and incentives for communities to assume responsibility for sustainable management and protection of marine biodiversity, often resulting in low compliance and conflict among authorities and communities. As

suggested by Camargo et al. (2009) and Gerhardinger et al. (2009) continuous cooperative work with local communities and other key stakeholders is needed to address these issues.

Yet, under the current Colombian governance approach, cooperation and participation opportunities are limited. The participatory policy "Parks and People", although useful to foster environmental education and awareness, offers minimal opportunities for stakeholder engagement in MPA planning and management. Challenges in implementing participatory mechanisms are frequently related to the difficulty of changing the behavior of government agencies and personnel rooted in command and control paradigms (Pomeroy et al. 2004); however, lack of community cohesion and organization capacity also make implementing participatory mechanisms difficult. Meaningful community participation requires a well-structured long-term plan that identifies and includes all key stakeholders, builds community capacity, and accommodates community differences (routines and life styles) and interests (Sayce et al. 2013). Participatory planning, even under top-down approaches, can be politically necessary and a means of combining and negotiating top-down and bottom-up interests (Sayce et al. 2013). Moreover, a decisive aspect for the success of MPA participatory planning is having a government directive and key individuals from government and community willing to overcome financial, technical, and political obstacles (Sayce et al. 2013).

Limited institutional capacity is recognized as a government barrier for MPA governance (Evans et al. 2011). In the case of Colombia, the institutional capacity of environmental government agencies is undermined by the contradiction between economic development and environmental national goals. Government decisions such as granting hydrocarbon

extractive leases in marine areas of international, ecological and socio-economic priority (Taylor et al. 2013) put conservation efforts at risk and diminish trust for government institutions. These contradictions, also common in other countries in Latin America (Rivas 2006), demonstrate not only the lack of coordination and consensus among government bodies but also the lack of clarity regarding national ocean management priorities. To overcome government barriers that impaired climate adaption activities in Australian MPAs, Cvitanovic et al. (2014) point out the need to have a government mandate that provides clear direction. A similar approach would be useful to address MPA government barriers in other contexts. For instance, a government mandate stating ocean management direction and allocating sufficient resources would help to reinforce the capacity and coordination of environmental agencies.

Social capital, a key aspect for governance, is affected by changes in fishing practices and market tendencies. More efficient but destructive fishing techniques replace self-regulatory practices and modify community traditions. The current depletion of fishing stocks and high reliance on marine resources exacerbates resource competition and diminishes social cohesion (Pomeroy 1995).

Violence is also an aspect that has undermined social capital, stakeholder participation, and MPA governance. Paramilitary activities during the 1990s had a profound influence on the coastal communities in the Colombian Caribbean (Verdad Abierta 2011).

Violence was used as a prominent strategy for armed actors to take territorial control and perform illegal activities (e.g., paramilitary/guerilla groups displace communities by controlling access to some marine/terrestrial areas as well as navigation/transport routes

used to hide illegal drugs). Investing in social capital, basic infrastructure and development (income opportunities), together with environmental awareness are key for collective action and community deliberation (Hogg et al. 2013).

While partnerships among NGOs, governments, industries, and communities have been successful in establishing mangrove restoration and resource sustainability programs in regional Colombian MPAs (e.g., Ciénaga de la Caimanera), local NGOs have played a key role in building institutional capacity, providing funding, and connecting communities and environmental authorities. Similarly, the support provided by grassroots organizations and universities to communities has led to community empowerment and rights claims in several countries in LAC and more recently in Colombia (Castilla and Defeo 2001; Brondo and Woods 2007; Durán 2009). Thus, collaboration and support provided by partnerships are crucial to shift command and control attitudes and to nurture the willingness of communities to assume responsibility for sustainable marine resource management.

MPA governance in Colombia is not an easy task. Governance is a complex and dynamic process. Conservation and management outcomes depend on multiple aspects of governance: stakeholders, MPA rules, community traditions and resource use practices, socioeconomic dynamics, and linkages among them. Prescriptive, top-down, government-led approaches assume that MPAs are immersed in a vacuum, but that is far from the case in Colombia (Fig. 4.4).

Scholars have pointed out that there is no perfect and universal mode of governance that matches all contexts (Jones et al. 2013). Thus, although top-down governance may work in

some circumstances, in the Colombian context a shared-governance approach may offer a more viable scenario to reflect and put into action new conservation tendencies.

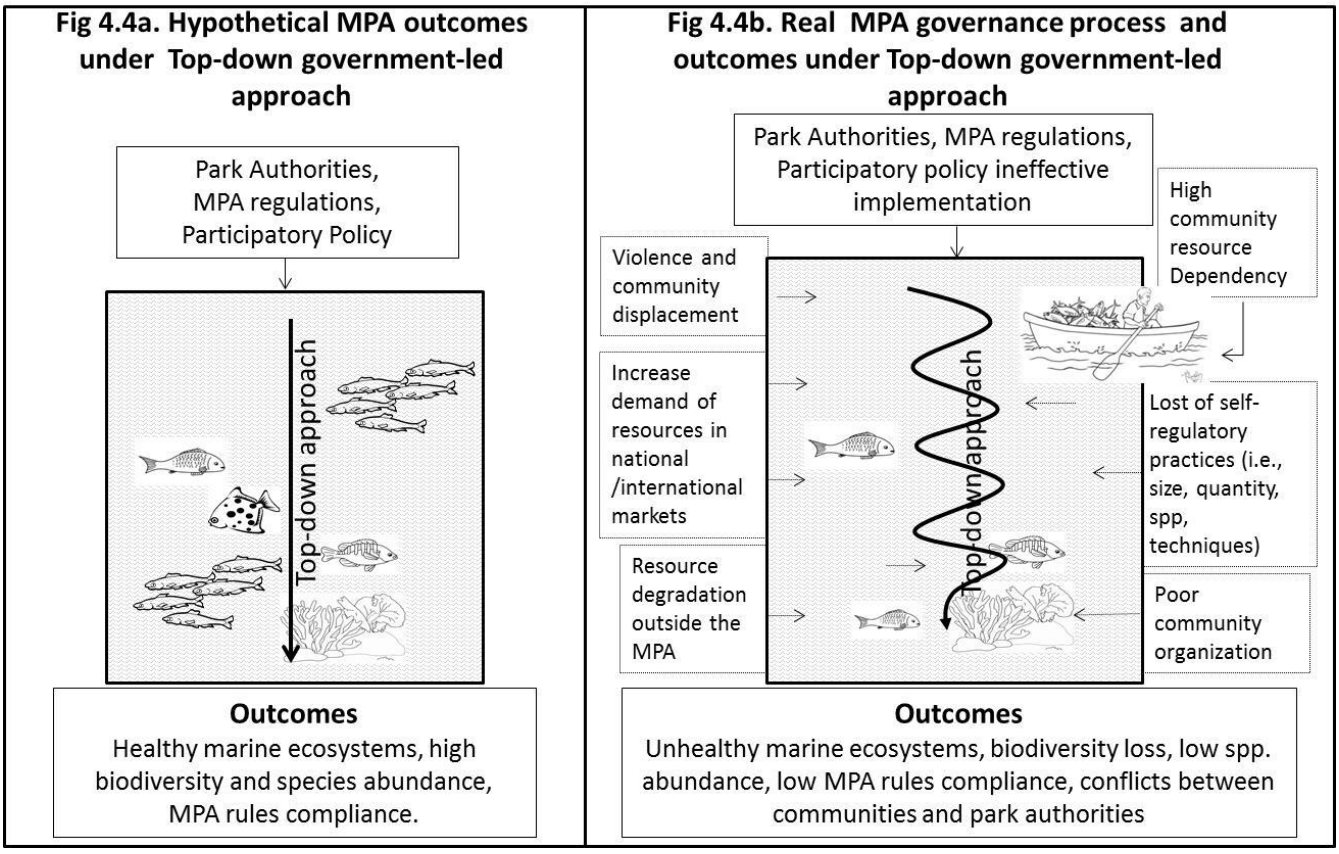

Figure 4.4 Representation of hypothetical vs real MPA outcomes and governance process under a top-down government-led approach. Figure 4.4a. The MPA top-down approach (represented by a straight arrow) applied in Colombia overlooks interactions of coastal communities and assumes that MPAs can be isolated from human intervention, thereby preserving marine biodiversity. Figure 4.4b. Top-down governance approach is not a linear process. In reality, MPA governance is the result of multiple interactions among park authorities, communities, and other actors. MPA conservation outcomes are affected by diverse drivers (e.g., market systems, degradation sources outside MPA such as pollution or industrial fisheries) that interact with governance processes.

A shared-governance approach would offer conditions for trust-building among communities and government, and mechanisms for implementing co-

planning/management agreements (Aswani and Ruddle 2013; Borrini-Feyerabend et al. 2013). Shared-governance also would be a more flexible approach adaptable to diverse socio-economic and ecological contexts. It is well acknowledged that shifting top-down governance is a major challenge, particularly in countries with developing economies where poverty constricts community and State capacity. In those situations, developing customized approaches is recommended (Ferse et al. 2010; Evans et al. 2011). In such cases, including Colombia, a government mandate together with collaboration and partnerships among MPA stakeholders may support a governance shift. Collaborative experiences in Belize, Chile and other countries in the Caribbean and the Mediterranean, among NGOs, universities, tourism operators, fishers and key government authorities have greatly facilitated MPA management through maximizing economic resources and capacity (research, monitoring) and have been central to facilitating negotiations among governments and communities to foster institutional changes, build trust among actors, and shift MPA governance (Castilla and Defeo 2001; Bustamante et al. 2014). Creating new partnerships and strengthening the existing ones will be fundamental to reduce financial and institutional gaps while supporting legitimacy, accountability, and trust.

4.7. Conclusion

This article has analyzed MPA development in Colombia and barriers and opportunities to improve MPA governance. Advances in the MPA system of Colombia have been mainly driven by the introduction of marine and coastal policies, the adoption of planning and

management tools, and MPA management decentralization. Most of these changes have been catalyzed by international agencies and treaties.

Regardless of the top-down government-led approach followed in Colombia, MPA governance is the result of multiple interactions among primarily government authorities and coastal communities. Thus, barriers and opportunities for improving MPA governance are related to the government but also to communities and other civil actors. Lack of consensus and coordination among organizations, as well as the lack of institutional capacity and implementation of participatory mechanisms diminish MPA effectiveness in Colombia. These aspects are barriers related to government level, and to overcome them will require a clear policy reform. On the community side, there is high dependency on marine resources, erosion of self-regulating fishing practices, and an incipient community organization and leadership that constrict community capacity to get involved effectively in the governance of MPAs. Solutions to tackle community barriers should be focused on creating job opportunities not related to resource harvesting, establishing an environmental education and awareness program, and fostering community organization capacity. Other aspects that diminish MPA governance effectiveness include the current state of resource degradation, paternalistic approaches that disempower communities to be responsible for sustainable resource use, market system drivers that erode traditions and motivate overfishing, and the actions of illegal actors (paramilitary, guerillas) that intimidate community members and authorities and undermine community trust and social capital. Many of these aspects could be solved if the aforementioned solutions to address government and community barriers were undertaken.

Existing linkages among different actors (NGOs, private organizations, communities, and some government representatives) represent an opportunity to mobilize efforts and resources, induce policy reforms, create income opportunities, and nurture social and institutional capacity. The recognition of ethnic minority rights in coastal areas (mainly afro-descendant), provides a crucial opportunity for promoting meaningful community participation in the planning and management of MPAs as well as coordination among community members and empowerment to assume MPA responsibilities. Strengthening linkages among actors and creating new partnerships are crucial steps for maximizing those opportunities and moving toward effective MPA governance. Knowing the key aspects that have influenced the development of MPAs and the main barriers and opportunities that constrict governance contributes to identifying the next steps to improve MPA performance and the focus where efforts and resources should be put. Further research that explores implications of collective territorial rights for MPA governance, and other mechanisms to facilitate the shift from top-down to shared or other new governance arrangements for MPAs is needed.

Chapter 5 Territorial Rights in the Seascape: Implications for the Governance of Marine Protected Areas

5.1 Chapter Summary

This chapter explores the implications of community organization and territorial community rights for improving marine protected area (MPA) governance. This analysis is based on a case study of the afro-descendant community (which was recently formally recognized as an ethnic minority) within the National Natural Park and Marine Protected Area Corales del Rosario & San Bernardo (CRSB) (Colombia). A qualitative analysis based on document review, semi-structured interviews (n=43), focus groups (n=3), and participatory observation shows that there are three key aspects for governance associated with afro-descendant community organization and territorial rights: ethnic-cultural self-recognition and political status; territorial, access, use and management rights; and responsibilities to comply with use agreements and to guarantee resource sustainability.

Overall, the recognition of collective territorial rights brings opportunities for transitioning from the current top-down MPA governance toward a shared governance approach, as it implies recognizing afro-descendant communities as key actors in the MPA planning and management process and enables communities to assume and share responsibilities with park authorities and other government agencies. Although formal recognition of afro-descendant territorial rights provides the legal means for negotiating conservation goals and community livelihood interests through use agreements, it is not expected to be a straightforward process. Underlying issues, such as the loss of customary management practices and high competition for marine resources among communities with

overlapping territorial rights impose additional challenges for the future implementation of territorial user rights in MPAs.

5.2 Introduction

No-take marine protected areas (MPAs) are recognized as a key strategy to stop marine biodiversity loss and restore fishing grounds (Halpern 2003; Lester et al. 2009). This management approach, however, often brings socio-economic concerns to fishing communities, given the restrictions imposed on resource use (Jentoft et al. 2007). This is frequently the case in Latin America and the Caribbean (LAC), where many coastal communities relying on marine resources see their livelihood activities restricted after the creation of MPAs. No-take MPAs, created through top-down approaches without community input, usually neglect historical community territorial-user rights and practices (Bown et al. 2013), thereby excluding local marine resource users (indigenous and non-indigenous) from the areas.

Shared governance approaches, whereby different actors (usually government and local communities/indigenous peoples) share authority and responsibility (Borrini-Feyerabend et al. 2013), have gained prominence in LAC and elsewhere in the last decade as a strategy to address equity issues and conflicts related to the exclusion of resource users from MPAs (Pomeroy 1995; Pomeroy et al. 2004). Examples of shared governance in LAC are based on the allocation of temporary (or sometimes permanent) territorial user rights for a specific area or resource (Castilla and Defeo 2001; Brondo and Woods 2007; Orensanz and Seijo 2013), including fishing rights and participation in tourism activities in certain areas (Foley

2012). The premise is that, through the involvement of local communities in marine conservation strategies, subsistence needs are better incorporated and conservation and human development goals are more likely to be achieved.

Territorial user rights in fisheries (TURFs) refer here to the privileges through which some people, individually or collectively, get exclusive access to use or manage resources in a defined area (Christy 1982; Wilen et al. 2012). TURFs are often linked to customary management (CM), and particularly to customary sea tenure operating as "customary TURF systems where community-oriented rights-based fisheries used to regulate the use, access to, and transfer of marine resources," as well as contextual characteristics (Aswani 2017, p 2).

TURFs and CM include practices such as limited entry, closed areas or seasons, gear restrictions, and size limits (Cinner and Aswani 2007). While TURFs and CM practices have been common in Oceania (Johannes 1978, 2002), they have recently emerged as strategies for fisheries management and marine conservation purposes in places without previous TURFs or a strong CM history, such as Chile (Castilla and Defeo 2001), Mexico (Basurto et al. 2012), Brazil, and Vietnam (Armitage et al. 2011), among others (Uchida et al. 2012, Nguyen Thi Quynh et al. 2017). TURFs are considered a key aspect in generating incentives for self-governance, as well as effectively controlling over-exploitation and access to fishing resources to support marine conservation (Ostrom and Schlager 1996; Basurto et al. 2012; Aswani 2017). Moreover, fishing territorial rights are proposed as a tool for improving the performance of marine reserves (Afflerbach et al. 2014) and as an advantage for implementing co-management approaches in fisheries and/or marine conservation

(Castilla and Defeo 2001). Territorial fishing rights are also highlighted as a means to deal with equity issues, as they may serve to guarantee that indigenous and minority groups have access to fisheries' resources for their livelihoods and other socio-cultural purposes (e.g., fisheries management equity between small-scale fishers and industrial fleets; Allison et al. 2012, Ramírez-Luna 2013).

The combination of TURFs and co-management may be a useful approach for marine conservation (Mills et al. 2013) as it provides mechanisms to exclude outsiders, regulate resource use, give a sense of ownership to communities, incorporate community socio-economic needs, and reflect local ecological knowledge and community worldviews (Ruddle 1994; Johannes 1998; Cinner and Aswani 2007).

Although cases incorporating TURFs and co-management approaches are becoming more common in Latin America and the Caribbean (Castilla and Defeo 2001; Orensanz and Seijo 2013; Beitl 2017), the majority of the cases are still in the development phase and have been little documented. Additionally, while TURFs in fisheries management have been fairly well-studied worldwide (Auriemma et al. 2014; Nguyen Thi Quynh et al. 2017), the role of TURFs in MPAs, and particularly in governance, is an area still understudied (Lester et al. 2016).

TURFs in LAC MPAs are getting more attention as an opportunity to change the long tradition of top-down government-led approaches and to incorporate community worldviews and priorities in MPA design and management. This strategy pursues the alleviation of tension between governments and communities, as well as improving marine conservation and providing livelihood opportunities for communities (Castilla and Defeo

2001; Brondo and Woods 2007; Brondo and Bown 2011; Bown et al. 2013; Orensanz and Seijo 2013).

Although conservation and management outcomes linked to the use of TURFs in MPAs have been positive in some cases (e.g., Extractive Marine Reserves in Chile), there are other places where the role of TURFs in MPAs is less evident (e.g., Honduras). Accordingly, understanding the underlying issues of TURFs in MPAs, particularly how attributes of TURFs may apply to the MPA context, is important to understand the real potential of TURFs for enabling shared governance approaches and improving MPA governance effectiveness.

Through a case study of the afro-descendant communities within the MPA Archipelagos of Corales del Rosario, San Bernardo, Isla Fuerte, and Barú (hereafter CRSB-MPA) in Colombia, this paper analyzes the implications of TURFs in MPA governance. Particularly, this paper investigates the potential role of TURFs in enabling or preventing the movement towards a shared governance approach and improving MPA governance effectiveness. In this respect, this paper examines territorial community rights in regards to the main factors underpinning the contribution of TURFs to conservation and resource sustainability.

TURFs are not promote here as a panacea. There are other strategies that may work better in this or other contexts. However, the recent recognition of afro-descendant territorial rights for communities within MPAs in the Caribbean of Colombia and the legal mechanisms and community empowerment it provides for involving stakeholders in MPA management warrants further consideration.

According to the literature, the key factors supporting the success of TURFs include the community's social capital and capacity, the involvement of rights holders in designing rules (as well as in management and monitoring activities), the existence of mechanisms to deal with conflict (excluding outsiders or negotiating resource harvesting techniques and quotes), the number of resource users involved, and the boundaries and productivity of the resource system, among others (Ruddle 1994; Ostrom and Schlager, 1996; Johannes, 1998; Cinner and Aswani 2007; Basurto et al. 2012; Aswani 2017; Nguyen Thi Quynh et al. 2017). These aspects of TURFs are used as a guide to analyze the potential role and implications of community territorial rights in the management and governance of MPAs.

This paper is organized as follows: the methods section describes the study site, data collection, and analysis procedures. The third section is divided into three parts: analysis of MPA development and governance in the study area, description of the afro-descendant community organization and territorial rights claiming process, and finally, assessment of the implications of these rights for the governance of CRSB-MPA. Lastly, the discussion and conclusion, sections four and five, analyze the underlying aspects of territorial rights in the context of MPAs and provide insights regarding the potential role and challenges of TURFs in MPA governance.

5.3. Methods

5.3.1 Study site

The study of collective territorial rights and their influence on the governance of MPAs is based on a case study of the afro-descendant community inhabiting the archipelago of San

Bernardo and the adjacent coastal villages of Berrugas, Rincón, and Tolú. The San Bernardo archipelago is located 40 km offshore in the Caribbean of Colombia, and together with the Archipelago of Corales del Rosario makes up the National Natural Park Corales del Rosario and San Bernardo (hereafter NNP-CRSB) (Figure 5.1). In 2005, a larger MPA, which includes the NNP-CRSB as well as other islands and marine-coastal areas, was created and named Marine Protected Area Corales del Rosario, San Bernardo, Isla Fuerte & Barú (MPA-CRSBIFB) (Figure 5.1). The marine protected area CRSBIFB covers 558,610 ha, including islands and coastal and marine waters.

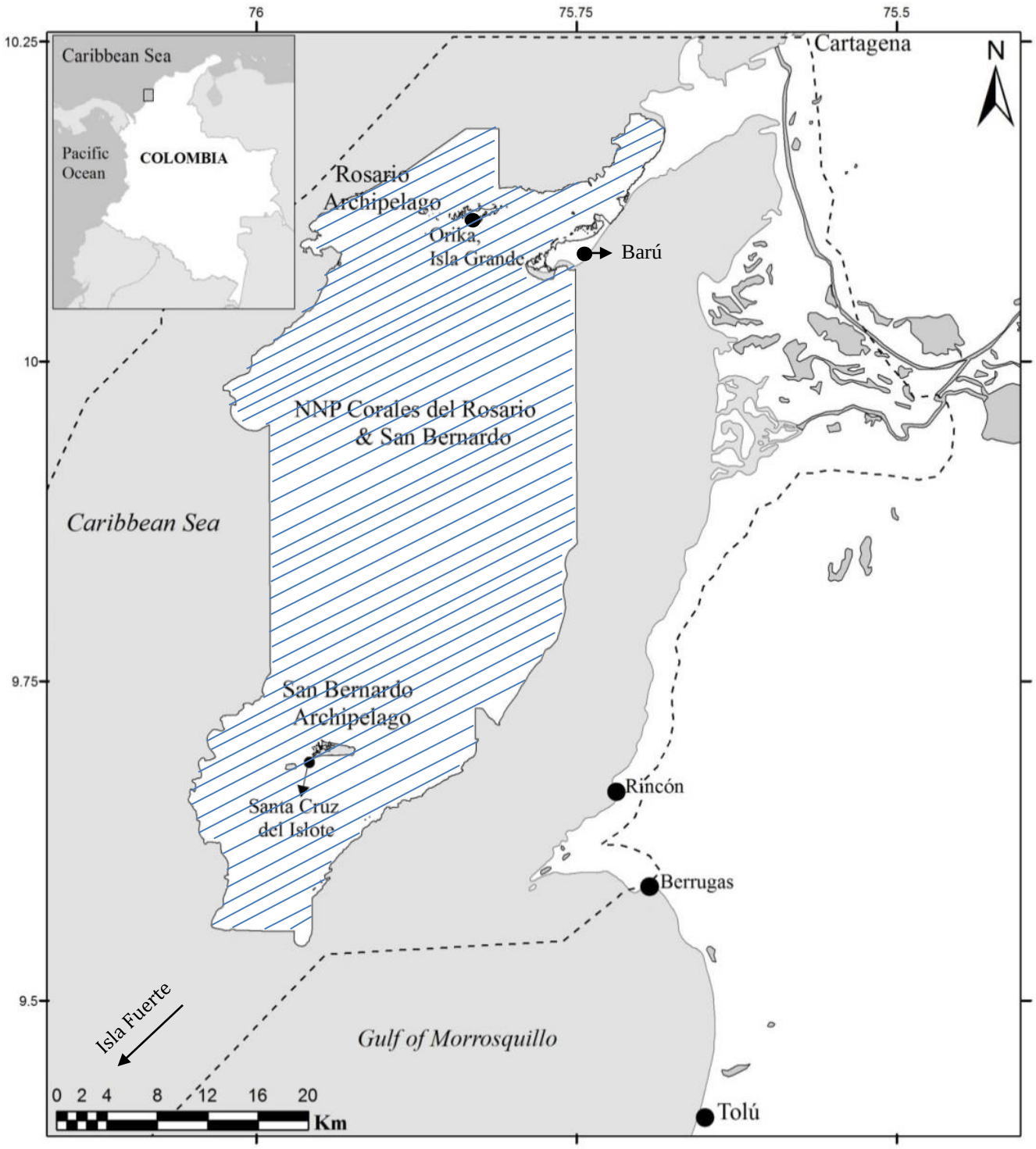

Figure 5.1 Map of the Study Site. National Natural Park Corales del Rosario (NNP CRSB). The dash line indicates the limits of the Marine Protected Areas Corales del Rosario, San Bernardo, Isla fuerte & Barú (MPA CRSBIFB).

The San Bernardo archipelago is composed of ten islands, although only three are permanently inhabited. Santa Cruz del Islote (hereafter El Islote) is the most populated island in the archipelago with approximately 540 inhabitants in one hectare. This number may increase up to 740 inhabitants during the months of June, July, December, and January when family members visit the island (Incoder-UJTL, 2014). Múcura is the second most populated island with approximately 150 inhabitants, while the permanent population on Ceycen Island is only around 40 people; however, these numbers increase when fishers from coastal villages temporarily stay during the fishing seasons (Duque-Rico and Torres-Gomez 2011). Tintipan is the largest island in the Archipelago and is located only 2 km away from Islote. Although no people live permanently on Tintipan, the island is used for community recreation, tourism, and as the cemetery.

Afro-descendant communities coming from the villages of Tolú, Rincón and Berrugas, as well as from other coastal areas closer to the Corales archipelago in the north, started visiting the islands in the mid-1800's to grow coconuts, hunt marine turtles, and fish during the rainy seasons (Ordosgoitia 2011; Incoder-UJTL 2014). Afro-descendant communities settled permanently in the El Islote and Múcura islands approximately 85 years ago (Camargo et al. 2009; Ordosgoitia 2011). Fishing is the main economic activity in the area, followed by tourism. Fishers have extensive knowledge of different fishing techniques. Although there is a fishers' association in El Islote, fishers work mostly independently and sell the fish to middlemen who re-sell the product to the main markets in Cartagena and Tolú. In Colombia, marine resources for subsistence needs have been historically considered to be common resources. Although many of the customary management

practices such fish size restrictions, avoidance of fishing in dangerous or difficult to access sites, and species preferences (e.g., fishers used to find the smell of the sharks' meat disgusting so they avoided catching sharks, (Pers. Comm., 2014)) have been mostly eroded, some fishers still use selective fishing techniques such as hand-line fishing and diving (Ramírez 2016). Fishing practices have since been replaced by more efficient, but destructive technologies, such as the use of nets and blast fishing. Customary management practices also have been affected by modernization. For instance, the use of motor boats and refrigeration facilities, as well as high demand for fish from the tourism sector, exacerbates the loss of self-regulatory fishing practices (Ramírez 2016).

Currently, the main fishing techniques used by fishers from the archipelago and Rincón are diving with a harpoon, hand-line fishing, and gill-nets. Fishers from Berrugas use cast nets and purse seines. Dynamite was frequently used to capture bait in the archipelago and surrounding areas in the 1980s and 1990s, which caused the degradation of coral reefs. Although the use of dynamite has almost disappeared, some fishers occasionally use gunpowder for blast fishing. The fishing resources include mainly coral-reef based species (e.g., mullet, jack, snapper, mackerel, parrot fish, squids, octopus, lobster, and queen conch).

5.3.2 Data collection and analysis

The methods used in this research included semi-structured interviews, field observations, focus groups, and document analysis. From a total of forty-three semi-structured interviews, thirty-three were conducted with key community informants from the islands and coastal villages, five interviews took place with representatives of

environmental authorities, and five were with non-governmental organizations (see details in Table 5.1). The interviews were conducted between April and July of 2014. Follow-up conversations with community leaders took place in November of 2015, and were used to verify the findings. Three focus groups (consisting of five to nine individuals each) were conducted with community participants from Berrugas, Rincón, and San Bernando Archipelago in July 2014.

Table 5.1 Interviews and type of participants.

Community members and organizations					**Environment authorities and non-governmental organizations**		
Site & type of participants	**Tolú**	**Berrugas**	**Rincón**	**San Bernardo Islands**	**Type of organizations**		
Fishers, tourism operators	3	2	3	6	Environmental Authorities	Park authorities	3
						Regional Environ. Authorities	2
Community organizations leaders & members	3	3	5	8	Non-governmental organizations	INVEMAR	1
						ECOVERSA	1
						Funsabanas	3
Total interviews community members/ village	**6**	**5**	**8**	**14**	**Total interviews Env. Auth & non-gov. org.**	**10**	

Note: Most of the leaders and members of community organizations are also fishers or tourism operators.

Previous research in the area by the first author (Ramírez et al. 2010) facilitated the identification of key interview participants. The snowball method was used as a complementary approach to identify a diverse number of participants and different community voices. Community participants in the study included direct users of marine resources, such as fishers and tourism service providers involved in transportation and snorkeling activities, community organizations, and environmental authorities. Although fishers work mainly independently, some of them are part of cooperatives. Fishing and

tourism services are activities performed exclusively by men, thus, interviewees in this category were all males over 18 years old. Community organizations were represented by community leaders and members of community organizations, such as the fishers' association and community councils. The environmental authorities interviewed represented three different levels of park officials: the San Bernardo park office, contract staff in charge of the environmental education program, and one professional from the Parks Regional Office, as well as representatives from the regional environmental authority.

Interview and focus group questions were guided by key aspects of protected areas governance adapted from Borrini-Feyerabend et al. (2013) and Jones et al.'s (2013) analytical frameworks. Interview guiding topics included community organization capacity, interactions among community members, fishing practices and informal resource management rules, relationships with park authorities and other organizations, and level of involvement in park activities. For the complete set of questions, see Ramírez (2017) (Appendix C and D). In preliminary interviews conducted within the MPA, the territorial rights process was clearly identified as a key aspect to re-shaping governance, as coastal communities were being invited to meetings with environmental authorities and other government authorities regarding the management and sustainability of the area. New communications and discussions among community leaders within the MPA regarding their roles and negotiation opportunities with the government in relation to the MPA management plan were also an indication of changes taking place in the area with implications for governance. Consequently, aspects related to rights (e.g., community organization and capacity, opportunities and stakeholders' willingness for getting involved

in designing rules, management activities and monitoring, the historical and current relationship between islander and continental fisher communities, fishing practices' compatibility with park rules, groups of fishers depending on fishing grounds within the MPA, type of fishery and productivity) were further explored during interviews, focus groups, and document analysis.

Observations made during field research when participating in informal community gatherings, fishing, and partaking in tourism practices (e.g., snorkeling led by the community tourism providers group, interactions among community members and with park authorities) were registered daily in a notebook, as well as in notes made after conducting interviews. Analyses of community documents, reports from research institutes and parks, and news found in local and national newspapers were also used to complement information collected in the field and to triangulate findings. Documents were examined through a latent content analysis following an interpretive approach (Hseih and Shannon 2005).

Interviews were audio-recorded and later transcribed and coded using the free Qualitative Data Analysis software in *R* (RQDA, Huang 2009). The coding process followed an inductive-deductive approach (Cresswell 2013). Initial codes were defined based on key aspects of governance and user rights identified from the literature (e.g., participation, organization, and formal and informal rules). New codes were added during the process to identify salient aspects mentioned by the interviewees. The software Docear, which is a mind mapping tool, was used to visually display codes and facilitate their organization in categories and themes. Quotes from the interviewees are anonymously used as sources of

evidence in this paper. Quotes from participants inhabiting the archipelago are identified by SBI, from Berrugas by BER, from Rincón by RIN, from environmental authorities by EA, and from non-governmental organization by NGO.

This research had Research Ethics approval from the Wilfrid Laurier University Research Ethics Board. Participants were informed and invited to be part of the interview process either through a letter or oral communication. The invitation described the purpose of the research, its voluntary nature, and how the information would be used. Quotes are used with the consent of participants.

5.4 Results

This section is divided into three parts. The first describes key aspects of the creation and management of the National Natural Park (NNP) and overlapped MPA, as well as government-community interactions driving the governance of the MPA. The second subsection explains the community organization process and collective territorial rights, while the last subsection analyzes the challenges and opportunities of afro-descendant territorial rights for MPA governance. Understanding the origins of the MPA, interactions between communities and authorities, and the context of afro-descendant rights is necessary in order to discern the possibilities of collective territorial rights as a TURF and their role in the MPA governance.

5.4.1 Marine protected area development

CRSB NNP was established by the National Institute of Renewable Natural Resources and Environment (Inderena) in 1977. The protected area consists mainly of submarine ecosystems, including coral reefs, sea grasses, soft bottoms, beaches and mangroves in some islands and islets. This area covers the larger portion of coral reefs in the Colombian continental platform, providing critical habitats for preserving marine biodiversity (Mancera and Sotelo 2005). With the purpose of conserving the integrity of the coral reef system, the boundaries of the park were extended twice (1985 and 1996), thereby increasing the area from 17,800 ha to 120,000 ha.

Since 1994, the authority in charge of the CRSB NNP has been the Administrative Unit of the Protected Areas System (UAESPNN), the national authority in charge of all national protected areas in Colombia. CRSB NNP is a no-take area created following a top-down approach. The management plan for the area, approved in 2007 by the Ministry of the Environment, includes three management zones: 1) strict protection (*Intangible* zone, as in Spanish meaning no-take zone), whereby activities other than research are forbidden in order to keep the area free of any human interaction and to guarantee long-term preservation; 2) restoration; and 3) recreation. Subsistence fishing and ecotourism are allowed only within the recreation zone.

Although afro-descendant communities inhabiting within and around the CRSB NNP have relied on natural resources (fish, mangroves) for more than 150 years for their livelihoods and cultural purposes (Ordosgoitia 2011), these communities were neither consulted nor taken into account in the creation and extension of the park, nor for the

formulation of the management plan. High dependency on marine resources and lack of community participation in the planning and management of the NNP have caused low compliance, use of destructive fishing techniques, and subsequent biodiversity loss (Camargo et al. 2009). In an attempt to improve the relationship between the park and the communities, and to increase compliance, the Parks and People Policy (Durán 2009) was adopted in the early 2000s by the National Natural Parks Authority. This policy aims to foster environmental awareness in the communities within the park and promotes sustainable economic alternatives (e.g., ecotourism). Through the Parks and People Policy, park authorities and communities in the archipelago join their efforts in protecting vulnerable species, such as marine turtles and parrotfish, promoting ecotourism activities and environmental awareness, and building organizational community capacity (EA1). This policy, however, does not include community participation in planning or management decisions maintaining a primarily top-down approach.

Regardless of the almost four decades since the creation of the NNP CRSB, studies conducted between 2008 and 2009 in the area revealed low levels of ecological health (e.g., low fish and coral diversity, algae overgrowth) and low social capacity (Camargo et al. 2009; Lopez-Angarita et al. 2014). The ecological degradation of the area is exacerbated by unregulated tourism activities, overfishing, pollution, and other activities taking place in the coastal zone, including from the city of Cartagena located 45 km from the NNP CRSB, which is an important industrial and tourism centre (Mancera and Sotelo 2005).

With the purpose of regulating the activities affecting the conservation and sustainability of the Corales del Rosario and San Bernardo archipelagos, as well as nearby coastal areas,

the multiple-use MPA Corales del Rosario, San Bernardo, Isla Fuerte & Barú (CRSBIFB) was created in 2005. CRSBIFB covers 558,610 ha and overlaps two national no-take protected areas, including the NNP CRSB (Resolución 0679, 2005, Figure 5.1). The main authority in charge of the MPA is also the UAESPNN. However, due to the large extent of the MPA—four times the size of the NNP CRSB—government agencies, including the Ministry of Environment, the regional environmental authority Cardique, the local administration of the city of Cartagena, the Colombian Maritime Administration (DIMAR in Spanish), and the Colombian Institute of Rural Development (Incoder in Spanish) are also involved in the administration and management of the area. Yet, as was pointed out in interviews with community leaders, environmental authorities, and research institute representatives working in the archipelagos, coordination among multilevel government agencies has been challenging, resulting in the impairment of effective management of the MPA and exacerbating community distrust of government agencies (SBI1, EA3, NGO1). Once again, communities within the islands and from nearby continental coastal villages did not participate in MPA creation and planning.

On November 24, 2011, six years after the creation of the MPA, the Colombian Constitutional Court reached a verdict in relation to concerns manifested in the Popular Action[4] (File 2003-91193-01) regarding the management of the MPA. The verdict established that the actions performed by government agencies with jurisdiction in the MPA had been insufficient and uncoordinated, driving the degradation of marine and

[4] A Popular Action is a mechanism created by the Colombian Constitution to protect collective rights or interests (Sarmiento 1994).

coastal ecosystems and affecting the quality of life of the MPA inhabitants. The Constitutional Court ordered the formulation of a sustainable development model for the MPA, the formulation of an MPA management plan, and the implementation of measures to mitigate current environmental degradation in the MPA. Consequently, Incoder and the Ministry of the Environment started action to address these requests. Incoder signed a collaboration agreement with the University of Jorge Tadeo Lozano (UJTL) to design the action plan for the sustainable use of the Rosario and San Bernardo Archipelagos, while the Ministry of the Environment initiated activities for the formulation of the management plan. After various meetings with the communities and government representatives, the action plan proposal was presented to the communities within the archipelagos in 2014. However, community leaders from both archipelagos disagreed with the proposed action plan, alleging that it was formulated without their participation and that they had concerns about how community interests and worldviews were incorporated. As is illustrated in the following quote, the community was concerned about its meaningful participation and how the financial resources provided for the planning and management of the area would be invested and allocated:

> "…strategies and projects must guarantee real community participation. One of the main priorities must be the level of participation of community councils in project formulation and execution…" (Archipelagos Community Councils 2014).

At that time, the communities requested that they be in charge of the action plan formulation and be provided with the financial resources to do so, a request that Incoder denied (Niño and Posada 2014). This event evidently portrays the community's distrust in regards to government agencies, and vice versa. Such distrust, in this case, is associated

with the top-down approach adopted to establish the park and the MPA without taking communities into account.

Although the participative formulation of the MPA management plan has required a lot of preparation and negotiation, it has provided opportunities for communities to build capacity. The management plan formulation led by the Ministry of Environment has been underway for five years as of 2016, and is still ongoing. Representatives from the afro-descendant community councils agree that, although the formulation of the management plan had been slow, it has provided tools for community organization and leadership (frequent meetings between leaders from different communities and within communities, workshops and training opportunities) (Pers. Comm. from community council representatives from Rincón, Berrugas, and El Islote 2015). In addition to the communities inhabiting the archipelagos, twenty-two more communities, including Isla Fuerte and coastal areas within the MPA, are being included in the management plan formulation process (Pers. Comm. from community council representatives from Rincón, Berrugas, and El Islote 2015). While from the community point of view the action plan consultation process led by academics and Incoder was unsuccessful, afro-descendant community representatives are optimistic about the advances achieved with the Ministry of the Environment to formulate the management plan (Pers. Comm. from community council representatives from Berrugas, and El Islote 2015).

Regardless of the lack of agreement on the action plan for the sustainable management of archipelagos and the long process for the formulation of the management plan, both processes have required that meetings be held with members and leaders of the

communities and government representatives, providing opportunities for interaction within both groups and contributing to improved communication and collaboration among communities within the area (Pers. Comm., from community council representative from El Islote 2015). These processes, through which active participation of all communities within the MPA is sought, support the legitimacy of afro-descendant rights and foster the communities' empowerment.

5.4.2 Afro-descendant community organization and territorial rights

The history of afro-descendant community organization and territorial rights claims in Colombia began more than 20 years ago, when the Constitution of 1991 recognized afro-descendants as an ethnic minority group. Through Law 70/1993, afro-descendant communities in the Colombian Pacific region were legally recognized and granted communal territorial rights. Although the recognition of afro-descendant communities as an ethnic minority in the Caribbean only started in early 2000s with "los palenques," inland communities with strong cultural identity and traditions, the recognition of rights for afro-descendant communities inhabiting coastal areas and islands in the Caribbean has been a longer process. To claim collective territorial rights, afro-descendant communities have to constitute community councils (as an internal administrative strategy) in order to be registered and recognized at the regional and national levels by the Ministry of the Interior. Once the community council is organized and registered, collective territorial rights can be claimed. Collective territorial rights are granted over terrestrial areas, excluding areas of the National Parks System, areas designated for national security and defense, or areas of

public domain, such as marine territorial waters. However, traditional practices taking place in the waters or beaches, as well as the sustainable use of terrestrial or marine resources for nourishment, house building or repairing purposes are allowed without a special permit (Ley 70/1993). The Law 70/1993 also specifies that protected area management plans have to take into consideration traditional practices of afro-descendant communities that have lived within areas of the National Parks System before the area was established. For the afro-descendant communities of Orika and El Islote located within Corales del Rosario and San Bernardo National Natural Park (CRSB NNP), that represents an opportunity to participate in the elaboration of the protected area management plan and to guarantee that their traditional practices are included in a compatible manner with the park conservation goals (Comunicado Oficial Islote de Santa Cruz 2013). Since Law 70/1993 also recognized afro-descendants' rights to carry out traditional practices related to food and housing security, communities within the NNP and MPA should be entitled to marine resources harvesting.

Orika, located in Isla Grande in the archipelago of Rosario—north of the CRSB NNP—was the first islander community in the Colombian Caribbean to be organized as an afro-descendant community. The history of the afro-descendant community organization and territorial rights claiming process in Orika is unique given its location within a Marine National Natural Park, the tensions associated with the top-down exclusionary conservation approach imposed on this community, and the land titling dispute on the islands (Durán 2009). The land titling dispute was resolved in 2014 when collective territorial rights were granted to the community after almost a decade of legal battle

(Resolución 3393 2014). Community participation and environmental awareness promoted through the Parks and People Policy in the early 2000s served as the basis for ethnic and political empowerment in this community (Durán 2009).

Orika set an example of community organization, resistance, and empowerment that inspired other coastal communities in the Caribbean. For instance, the community of El Islote, in the archipelago of San Bernardo—in the southern part of the CRSB NNP—and the surrounding coastal communities of Rincón and Berrugas, among others, have recently created afro-descendant community councils. El Islote, the main settlement in the Archipelago of San Bernardo, was organized as an afro-descendant community in 2013, but is still in the process of claiming collective territorial rights (Comunicado Oficial Islote de Santa Cruz 2013; Observatorio para el Desarrollo Sostenible de los Archipelagos de CRSB 2015).

Coastal communities, such as Berrugas and Rincón, among others, who rely on CRSB NNP as fishing grounds but are located outside the NNP, have now recognized themselves as ethnic minorities. Afro-descendant communities' organization and self-recognition as ethnic minorities has increased the visibility of afro-descendant communities within the marine protected area. As a result, the Ministries of the Environment and Interior officially acknowledged their presence within the MPA (Resolución 005 March 5th, 2015).

The official recognition of afro-descendant communities within the MPA has implications in relation to access and user rights to marine resources within the park, as these rights should be recognized as a part of the traditional and critical survival activities of these coastal communities. Yet, according to community leaders from the coastal village of

Berrugas (BER1, BER4, BER5), continental coastal communities near the park have almost nonexistent interactions with park authorities and have not been a part of the environmental programs carried out under the Parks and People Policy. This was confirmed when talking with an elder fisherman (BER2) and a female dedicated to selling fish (BER3) in the same community for more than 20 years, who both indicated not knowing that San Bernardo Archipelago was part of a National Protected Area. The lack of involvement of continental afro-descendant communities with the NNP has limited the opportunities for building community organization capacity and developing environmental awareness and trust of environmental authorities.

5.4.3 The Implications of afro-descendant community recognition and territorial rights on MPAs

The process of community organization of El Islote as an afro-descendant group has implications for the community itself and for MPA governance. There are three main aspects regarding territorial rights and their potential role for MPA governance that deserve further analysis. First, the organization of a community council, recognition as an afro-descendant minority, and the territorial rights claiming process have promoted community self-recognition as a cultural group, as well as the realization of their role in governance. Self-identification as an afro-descendant community, as well as legal recognition by the State, have transformed the community of El Islote into a political actor. Second, the political status gained as an ethnic group gives rights to the community to participate in the MPA management plan decision-making process, thus providing

opportunities for the negotiation of marine resource use agreements within the protected areas. Third, under Law 70/1993, afro-descendant communities obtain rights but also responsibilities to seek and comply with norms for conservation, protection, and sustainability of natural resources. Each of these points is discussed below, and summarized in Table 5.2.

Table 5.2 Implications of territorial rights for local communities within the PNN CRSB & MPA CRSBIFB.

Implications category	Opportunities	Tensions/limitations
Intersection of Afro-descendant identity, organization, and resource practices	• The afro-descendant community council constitution and territorial rights claiming process strengthen community organization capacity, partnerships, and community cohesion and empowerment (e.g., community becomes aware of its rights, has better access to information and resources).	• Erosion of self-regulatory practices for fishing and selective methods may underpin the success of sustainable use agreements • The fact that Afro-descendant self-recognition and organization is mainly driven by socio-political interests rather than by environmental awareness limits the initial capacity to develop resource use agreements.
Territorial rights and MPA governance	• For communities in the CRSB islands the near shore marine areas are a natural extension of the land; thus, the concept of territory is complex and goes beyond geographical terrestrial limits. • Territorial rights could help to prevent/stop new settlements in the islands and commercial leases (industrial/commercial fishing, oil and gas exploration). • Afro-descendant collective territorial rights are recognized in the Colombian constitution. Thus, there is opportunity to legally recognized marine use rights. • Exclusion of outsiders and control of resource over-exploitation by free riders. • Creation of use agreements with non-islanders and integration of coastal continental villages in the MPA management.	• The type of fishery that takes place in Corales & San Bernardo Archipelagos imposes challenges for management through TURFs. The design of resource use agreements may be challenged by the current degradation of the fisheries in the MPAs (e.g., Lobsters, queen conch, some fish species, and top predators such as sharks and groupers are overfished). • Too many fishers, too few fishing sites in good condition, while fishing is the main source of income. • Impacts on non-residents depending on fishing grounds within the archipelagos (e.g., Continental coastal fishers may be excluded or limited to fish within the archipelagos putting their livelihoods at risk and creating conflicts/retaliation among islanders and non-islanders). • Landholders, mangrove reclamation and private owners on Islands (hotels).
Territorial rights and community responsibilities	• There is an opportunity to engage continental and islanders communities from each village in marine conservation and strengthen linkages within and among communities. • Previous experience of community and park authorities working together (environmental education, protection of species, and eco-tourism activities promoted through the Parks and People Policy) may serve as a base-line for participatory and integrative management. • Commitment to management, community cohesiveness, and	• There is no experience of granting territorial/user marine rights to communities in Colombia. • Lack of historical TURFs and CM as a management strategy. • This approach would challenge conservation and resource management paradigms. • Community organization and power issues inside the communities. Who has access to commercialization, to knowledge, to partners, equipment, resources, etc.

Implications category	Opportunities	Tensions/limitations
	respect for community leaders provide fundamental social capital required to effective community involvement in the management of the area.	(e.g., tourism operators in Múcura allocate the revenue to the group members, but the owner of the equipment and the boat gets an additional share).

The intersection of afro-descendant identity and organization

The afro-descendant cultural and ethnic identity in Corales del Rosario and San Bernardo (CRSB) Archipelagos has been useful in mobilizing the community as a socio-political actor through self-organization and empowerment (Durán 2009; Reales 2012a). The afro-Colombian identity is defined not only for "people physically identified as black, but also for those persons whose African background is evident as regards their cultural expressions" (Reales 2012b; p 161). In the communities within the CRSB archipelagos, afro-descendant self-recognition and organization is a socio-political construction that responds to the need to gain political status for the negotiation of rights, and at the same time supports cultural identity construction (Reales 2012a). This cultural identity brings a sense of community belonging and resource/territory ownership that not only contributes to increased political empowerment but also social cohesion. Thus, the afro-ethnic identity becomes a political and social strategy (Reales 2012a).

As the following quote suggests, the afro-descendant organization and territorial rights claiming processes in CRSB archipelagos and surrounding villages is propelled by socio-political interests:

> "We [afro-descendant community of El Islote] are risking the development plan and our future, which many things depend on. Once the Park Authority disseminates the management plan, they are not going to call us again to be part of an agreement process or to be part of a fishing management plan. That is not going to happen. Thus, our opportunity to negotiate is now" (SBI1).

This quote illustrates a key point, which is that active participation in the construction of the MPA management plan and use agreements is seen by members of El Islote Community Council as a unique opportunity for the negotiation of development opportunities for the

community. This idea was also echoed by an informant from the environmental authority who is in charge of the environmental education program and that works close to the community (EA3).

The afro-descendant discourse in the CRSB is often based on the community role in the protection of the area. For instance, an informant from El Islote states that, "Somehow the communities have contributed to the long-term preservation of these islands [Corales del Rosario and San Bernardo archipelagos], taking care of them and protecting them" (SBI1). Yet, as identified in this and previous research conducted in the area, much of the self-regulatory and selective fishing practices used in the CRSB archipelagos and surrounding communities have been eroded by the influence of market systems and destructive fishing technologies (Camargo et al. 2009; Ramírez 2016).

In focus groups conducted in El Islote, Berrugas and Rincón villages, participants recognize their responsibility for resource over-exploitation and agree that unsustainable practices, such as blast fishing, nets catching entire fish schools, and catching fish with eggs ready to release, among others, have exacerbated resource depletion. Participants also indicated that these unsustainable practices are often still observed in the area.

One key opportunity associated with the afro-descendant organization in CRSB archipelagos for transforming destructive fishing practices into more sustainable ones is the dialogue and reflection on the role and responsibility of the community in the sustainable management of the area. For instance, as indicated in the following quote, a community leader from El Islote recognizes that the area has to be preserved because it is important for the conservation of the territory:

> "We know that the area has to be protected. I would not agree on taking the park away. The park is important to conserve the territory and the species, but a use-zone classification is needed" (SBI1).

As confirmed by community members and environmental authorities, this realization has facilitated the willingness of some of the communities within the MPA to support programs promoted by the Park Authority, such as environmental education and the elimination of parrotfish and marine turtles catches (SBI1, SBI3, EA3).

Community territorial rights and MPA governance

Communities granted territorial rights would have the legal right to exclude outsiders and to control over-exploitation of resources by free riders (Cinner and Aswani 2007). Although this has not yet been put in practice in the Caribbean, and its implementation will require a lot of negotiation and support from government and NGOs, experiences from afro-descendant communities in the Pacific Region of Colombia may provide some direction. For instance, although afro-descendant rights in marine waters are still limited to the resource use privileges associated with cultural and livelihood practices, the declaration of the Exclusive Fishing Zone for the Fishery in Chocó (Pacific Ocean-Colombia) in 2013, as a result of afro-descendant community efforts to exclude industrial fisheries from their territory (Ramírez-Luna 2013), provides an important precedent.

Community territorial rights may provide opportunities to increase compliance and enforcement in the MPA and alleviate the financial and institutional capacity gaps for the management of the protected areas (Ramírez 2016). Thus, granting community territorial rights may create incentives for conservation and the sustainable use of marine resources.

Excluding outsiders from the National Natural Park (NNP), however, may have implications for coastal continental fishing villages that depend on the area. People from Rincón, Berrugas, Tolú, as well as other villages that have a long history of interaction with the communities on the islands, could bear the costs of islanders being granted exclusive territorial rights.

> "…We have a dynamic social and historical relationship with Berrugas, Rincón and Tolú. There are different reasons [interactions] and it happens independently of whether we want that or not" (SBI1).

The previous quote speaks about the long-term relationship between continental and island communities. The interactions among both groups are based on family and friendship relationships and dependency linkages. Fishers from continental villages have used fishing grounds located in the archipelagos for more than fifty years. Other members of these communities have established relationships based on the exchange and commercialization of goods.

As confirmed in the next quote, as primary needs on the islands are not fulfilled by island resources alone, islanders rely on coastal villages for food provision, medical services, transportation, and gasoline, among other resources.

> "We [El Islote community] have an intrinsic relationship with them [people from Berrugas and Rincón]. We share food, culture, and parties on a daily basis, as well as we use those villages as transportation hubs for the islands…" (SBI7).

For this reason, excluding continental fishers from fishing grounds within the NNP would not only affect the livelihoods of continental communities, but might also generate conflict amongst communities. As the following quotes indicate, although islanders do care about

resource over-exploitation and competition, they prefer to avoid conflict with continental fishers and suggest that the exclusion of outsiders must be assumed by parks and government agencies.

> "One cares because it is our source of work. Our food security is there in the sea, but if they come from the continent to take the few resources we have so our food security is depleted, what will we do? But it is not convenient for us to fight with other fishers because our safety can be threatened" (SBI3).

> "Parks and the Navy are the authorities in charge of controlling illegal fishing, not us, because it would create a social conflict between us and the communities of Berrugas, Rincón and Tolú" (SBI7).

As well as the archipelagos' inhabitants, continental coastal communities within the MPA but outside the NNP, including Berrugas and Rincón, have historically relied on marine resources from the archipelagos as part of their livelihoods. Given that in recent years, many of these continental coastal communities have organized community councils and have been recognized as afro-descendant—or are in the process of being recognized under Law 70/1993—their access to marine resources for cultural and livelihood purposes must be guaranteed. Yet, this anticipates additional challenges for the sustainability and overall governance of the area.

Another consideration is the meaning of territory for afro-descendant communities and its implications in relation to marine waters under national administration. Law 70/1993 refers to the rights granted on land portions where afro-descendant communities inhabit and develop traditional productive practices (excluding National Protected Areas and areas set aside for national security and defense, such as marine waters). However, for communities inhabiting the islands, the sea is a natural extension of the land. In particular,

in El Islote where population density is high, the sea and adjacent islands constitute a critical part of the community space. For instance, the islands of Múcura and Tintipan, located less than 2 km away from El Islote, are part of the daily activities of the community (Figure 5.1). The sea and adjacent islands, in this case, are not only the place where daily activities (recreation, transportation, and work) take place, but also where cultural identity and ethnic autonomy survive (Coronado, 2006). The following quote from a community leader illustrates the idea of territory for the community:

> "We are the only owners of this territory. When I speak about the territory I refer to all the geographical space, including the sea and the submerged islands, because we cannot live on the islands without access to use the territory, in this case the sea" (SB1).

An even more comprehensive understanding of the meaning of territory for afro-descendant communities is proposed by the Afro-descendant Association of Community Councils of Bajo Atrato, Pacific Region, Colombia:

> "The territory is and makes part of our social and cultural life…It is a space that takes form in community life in an integral manner…and provides natural resources for the reproduction of life and culture…It is all that can be seen and easily touched, such as rivers, lagoons, forests, animals, etc., but also includes all you cannot touch with your hands and is part of our spirituality as afro-descendant people" (Ascoba; 2005, 2).

From this definition, it is clear that the understanding of territory for ethnic groups is more complex than the general definition where territory is described as a geographical area under the jurisdiction of a political power (Cambridge Dictionary, 2015). The management plan for the NNP and MPA CRSBIFB and adjacent coastal areas needs to

consider this integral afro-descendant notion of territory, which may imply granting access/user rights and responsibilities for marine waters to afro-descendant communities.

Territorial rights and community responsibilities

As a consequence of the lack of the communities' participation in the creation of the NNP CRSB and MPA CRSBIFB, and the fact that they have not had a say in the management plan, communities have not developed a sense of ownership and have not assumed responsibilities for the management of the area. Instead, management has been an exclusive responsibility of park authorities and other government agencies. As a result, communities have assumed a passive role in preserving marine resources, expecting the government to take action. This is illustrated in the following quote:

> "I know that as fishers we are never going to conserve because what we think is what are we going to eat?" (SBI 3).

Communities have had the rights to use, and sometimes over-use, marine resources, but few or no responsibilities. Yet community territorial rights do come with community responsibilities. Law 70/1993 asserts that the social and ecological function of the collective property and the obligation of all recognized afro-descendant communities to pursue conservation, protection, and sustainability of natural resources and to comply with the norms designed for this purpose (Law 70/1993, Article 14). Accordingly, afro-descendant communities in the archipelagos and continental coastal villages have the legal responsibility to protect, conserve, and use marine resources in a sustainable manner.

These legal responsibilities associated with territorial collective rights bring opportunities to assure community compliance and improve MPA governance. Rights and use agreements give power to the community; however, to keep those agreements and rights, communities have to observe the arrangements agreed upon to ensure that they satisfy conservation objectives and the communities' interests (Pomeroy et al. 2004).

Customary management systems usually work with self-enforcement of rights and rules based on "local moral and political authority" (Aswani 2017, p 7). In the case of afro-descendant communities, regardless of their unique cultural identity, market forces and the loss of traditional practices constrain their capacity for self-enforcement and control of rights and rules. Therefore, a monitoring and enforcement system in coordination with environmental authorities (Parks, Navy, Fishing Authority) and the community will be required; only then will territorial rights contribute to the MPA management goals.

5.5 Discussion

This research examined the underlying issues of afro-descendant community rights in the context of MPA governance and management. Using the case study of the MPA Corales del Rosario, San Bernardo, Isla Fuerte y Barú (CRSBIFB-MPA) in the Caribbean of Colombia, this study particularly examined the implications and opportunities of territorial rights for sparking change in current top-down MPA governance systems and fostering community participation in MPA planning, decision-making, and management responsibilities. This research found that the formalization of community socio-cultural rights (political status and participation) and marine resources (livelihood) access rights provides mechanisms for

empowering communities and for dealing with equity aspects in MPAs. Yet, although territorial rights offer legal mechanisms for shifting from a top-down to a shared governance approach, MPA governance effectiveness is still highly challenged by the state of the resource system and socio-economic characteristics. The intention in this section is to illustrate the potential role of community territorial rights for MPA governance, but also to show the additional challenges that these rights may add to governance in a setting with diverse competing interests and unsolved basic socio-economic needs.

Afro-descendant community rights beyond TURFs

Territorial rights for afro-descendant communities within the CRSIFB-MPA are seen not only as an opportunity to claim marine resource access rights, but also to improve their access to basic human rights (e.g., water, healthcare, electricity, and education). Therefore, Colombian Afro-descendants' territorial rights claims go beyond securing marine use or fisheries rights, but include guaranteeing universal human rights (Allison et al. 2012). Territorial rights, in this case, follow a "Human Rights-Based Approach," where "political, material, and cultural implications" for communities and "social justice" are pursued (World Forum of Fisher People (WFFP), Afrika Kontakt (AK) and Transnational Institute (TNI) 2016, p 4).

A human rights-based approach represents the interests of a more diverse population—not only marine resource users—and mobilizes a larger portion of the afro-descendant community. Although this approach promises to better address equity and social issues, it may imply additional challenges for MPA governance. For instance, afro-descendant

communities' expectations regarding their participation in MPA planning and management may entail interests that go beyond the domain of MPA management authorities, adding complexity to the negotiations and collaborative work among communities and MPA authorities.

Territorial rights and community organization and participation

In CRSBIFB-MPA, territorial rights claims have been motivated by the interest of the community in having a voice as a political actor and being a part of the decision-making process regarding its territory. Being recognized as a political actor has empowered the community and reinforced community organization.

Community organization has given visibility to the afro-descendant community within the CRSBIFB-MPA. Before that, there was little place for dialogue and negotiation between the community and authorities. Now that afro-descendant communities have been formally recognized, they must be consulted before any interventions (e.g., tourism development, oil exploration and transportation, conservation actions) take place within the area. This has fundamental implications for MPA planning and governance, as decisions regarding the MPA require unequivocal community input.

One of the key opportunities for MPA governance in relation to territorial rights is the legal right of communities to be consulted. Public consultation is a means for communities to contribute to planning resource management and to incorporate the community's interests. As suggested by Lopes et al. (2013), participatory approaches where resource users' knowledge and interests are incorporated in MPA planning may result in reducing

conflict, increasing compliance, and achieving MPA goals overall. However, in order to effectively use territorial rights for natural resource governance, mechanisms to encourage and enable community participation and empower communities in decision-making and assuming responsibilities need to be created (Lockwood 2010). In the case of the afro-descendant communities, the recognition of territorial rights provides a policy mechanism for sharing marine resource management responsibilities. Sharing responsibilities between communities and authorities is a crucial aspect in making shared governance approaches work effectively (Begossi and Brown 2003). On the other hand, the loss of responsibility for natural resource management is associated with reduced community environmental engagement (Brondo and Bown 2011). Although generalizations cannot be made, the lack of community environmental engagement is revealed through the use of destructive fishing practices by both islanders and continental fishers in CRSBIFB-MPA. Although legal mechanisms exist for sharing MPA responsibilities with afro-descendant communities, this will require developing environmental awareness and community capacity.

Community participation also contributes to increasing legitimacy and trust within and among communities and authorities. Effective participation and trust between the park's staff and local resource users were identified as enabling conditions for co-management in national protected areas in Colombia (De Pourcq et al. 2015). In the case of the CRSBIF-MPA, although the participation of continental coastal communities in MPA planning and management increases complexity, their recognition as key stakeholders is fundamental for building trust and solving or preventing conflict with islanders and park authorities. Additional support for continental coastal communities might be necessary to guarantee

the same opportunities for taking part in the MPA management plan formulation and implementation and to prevent inequity and conflict among communities.

Territorial rights and MPA governance

This and other research suggests that the combination of MPAs and TURFs may provide useful mechanisms to harmonize conservation and social goals (Castilla and Defeo 2001; Basurto et al. 2012; Orensanz and Seijo 2013). Nevertheless, the fact that territorial rights claims are driven by socio-political reasons in a context where traditional self-regulatory fishing practices are disappearing, and resources are over-exploited—as is the case in CRSBIFB-MPA (Lopez-Angarita 2014)—creates greater challenges for a community participatory management approach. The successful implementation of participatory planning and management through TURFs has been found to relate strongly to the characteristics of the physical environment, as well as fishing technologies, cultural factors, distribution of power, affluence, and government participation in the creation and maintenance of territorial use rights (Christy 1982; McCay 2017). Characteristics of the CRSB archipelagos, such as high biodiversity yet low abundance, open waters that are difficult to monitor, the current state of the fishing grounds, the use of destructive fishing technologies, poverty, and weak enforcement, in addition to the influence of market systems (high demand on resources for re-sale in markets and tourism) represent challenges for the incorporation of territorial rights and community involvement in shared MPA planning and management (Johannes 2002; Pomeroy 1995).

While challenges associated with the ecosystem characteristics and the current state of resources cannot be easily overcome in CRSBIFB-MPA, efforts should be focused on improving both environmental and livelihood conditions. These improvements may help to increase environmental awareness and diminish the community's reliance on marine resources. The role of the partnerships among government-community and other actors (non-governmental organizations, universities, private organizations, and afro-descendant groups from other areas with more experience) may maximize resources and capacity. Yet, as Brondo and Bown (2011) found in Cayo Cochinos MPA (Honduras), there is the risk that hybrid governance approaches may just create new types of institutionalized authorities. In the case of Cayo Cochinos MPA, an NGO representing civic society took the form of the new institutionalized environmental authority and the Garifuna community had to integrate to that new governance model (Brondo and Bown 2011).

Regardless of the complexity of integrating continental and islander communities in the MPA management plan development, the collective construction of the management plan is still an opportunity to reconcile key actor interests, worldviews, and needs, and to achieve conservation and social outcomes. As some participants discussed in this research, they are not against the MPA, but want resource use zones that guarantee their access to their livelihoods. Similar perceptions of MPAs were obtained from fishermen in the Paraty region of Brazil during a participatory exercise conducted to evaluate the feasibility of adapting conflictive MPAs. Participatory research in Brazil showed that fishers' agreement with management procedures will likely increase compliance (Lopes et al. 2013, p 100). Agreement among users with respect to restrictions and sanctions is one of the key

characteristics related to good performance in MPAs-TURFs systems in Chile (Crona et al. 2017). Those findings, as well as this research, highlight the fundamental role of community participation and consensus for MPA planning and for improving governance.

Community participation in the case of CRSBIFB-MPA might be particularly challenging given the competing interests among islander and continental communities, as well as the high levels of coordination, negotiation capacity, and leadership required. Cultural similarities and a shared interest in a resource system should help to decrease conflict and implant territorial rights (Alston et al. 2009). In the case of CRSB archipelagos, the historically amicable and dependent relationships among the communities both inside and outside the archipelagos, as well as the apparent leadership of community council representatives, may provide solid ground for negotiating resource use agreements. However, as found in the case of the Garifuna community in Cayo Cochinos MPA in Honduras, participation from a large part of the community is required to avoid the imposition of interests of community elites (Brondo and Bown 2011).

As territorial rights recognition gives equal importance to the community's needs and conservation goals, and requires the implementation of legal mechanisms for community participation in shared governance systems, it is a step forward towards shifting top-down governance approaches. In the case of Colombia, the implementation of TURFs in MPAs is not expected to be an easy process. However, as suggested by Allison et al. (2012), adopting a broader perspective of human rights that includes governance challenges of marine resource management increases the possibility of achieving human development and resource sustainability outcomes.

5.6. Conclusions

The establishment, planning and management of MPAs in "culturally sensitive" (Reales 2012a) areas, such the coastal zone of Colombia where more than 40,000 fishers and their families (mainly afro-descendant) rely on marine resources as their first source of income (Saavedra-Diaz et al. 2015), requires a comprehensive and interlinked understanding of ecological and human dimensions, as well as meaningful community participation. Otherwise, neither conservation nor social goals will be achieved. How continental coastal villages culturally and historically linked to the CRSB archipelagos are integrated into the elaboration of the management plan for the area, as well as how their needs and interests are accommodated, are crucial aspects that need to be addressed in order to improve MPA governance.

The afro-descendant cultural and political empowerment, territorial rights recognition, and the obligations imposed by the Colombian Constitutional Court on government agencies regarding the effective sustainable management of the CRSB archipelagos, offer a unique scenario for the meaningful participation of local communities in the governance of the CRSBIFB-MPA. How this political evolution is used to include communities as key agents of governance and to enhance the overall sustainability and conservation of the archipelagos will depend on stakeholders' willingness to trust each other and collaborate.

Concrete actions toward using TURFs and MPA governance in Corales del Rosario and San Bernardo Archipelagos include strengthening community capacity and environmental awareness, putting in place mechanisms that guarantee effective community participation and facilitate the integration of community knowledge and interests in the MPA

management plan, providing alternative livelihoods, and addressing basic human rights (water, healthcare, and education).

In the case of Colombia, and elsewhere, the successful implementation of TURFs and other collaborative arrangements among authorities and communities will not only determine the effective governance of MPAs, but will also provide direction on how TURFs may facilitate shifting away from top-down MPA governance toward shared governance approaches. Understanding the social-ecological interactions, as well as the intricacies surrounding TURFs, helps to identify the benefits of using TURFs for advancing MPA governance and the potential challenges for their implementation in MPA systems.

Chapter 6 Institutional arrangements for marine protected areas in Colombia: Insights for improving governance

6.1 Chapter summary

This paper examines MPA implementation in Colombia with different institutional arrangements and actors. Institutional arrangements in this study refer to the combination of diverse rules and organizational characteristics (e.g., hierarchical complexity referring to the government levels and institutions involved in management, use restrictions, and opportunities for community involvement) that provide conditions for distinct governance interactions and processes. Governance in an MPA context refers to the process whereby beliefs, interests, knowledge, formal and informal rules, and traditions from diverse actors interact to guide decisions and choices. Understanding how MPA institutional arrangements support or constrain governance provides insights for better planning of MPAs and enhancing governance. A conceptual framework that brings together key aspects for governance is used to assess four different MPA institutional arrangements in Colombia and to examine how they influence governance. Qualitative research involving semi-structured interviews, focus groups, and document analysis shows that key aspects of governance such as legitimacy, equity, fit, and adaptiveness may be influenced by MPA institutional arrangements. For instance, d*e jure* legitimacy, associated with Colombian national and regional government-led and no-take MPAs, does not guarantee *de facto* legitimacy. However, less hierarchical MPA arrangements (local-private and regional government-led) integrate participatory mechanisms (community consultative meetings, sustainable use of resources), facilitate cross-scale interactions among stakeholders, and

increase *de facto* legitimacy and equity. This type of configuration also provides the conditions for the appearance of key individuals and the linking of organizations that have the potential to enhance governance. This manuscript contributes to the field of MPA governance where transformation and adaptation of top-down approaches is being sought to improve the performance of MPAs. Empirically, this research contributes to expanding the knowledge of MPA governance in Colombia and other countries in Latin America with similar processes and contexts.

6.2 Introduction

This paper examines how different institutional arrangements support or constrain governance in Colombian marine protected areas (MPA), and sheds light on how governance can be enhanced. Marine biodiversity loss and fisheries degradation are leading to increased efforts to protect biodiversity (Mora & Sale, 2011). This impetus has driven most of the marine conservation initiatives around the world. International agreements, such as the Convention on Biological Diversity (CBD), and specially COP 7 and Aichi Target 11, have sparked marine conservation initiatives. Many signatories of the CBD, including Colombia, are taking part in the ambitious goal of establishing a complete, representative, and effectively-managed system of MPAs that protects at least 10% of their marine waters by the year 2020. Countries pursuing these goals need to pay attention to the MPA governance process and how it facilitates the achievement of conservation purposes while addressing social and equity issues.

The establishment of MPAs, in Colombia and other countries in Latin America, has historically followed a top-down government-led approach, with few opportunities for

bottom-up or shared approaches (Durán 2009; Hogg et al. 2013; Bustamante et al. 2014; Ramírez 2016). This is in spite of the fact that most of the recent MPAs established in Colombia—15 in the last decade—overlap with sites inhabited or used by ethnic minority communities (indigenous or afro-descendant) for livelihood and cultural purposes (Ramírez 2016).

Globally, with the aim of accomplishing conservation goals while addressing social and equity issues, diverse institutional arrangements that combine different jurisdictions (national and regional) and categories of management (from strict conservation or no-take to sustainable uses) have been implemented (Fernández and Castilla 2005; Guaderas et al. 2008; Beitl 2011; Hogg et al. 2013).

MPA institutional arrangements refer to the set of characteristics that determine interactions within the MPA. MPA institutional arrangement characteristics include hierarchical complexity, management objectives, and related resource use restrictions, which influence community livelihoods and opportunities for actors' involvement. Hierarchical complexity refers here to the level (or levels) at which the MPA operates, as well as the number of institutional levels that need to be involved for decision-making, and how such hierarchical complexity facilitates or limits decision-making, coordinating efforts, and capacity (Cash et al. 2006).

The concepts of governance and management are often interchangeable depending on the academic or empirical context where they are applied. Although they are closely related and may influence one another, they are distinct (Armitage et al. 2012). In this paper, governance is understood as the process in which perceptions, beliefs, interests, knowledge, formal and informal rules, traditions, and worldviews from diverse actors

(government, community, NGOs, and private companies) interact to guide decisions and choices that determine the performance of MPAs (Ramírez 2016). In contrast, management is related to the set of decisions, mechanisms and tools that are used to operate and pursue MPA objectives (e.g., parks personnel tasks, budget and equipment needed, and zoning) (Salm et al., 2000; Lockwood, 2010; Armitage et al. 2012; Borrini-Feyerabend et al. 2013).

Governance is a concept that has changed over time. Governance was (and in some contexts, still is) traditionally linked to 'government' and the laws and rules disclosed and enforced by it. However, contemporary ideas of governance emphasize the role of non-government actors in decision-making, participation in management roles, and assumption of responsibilities (Pavlova 2007). Changes in the governance paradigm have supported the transition from top-down or command and control structures (see Holling and Meffe 1996) toward hybrid forms of governance that may include shared governance (public-social, public-private partnerships, and private-social partnerships) (Lemos and Agrawal 2006; Pavlova 2007; Armitage et al. 2012).

In protected areas, the term 'governance' often refers to the type of approach through which a protected area is conceived and set up (see Borrini-Feyerabend et al. 2013). In that sense, governance can be also used as a descriptive term that serves to indicate the way an MPA is framed, and largely dictates how the governance process will take place. Yet, the institutional arrangement through which the MPA is implemented, as well as context characteristics, may influence the governance process. Independently of the governance approach used to established MPAs, the governance process is dynamic and goes beyond prescriptive approaches involving various actors and both formal and informal institutions. Institutions refer to any "constraints that structure political, economic, and social

interactions (e.g., sanctions, customs, traditions, constitutions, laws, and property rights)" (North 1991, p 97).

The argument we explore here is that regardless of how MPAs are created and managed—government-led, hybrid, or community-led—even slight differences in the configuration of institutional arrangements shape the MPA governance process and produce different outcomes. For instance, management capacity (enforcement, budget, number of park rangers), community organization, community engagement, and livelihood opportunities, among other variables, may vary across different jurisdictional levels and will engender differing equity, legitimacy, and accountability, as well as fit between the resource system and the management system. In other words, institutional configurations may influence how governance takes place on the ground (Young 2008).

To explore this argument, this research compares four different MPA institutional arrangements in Colombia. These MPAs, although predominantly top-down in origin, showcase different hierarchical complexity contained in local, regional, and national jurisdictions of management, different objectives of management and use restrictions, and different strategies for actor involvement (e.g., training, meetings, and mangrove restoration).

A conceptual framework based on a synthesis of protected areas and environmental governance principles (see section 6.3, Table 6.1) is applied to examine how characteristics of different institutional arrangements may influence, facilitate, or constrain governance in MPAs. This analysis is useful to identify aspects of MPA institutional arrangements that may contribute to fostering governance principles.

This chapter is organized as follows: first, it defines and discusses the conceptual framework used to guide the analysis of principles and key aspects of governance associated with MPA arrangements. Next, the study site context and methods for data gathering and analysis are described. Section 6.5 presents an examination of the occurrence or absence of key institutional arrangements and the relationship with governance outcomes in MPAs, and section 6.6 discusses the main findings and implications for MPA governance. The final section provides insights on lessons that can be applied for selecting and adapting MPA institutional arrangements to support governance and contribute to improving MPA performance.

6.3 Governance principles for MPAs

Governance principles have been widely discussed by scholars and international agencies (United Nations Development Programme-UNDP 1997; Costanza et al. 1998; Graham et al. 2003; Duxbury and Dickinson 2007; Kooiman and Jentoft 2009; Borrini-Feyerabend et al. 2013; Song et al. 2013). In the context of natural resources and global environmental issues, the analysis of key principles and aspects of governance has recognized the central role of non-state actors and has offered new insights for environmental and protected areas governance (Lockwood et al. 2010; Lockwood 2010; Armitage et al. 2012; Borrini-Feyerabend et al. 2013). More recently, research focused on analyzing governance effectiveness in MPAs has proposed frameworks based on incentive categories (Jones et al. 2013) and different inputs (governance, management, and local development) that underpin MPA outcomes (Bennett and Dearden 2014).

While the importance of legitimacy, accountability, participation, effectiveness, and equity are consistently highlighted as fundamental principles of governance, recent perspectives recognizing the complexity of natural resource systems point out the importance of incorporating aspects of resilience and learning, connectivity/fit and scale, and inclusiveness in governance (Lockwood et al. 2010; Lockwood, 2010; Armitage et al. 2012).

From the analysis of principles and other key aspects of governance suggested in protected areas and environmental governance literatures, some core and common elements emerged (Table 6.1). While legitimacy, accountability, and aspects related to equity and fairness, as well as actor inclusiveness, are common concerns, newer approaches to governance recognized participation and interaction of multiple actors (state and non-state) and formal/informal forms of legitimacy and accountability. Legitimacy is relative to the validity of the organization (state and/or non-state actors) in charge of making decisions and the integrity with which power is applied (Lockwood et al. 2010). Legitimacy is not only given through legal mechanisms, but also through acceptance and validation from non-state actors.

Transparency refers to the visibility, clarity, and adequacy of communication around decisions and outcomes (Lockwood et al. 2010). Lockwood et al. (2010, p 10) refer to accountability as the action of "allocating and accepting responsibility for decisions and actions and demonstrating how those responsibilities are met." Clarity concerning the roles and responsibilities of stakeholders, awareness of other actors, and access to information and communication are also relevant for accountability in governance systems (Armitage et al. 2012). Armitage et al. (2012) recognize legitimacy and accountability as key issues in

new hybrid governance approaches, but emphasize that in these approaches, challenges may be imposed by the difficulty of measuring non-formal legitimacy and accountability relationships (e.g., trust and kinship).

Armitage et al. (2012) and Lockwood (2010) suggest that environmental governance ideas, such as participation of state and non-state actors, recognition of the complexity of the natural system, and socio-ecological linkages, although key to enhancing environmental governance, need to consider conservation practice challenges. Therefore, examining governance from a dynamic perspective and looking at issues such as equity, fit and scale (connectivity), adaptive capacity, and knowledge, in addition to traditional and contemporary forms of legitimacy and accountability are required to enhance conservation practice. For instance, fit and scale (spatial and temporal) mismatches in environmental governance are often linked to institutional arrangements or jurisdictional levels that do not match the characteristics of the biophysical system (Young et al. 2008). These mismatches often apply to marine conservation arrangements, and are difficult to solve given that territorial ocean waters are usually a sole responsibility of central governments. Yet, a governance approach that recognizes the role of government and non-government actors for achieving conservation goals may facilitate the design and implementation of MPA arrangements that match ecosystem characteristics (Galaz et al. 2008).

Adaptive capacity refers to the flexibility and creativity for dealing with socio-ecological complexity and unexpected changes, whether biophysical or socio-economic (Young et al. 2008). Collaboration among actors during the process of learning and co-production of knowledge are outlined as key aspects for nurturing the adaptive capacity of the governance system (Young et al. 2008; Lockwood 2010; Armitage et al. 2012).

A synthesis of salient governance ideas through time provides the basis for the analysis of key principles of governance in MPA institutional arrangements in Colombia (Table 6.1). While this synthesis does not represent a comprehensive account of all the principles for governance quality, it includes some of the most relevant aspects pointed out in the protected areas and environmental governance literature in relation to participation of new actors (State and non-State) in governance as well as resource management complexity aspects (multilevel and cross-scale interactions).

Table 6.1 Governance principles framework.

Key aspects & principles	Indicators
Legitimacy[1,2,3]	• Formal/informal relationships of trust among actors (e.g., collaboration among actors, actors know each other and their roles and responsibilities are identified, interactions among actors through meetings, training opportunities). • Institutional arrangements are understood and accepted by actors as well as their implications in terms of use restrictions/conservation goals. • Decision making is open to scrutiny by stakeholders, reasons for decisions as well as achievements and failures are evident, information is presented in clear forms to all stakeholders[1].
Equity [1,2,3, 6]	• Recognition of local livelihoods and cultural issues, rights recognition, means to engage stakeholders, indigenous peoples/ethnic minorities, human rights are respected[2]. • Fair distribution of cost/benefits is taken into account to make decisions[2].
Fit [1,2, 5, 6]	• Vertical and horizontal linkages[2]. • The levels at which power is exercised match the scale of associated rights, needs, issues, and values[1]. • The agency in charge of the MPA is effectively connected with agencies operating in the same jurisdiction as well as in different jurisdiction levels[1]. • Identification and participation of all actors involved in making decisions, interactions among them and their roles[2]. • All stakeholders have appropriate opportunities to participate (arenas for communication and trust building, knowledge sharing, meaningful participation)[1].
Adaptiveness[3, 5]	• Capacity and disposition for learning from experience and incorporating new knowledge[1]. • Flexibility to rearrange processes and procedures in response to changing internal or external conditions[1]. • Opportunities (formal and informal) for collaborative and social learning among different actors and multiple levels[2]. • Mechanisms for deliberation and knowledge sharing[2].

[1] Lockwood et al. (2010) and Lockwood (2010), [2] Armitage et al. (2012), [3] Graham et al. (2003), [4]UNDP (1997), [5] Costanza et al. (1998), [6]Jones et al. (2013).

The four key principles outlined in the governance principles conceptual framework (Table 6.1), along with corresponding indicators, are used to assess how governance is expressed in each institutional arrangement. For example, understanding the type of relationships between communities and MPA authorities, community knowledge, acceptance of MPAs, and whether communities are a part of the MPA decision process are all factors used to assess accountability and legitimacy. The existence of livelihood opportunities accepted or fostered by MPA authorities, as well as the recognition of community rights, are used to assess aspects of equity. How fit is addressed in each of the institutional arrangements is examined by looking at the connections and interactions among and between stakeholders and authorities. The opportunities that each arrangement provides for bringing together different stakeholders and incorporating their knowledge and capacity in MPA management are used to assess the adaptiveness capacity in each arrangement.

6.4 Research Context and Methods

6.4.1 Study site context

The study site includes four marine protected areas located in the Caribbean Region of Colombia (Fig 6.1). The predominant marine-coastal ecosystems in these MPAs are coastal lagoons, mangroves, sea grasses, and soft sand bottoms. The archipelagos of Corales del Rosario & San Bernardo (CRSB) enclose the largest and most diverse coral reef area in the continental platform of Colombia (Invemar, 2003), representing an important biodiversity hot spot for Colombia and contributing to the high Caribbean biodiversity (Burke et al. 2011).

The population within and around the selected MPAs is mainly afro-descendant communities inhabiting the CRSB archipelagos (Sta Cruz del Islote, Múcura, and Isla Grande) and the coastal villages of Rincón and Berrugas. The coastal towns of Tolú, Coveñas, and the villages of Guacamayas and Ciénaga de la Caimanera have a mixed ethnic population (afro-descendant, indigenous, and mestizo) (Ramírez 2016).

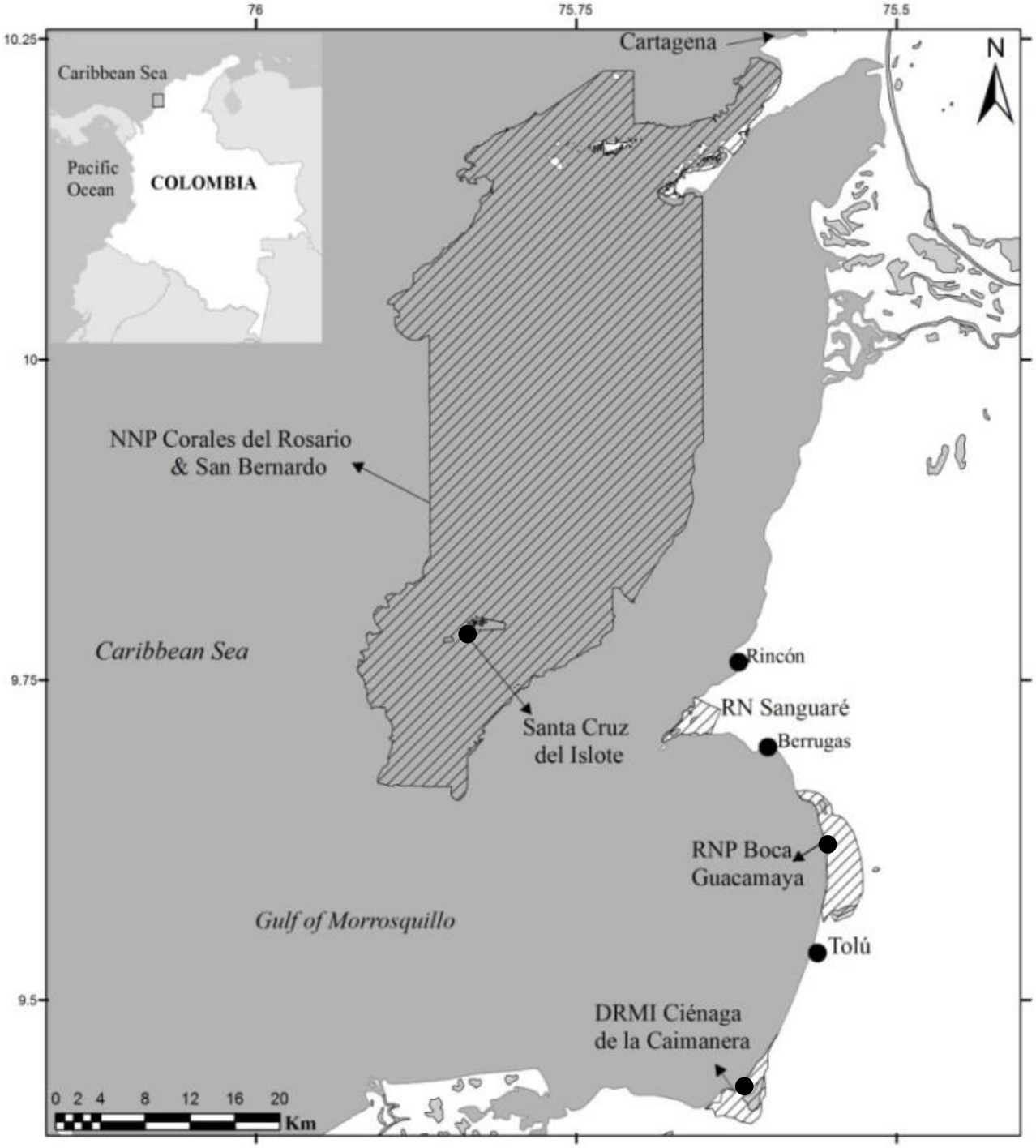

Figure 6.1 Map of the study area. NNP: National Natural Park, RNP: Regional Natural Park, DRMI: Regional Integrated Management District, PNR: Private Natural Reserve Sanguare. (Map Modified from Ramírez 2016).

Livelihood activities in the area are based on artisanal or small-scale fishing, mangrove harvesting, and jobs related to tourism services. Although there is no precise information on the total number of fishers in the study area, experts estimate around 40,000 fishers in both Colombian oceans (Saavedra-Díaz et al. 2015). Thus, community food security and culture in coastal areas are strongly connected to the sea. However, ecosystems and fisheries within the Gulf of Morrosquillo and CRSB archipelagos (Fig.6.1) have been severely affected by illegal industrial fishing (shrimp), the use of destructive fishing practices (dynamite), and uncontrolled tourism practices (Mancera and Sotelo 2005). Other factors affecting marine biodiversity in the area include mangrove harvesting, infrastructure development (including road construction affecting water exchange in mangrove areas and lagoons), mangrove reclamation for tourist development, massive tourism in the archipelagos, and oil spills associated with storage and transport facilities located in the area.

Case studies description

Three of the case studies involved a top-down approach to MPA establishment, meaning that the sites were conceived and established by government through an Administrative Act without local actor input and that a government agency is the sole manager with the responsibility of decision-making for the area. The fourth case study is characterized by a private governance approach. In that case, although the area is legally registered in the national system of protected areas, all decisions are the sole responsibility of the land owners. Regardless of some similarities among the cases (e.g., government roles, lack of actor input), these case studies reflect different MPA governance configurations.

Characteristics of MPA institutional arrangements include the jurisdictional level at which the MPA is operated, management objectives that determine use restrictions, and mechanisms for community involvement. The case studies analyzed here operate under national, regional, and local-private jurisdictions; each pursues different conservation objectives and has different use restrictions. Each of the four MPA arrangements provides different scenarios and conditions with different implications for MPA governance. A comparison of the cases is presented in Table 6.2.

Table 6.2 Marine protected areas comparison.

MPA	IUCN Category	Jurisdiction	Authority in charge	Institutional arrangement scenario
National Natural Park Corales del Rosario	II	National Top-down Centralized	National Natural Parks UAESPNN	Management decisions are made only by the national parks authority. Most of the park activities (expenses, research projects, monitoring activities) must be consulted with regional and central levels and authorized by them. Main MPA objective is conservation. Management zones: conservation, restoration, & recreation. Community territorial user rights were recently recognized.
Regional Integrated Management District Ciénaga de la Caimanera	VI	Regional Top-down Decentralized	Regional Env. Authority Carsucre	Management decisions are made by the regional environmental authority. MPA objectives: conservation, restoration, and sustainable use of fisheries and mangroves. Community is involved in mangrove monitoring & restoration activities (participants in these activities receive an economic incentive). Consultative mechanisms are in place. Fisheries regulation is the responsibility of the National Fisheries Authority.
Regional Natural Park Boca Guacamaya	II	Regional Top-down Decentralized	Regional Env. Authority Carsucre	Management decisions are made by the regional authority. Main objective of the area is conservation. Community is involved in mangrove monitoring & restoration activities. Community consultative mechanisms are in place. Resource uses are not allowed. Fisheries regulation is the responsibility of the National Fisheries Authority.
Private Natural Reserve Sanguaré	VI	Local-Private	Private owners of the	Area managed by paid employees. Main objective is sustainable use. Zones:

MPA	IUCN Category	Jurisdiction	Authority in charge	Institutional arrangement scenario
			land	conservation, restoration, sustainable use. Community is involved through environmental education/training activities & job opportunities. Most of the management decisions are made by the MPA manager in consultation with experts from the academia or input from the personnel working in the MPA.

National Natural Park Corales del Rosario and San Bernardo (NNP-CRSB). The NNP-CRSB was created in 1977. Originally, the park included only the archipelago of Corales; however, to protect key marine ecosystems and ecological integrity, the archipelago of San Bernardo was included in 1996. The park is located 45 km southeast of the touristic city of Cartagena, and 30 km northwest of the town of Tolú. The park covers 120,000 ha (UAESPNN 2006) and is managed by the National Parks Authority (Unidad Administrativa Especial del Sistema de Parques Nacionales Naturales-UAESPNN). The institutional arrangement in place corresponds to category II in the International Union for the Conservation of Nature (IUCN) system, and the management objectives include preserving habitats for biodiversity and maintaining the natural landscape and ecosystem services. The NNP-CRSB was created as a no-take area with three zones: preservation, recuperation/restoration, and recreation. However, subsistence fishing is allowed in the recreation zone. The main population within the park is located in Santa Cruz del Islote in San Bernardo (n≈600) (Incoder-UJTL 2014) followed by the population of Isla Grande (n=532) in Corales del Rosario (UAESPNN 2006). The population size on other islands (Ceycen, Múcura, and Tintipán) within San Bernardo Archipelago oscillates between 20 and 200 people depending on the fishing and tourism season. In addition to the fishers from the islands, fishers from the continental coastal

villages of Rincón, Berrugas, and Tolú, among others, fish within the San Bernardo archipelago.

Regional Natural Park Boca Guacamayas (RNP-Boca Guacamayas). The RNP-Boca Guacamayas is located 11 km from the town of Tolú, within the province of Sucre. The RNP-Boca Guacamayas was created in 2008 by the regional environmental authority Carsucre.

The area encompasses 3,759 ha of mangroves, mud plains, and coastal lagoons. The main management objective of the area is conservation, and includes mangrove restoration activities. The institutional arrangement corresponds to category II in the IUCN system and extractive activities are not permitted. Carsucre is the environmental authority in charge of the area; however, fishing regulations and enforcement are the responsibility of the Colombian National Fishing Authority (Autoridad Nacional de Pesca-AUNAP in Spanish). The population living around the RNP-Boca Guacamaya is approximately 300 people (DANE 2005). Although fishing and mangrove harvesting are important livelihood activities in the area, these activities represent a complementary income for most of the people living in the area. The main livelihoods in the area are related to construction jobs and surveillance and maintenance of cottages for recreation.

Regional Integrated Management District Ciénaga de la Caimanera (DRMI-Ciénaga Caimanera). The DRMI-Ciénaga de la Caimanera is located within the municipality of Coveñas, 20 km from the town of Tolú. The DRMI was established in 2008 by the regional environmental authority, Carsucre, and covers 2,125 ha of mangroves, mud plains, beaches, and coastal lagoons (Tavera et al. 2004). The creation of the DRMI responds to the need to

protect the largest mangrove area in the province of Sucre and regulate the use of mangrove and aquatic resources. The DRMI combines conservation, protection, and restoration actions with sustainable use. The area is divided into four management zones: preservation, protection, restoration, and production. This institutional arrangement corresponds to category VI in the IUCN system, allowing some resource uses, such as mangrove harvesting, fishing, and tourism, which represent the main income activities for the community. The main access to Ciénaga de la Caimanera is close to an important regional road that connects Coveñas and Tolú. This facilitates tourism.

The regional environmental authority, Carsucre, is in charge of the management of the area; however, the institutional arrangement recognizes that the area management plan has to be defined with the community's participation, and that strategies for involving community actors in management activities should be created. Carsucre is responsible for monitoring the area and for assigning mangrove harvest quotes; however, fishery management decisions and enforcement are again the responsibility of the AUNAP. The population of Ciénaga de la Caimanera is approximately 630 people (DANE 2005).

Private Natural Reserve Sanguare (PNR-Sanguare). The PNR-Sanguare is located in the coastal zone of the province of Sucre, east of the archipelago of San Bernardo and between the coastal villages of Rincón and Berrugas. The PNR-Sanguare was established in 2002. The size of the Reserve is 898 ha, and although it includes important mangrove and beach fringes, it encloses mainly terrestrial ecosystems (dry forest, wetlands, grasslands). This reserve is located on private land and is privately managed. The reserve is located in land owned by the private consortium Promociones Alejandrinas S.A. which operates livestock

and fruit production farms. The consortium agreed to set aside part of the land for resource sustainability and conservation purposes. The management objectives include conservation, restoration, sustainable use, social empowerment and community organization, environmental education, and research. Management and enforcement activities are mainly performed by five individuals, who work as permanent staff in the reserve. Collaboration with university partners provides management guidelines, and enforcement activities are at times supported by regional authorities. The main livelihood activities for the population in surrounding areas include mangrove harvesting, fishing, agriculture, and livestock. People from nearby villages illegally fish and hunt in the area.

6.4.2 Methods

This research follows a qualitative case study approach, including four different MPA institutional arrangements and the local communities associated with them. The case study approach in this case facilitates the understanding of the characteristics of each institutional arrangement and the interactions that take place among government and non-government actors. The MPAs are located in the same geographical area (Figure 6.1), sharing ecological, socio-economic, and cultural characteristics, which reduces context-related bias (see section 6.4.1, Table 6.2). As previously described, the case studies correspond to private-local, regional and national jurisdictions, as well as no-take and multiple-use MPA arrangements. The selected areas represent the main institutional configurations of MPAs in Colombia.

Data collection

The data collection methods include document analysis, sixty-nine semi-structured interviews, six focus groups, and field observations. Interviews, focus groups and field observations were carried out from April to July of 2014, with a follow-up in November of 2015 to verify and validate findings. Document analysis was based on secondary data sources, such as research and government reports elaborated by environmental authorities, NGOs, and research institutes, as well as MPA documents related to the creation of the areas, management plans and monitoring reports, and academic journal articles. Selected documents were analyzed through latent content analysis and an interpretive approach (Hseih and Shannon 2005).

Secondary information provided insights into institutional arrangement characteristics, objectives, development, and governance processes, while primary information from semi-structured interviews and focus groups complemented the characterization of governance aspects in each arrangement and provided actors' perceptions of governance issues.

Guiding questions were used to conduct semi-structured interviews and focus groups (See Ramírez 2016; appendix 1) (Appendix C & D in this document). They were based on key aspects of governance, particularly on characteristics such as community knowledge of the MPA objectives, formal rules and restrictions, the relationship between the community and the environmental authority, the existence of NGOs and other organizations interacting with communities within the area, existing mechanisms to resolve conflicts, individual and community participation in the MPA establishment process (e.g., meetings, jobs, monitoring, training, and environmental education), and perceptions about the performance and importance of the MPA.

Semi-structured interviews were conducted with key informants from communities (n=56), as well as state and non-state environmental organizations (n=13) interacting with the MPAs. Interview participants from environmental authorities at the regional and national level, government agencies, NGOs, and research institutes were chosen for their key roles and/or knowledge of the MPA. Community participants included leaders from local organizations (fishers' associations, mangrove harvesters, tourism operators, and community councils), as well as independent resource users (fishers, mangrove harvesters, and fish sellers). Focus groups (n=6) were conducted with key informants from the communities, mainly community leaders and elders with extensive knowledge in fishing and mangrove harvesting practices. Key informants were identified through previous connections made in the study area by the lead author when working in marine conservation planning at the Colombian Institute of Coastal and Marine Research (Invemar) (Ramírez et al. 2010; Segura et al. 2012). The number of participants was determined following the principle of saturation when little new information or insights were produced (Newing et al. 2011).

Data Analysis

The framework for the analysis of governance principles in MPAs (Table 6.1) is based on the synthesis of work on protected areas and environmental conservation governance. The framework brings together past and contemporary concerns in MPA governance.

The principles of governance and the corresponding indicators compiled in Table 6.1 were used to guide the characterization of each MPA's institutional arrangement and to analyze interviews, focus groups, and documents. Interviews were audio-recorded and

transcribed. A deductive coding process was applied for the analysis of semi-structured interviews and focus groups using the qualitative analysis software RQDA (Huang 2014).

This research received ethics approval from the Wilfrid Laurier University Research Ethics Board. Verbal or written consent to audio-record interviews and focus groups, and to use quotes, was obtained from participants. Quotes and references from focus groups are identified as FG, from community participants as LC, and from environmental authorities as EA.

6.5 Results

This section describes and analyzes how key principles and aspects of governance (as outlined in Table 6.1) take place differently under national, regional and local-private institutional arrangements in Colombia. Key aspects of institutional arrangements (summarized in Table 6.2) that influence a shift to more legitimate, adaptive, and equitable MPA governance are discussed. Linkages and interactions among the main dimensions of institutional arrangements (hierarchical complexity, resource use restrictions, and community involvement opportunities) and key principles/aspects of governance are presented in Figure 6.2, and a synthesis of the main aspects of governance identified in each institutional arrangement is presented in Table 6.3.

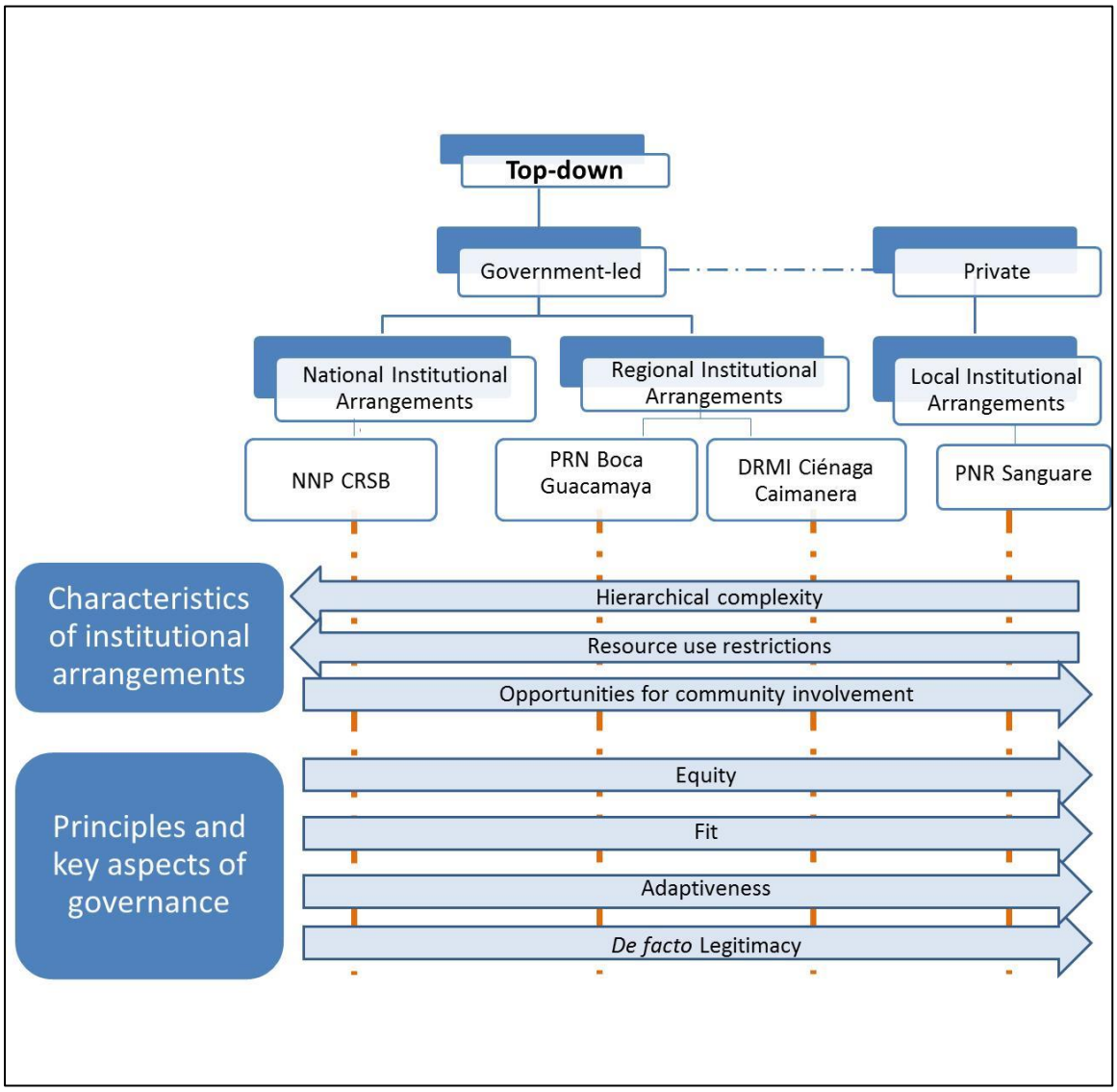

Figure 6.2 Institutional arrangements in terms of key governance principles (the arrows indicate the direction in which the presence or absent of characteristics of institutional arrangements and principles of governance increase).

National Institutional Arrangements

Although legitimacy of the park authority as representing the national government's legal authority to dictate and enforce management regulations is expected to be inherent to government-led institutional arrangements (given their formal recognition), there is a difference between *de jure* and *de facto* legitimacy in the CRSB NNP. *De jure* legitimacy

means, in this case, that there is a general understanding that the park authority is the legal representative of the government, with the power to enforce and impose management rules within the area; however, *de facto* legitimacy is undermined given that in reality the government does not have sufficient presence in the area and locals usually ignore the park authority, and do not respect management rules. The lack of inclusion of local communities in the creation of the institutional arrangement, together with restrictions imposed on locals and low enforcement capacity, reduce the *de facto* legitimacy of CRSB-NNP. The National Parks and People policy, implemented in the 2000's through actions such as the permanent presence of park personnel in San Bernardo Archipelago, and environmental educational and awareness activities, has increased *de facto* legitimacy among communities within the CRSB archipelagos. However, as indicated in interviews with community participants, the park is still not recognized by all actors (Table 6.3). When asking to interview participants about the park, it was discovered that although community leaders and inhabitants from the islands were relatively familiar with the restrictions and limits of the park, participants from continental communities (Berrugas, Rincón, and Tolú) showed a limited knowledge of the park limits, objectives and restrictions. At least two interviewees from Berrugas (one fisherman-LC2 and one female that buys and resells fish caught in the islands-LC3) were not familiar with the park designation and what it implies. Regarding the role of the park, a leader of a fishers' association said: "the park, it is as if it doesn't exist, everything has been the same with park or without park (LC4)." This perception was echoed by interview and focus group participants in Rincón and Berrugas. It was also confirmed in an interview with a park representative, who explained that a study conducted in the area showed that fishing practices within and outside the MPA are very

similar (EA5). Hence, legitimacy is diminished by the low capacity and ineffective rule enforcement.

While vertical accountability, meaning accountability to central government agencies, is strong and responsibilities related to the management of the area to achieve conservation goals are assumed and understood by park authorities and personnel in charge of the park, accountability to stakeholders, including local communities, is limited. For example, technical and financial reports are produced by parks and can be consulted, but these reports are not easily accessible to all stakeholders, particularly local communities. A Popular Action, a mechanism to protect collective rights and interests in Colombia (Sarmiento 1994), was recently used in the area of influence of the park to demand that government agencies within the jurisdiction guarantee the sustainability of the area (Acción Popular-Exp 2003-911-9301). This mechanism can be a useful tool for accountability; however, the efficacy of popular actions depends on community collective action, which is limited in this institutional arrangement. In the case of the communities around the NNP-CRSN, particularly in Rincón and Berrugas, five interview participants mentioned that political corruption and past experiences of violence spark fear of retaliation, lack of trust in government authorities, and undermine community action.

As mentioned by the majority of the participants living on the islands, efforts by the parks authority to communicate decisions regarding MPA management (restrictions, zoning, and permitted uses) have been important for promoting the park directives and increasing transparency. However, according to non-islander participants, these efforts are still insufficient and have been focused on communities within the park, overlooking stakeholders from continental coastal communities, such as Rincón and Berrugas. Although

the institutional arrangement does not incorporate participatory mechanisms for engaging stakeholders in the management of NNP, other than environmental awareness and education, there have been some concrete activities that promoted the participation of islanders in tourism, providing income opportunities and diminishing pressure on marine resources. These opportunities have been focused exclusively on islander communities, failing to fully reach aspects of governance such as inclusiveness and participation of all key stakeholders.

Similarly, elements of governance, such as equity and fairness, are inadequately incorporated in the NNP-CRSB (Table 6.3). This institutional arrangement underestimates the livelihood needs of communities within and around the area, ignoring social-ecological linkages. Moreover, as indicated by interviewees, the distribution of costs and benefits is not well-addressed in CRSN-NNP. Almost all interviewees expressed their discontent with park restrictions that go against their traditional and only means of livelihoods (e.g., fishing with harpoons) without offering alternative income solutions. This is illustrated in the following quote:

> "The park authority stops us from fishing because they say it is for commercialization, but we see that they are not protecting the park. Some people from the islands still cut the mangroves, and industrial fishing continues in the area, creating massive destruction. They have affected our subsistence. Parks are taking away our fishing zones without taking us into account, even though fishing is a tradition for us" (LC3).

Integration and coordination among government agencies with jurisdiction in the area (i.e. the Navy, AUNAP), as well as with other environmental authorities, is weak and has been previously identified as a barrier for governance of the MPA (Ramírez 2016).

Likewise, the coordination and involvement of key stakeholders in the area (tourist operators, fishers) are lacking. This lack of coordination limits multilevel interactions and the capacity to deal with conservation issues requiring collaboration between horizontal and vertical scales.

Adaptive capacity under the NNP management category is restricted by the command and control approach of national protected areas (Table 6.3). Management practices follow prescriptive rules drafted in centralized offices by Park staff that are not always familiar with the daily dynamic and reality of the protected area. Consequently, these rules are difficult to adjust or adapt to the contextual situation. For instance, one of the park rules refers to the prohibition of building new infrastructure within the NNP, to prevent ecosystem damage. However, people living within the park boundaries sometimes build rudimentary defenses (e.g., rip-raps made of debris) to protect their homes from erosion and storms. These defenses are counted as new infrastructure and are consequently prohibited.

The lack of adaptive capacity is exacerbated by the hierarchy and bureaucracy of the National System of Protected Areas, which implies that most of the management decisions have to be approved at the regional or central levels, a process that delays and reduces flexibility in conservation action implementation. On the ground, however, interviews with park personnel (who deal with people's day-to-day struggle to obtain livelihoods) show that they have a different perspective and tend to be more flexible regarding regulations within the area. For instance, one of the park rangers on the islands says:

> "When the Ministry of Environment and the National Parks Authority were created, everything changed, because it was not anymore parks without people…instead it is now parks with people. So we understood that we have to accept that people

> [community members] have some rights inside the area. Fishing with nets is prohibited here [in the park], but subsistence fishing with a hand line is allowed" (EA2).

Contract staff working directly with community members in the park argue that "as an authority, we have to impose prohibitions and guidelines, but there is also a national reality. The idea is combining the two of them to get an agreement with the community" (EA3). On the other hand, recent events, such as the organization of the afro-descendant community within the area, territorial rights claims, and the popular action demanding response from government agencies to guarantee the sustainability of the area have initiated a change in the NNP-CRSB governance approach. Currently, the Ministry of the Environment is leading consultations with communities in regards to the management plan for the area, and actions are being taken to coordinate management activities with government agencies within the jurisdiction (Chapter 5, section 5.4).

Regional Institutional Arrangements

Neither *de jure* nor *de facto* legitimacy and accountability are strong in the case of regional institutional arrangements in the case study. Lack of personnel and financial capacity in the regional environmental authority mean that the management responsibilities are not assumed as is required. The legitimacy of the regional areas is constrained by the lack of trust in regional environmental authorities (Carsucre) by the communities, as well as a lack of communication and participation in processes. Interviews with community participants reveal that, although community leaders are familiar with the institutional arrangements, there is no general understanding or knowledge in the

community regarding the implications of those arrangements (Table 6.3). Moreover, community members have concerns regarding the limited capacity of the regional environmental authority to respond to the area's management needs. One interviewee from Ciénaga de la Caimanera mentions that the environmental authority often complains about the lack of budget for monitoring the area, so the fact that, since 2011, the regional authority has had the responsibility of managing not only coastal areas, but also coral reefs and sea grass ecosystems along the coast and 12 nautical miles offshore (Law 1450 Art. 208/2011), is worrisome (LC1). Furthermore, according to the interviewee, the lack of budget is not justified, as the royalties paid to the environmental authority by the oil transportation facility located in the region should be invested in the management of the area (LC1).

Regardless of the limited management capacity of the environmental authority, decentralization seems to play a key role in the facilitation of both inclusiveness and participation of local community members. Activities such as mangrove restoration projects and consultative committee meetings have played an important role in the inclusion of community environmental management concerns, as well as providing networking opportunities among the coastal communities and government agencies (Table 6.3). Interviews with the leaders of the mangrove associations in Ciénaga de la Caimanera and Boca Guacamaya confirmed that the members of the associations received occasional income for their participation in mangrove restoration activities. These activities also facilitate interactions (arenas for dialogue and exchange) among regional environmental authorities and communities, thus reducing the distance between resource users and decision-makers. Although the interviews revealed a generalized distrust between

communities and authorities, participants reported one-to-one relationships of trust between community leaders and the environmental authority, as well as with some individuals from the private sector, and NGOs that support mangrove restoration programs and other community projects. For instance, the leaders of the fishers and mangrove associations from Ciénaga de la Caimanera have direct communication with the environmental coordinator of Ocensa—a private company in charge of the oil transportation facility located near the area and that supports both mangrove restoration and the construction of artificial reefs for restoration purposes—and with the manager and staff of the NGO Funsabanas, which coordinates the mangrove restoration program and acts as a liaison between the community and the environmental authority.

Consultative committee meetings and mangrove restoration activities are planned, authorized, and supported by the regional environmental authority; however, in recent years, the local NGO Fundación Sabanas (Funsabanas) has coordinated such activities. Interviewed leaders from coastal community organizations agree on the role that Funsabanas has had in facilitating interactions among the communities and the environmental authority, as well as fostering community leadership. Funsabanas has served as a linking organization for communities and environmental authorities.

The DRMI Ciénaga de la Caimanera includes several mechanisms that help deal with equity issues, such as permitting the sustainable use of resources and involving community members in mangrove restoration activities (Table 6.3). Costs and benefits are more easily balanced through this institutional arrangement than through the Regional Natural Park in Boca Guacamaya, where all resource uses are restricted without providing alternative livelihood opportunities. In Boca Guacamaya, the community's dependence on natural

resources is alleviated by construction and maintenance jobs; however, the lack of mechanisms in place for stakeholder integration and participation still affect the legitimacy of the institutional arrangement. With the exception of a few community leaders, the population of Boca Guacamaya ignores that they live next to a Regional Natural Park, as well as what the institutional arrangement implies.

Table 6.3 Evaluation of key principles of governance in case-study MPAs

MPA Governance principles	Centralized National Institutional Arrangements	Decentralized Regional Institutional Arrangements		Private-Local Institutional Arrangements
	No-take marine protected areas		Multiple use marine protected areas (no-take + sustainable use)	
	NNP CRSB	RNP Boca Guacamaya	DRMI Ciénaga de la Caimanera	PNR Sanguare
Legitimacy	- Formal status of the area; yet, it is not widely recognized and respected by stakeholders (LC4). - Popular action - citizen mechanism to request appropriate management (LC5). - All decisions are made by UAESPNN. - Relationship among actors through passive participation in environmental education.	- Community members are not familiar with the institutional arrangement and implications (FG1, FG2). - Carsucre is known as the environmental authority for some members, but its legitimacy is questioned due to its lack of capacity to enforce regulations and limited presence in the area (LC1, LC6). - Personnel has not been appointed (EA3). - Relationships among actors are facilitated through mangrove restoration programs and consultative meetings which create spaces for communication (FG1, FG2).		- Authorities and communities respect the reserve and relate it to the environmental authority in the area. - Community participation and relationships are facilitated through environmental education, workshops, and job opportunities (LC9, LC10). - Decisions are made by managers - Supports local capacity
Equity	- Subsistence fishing is allowed within the recreation zone for local communities, engagement in tourism activities (EA2). - Cost/benefit distribution is not fair (LC3). - After the recent recognition of afro-descendant communities within the park, the park is in the process of conducting a management plan consultation.	- Job opportunities related to mangrove restoration, but not all the community is involved. - Costs/benefits distribution is not included.	- Sustainable use activities are allowed (mangrove harvesting quotes for locals), fishing, tourism (promoted by partnerships). - Job opportunities related to mangrove restoration. - Costs/benefits distribution is somehow included.	- Job opportunities related to tourism services and as providers of local goods (LC9, LC10) - Efforts to keep and incorporate traditional foods, ingredients, and construction materials (EA5)
Fit	- Historical connections among people from the islands and coastal areas are not taken into account (LC5). - Not all stakeholders have been identified/included neither appropriate participatory opportunities exist. - Connectivity among ecosystems on the islands (coral reefs, sea grasses, mangroves) and in the continental coastal areas (mangroves, lagoons) is considered. - Different levels of management: national, regional, local are key in the area, but they are not well connected.	- Management jurisdiction is adequate. - Poor linkages at the local level and national level. - Linkages among stakeholders are minimal (FG2 & LC interviews). - Important partnership among communities, NGOs, and the private sector (FG2 & LC interviews). - Few opportunities for stakeholder participation.	- The management jurisdiction is appropriate, but there are not strong linkages between the local, regional and national jurisdictions. Neither are there strong linkages among key stakeholders (LC interviews & FG2). - There are some important partnerships among communities, NGOs, and the private sector (LC interviews).	- The management jurisdiction is appropriate, but the linkages at the local level are limited. - Vertical and horizontal linkages with environmental agencies are relevant (EA interviews). - Partnerships with Academia provide important research opportunities (EA interviews).

MPA Governance principles	Centralized National Institutional Arrangements	Decentralized Regional Institutional Arrangements		Private-Local Institutional Arrangements
	No-take marine protected areas		Multiple use marine protected areas (no-take + sustainable use)	
	NNP CRSB	RNP Boca Guacamaya	DRMI Ciénaga de la Caimanera	PNR Sanguare
Adaptiveness	- Most of the management decisions are made at the central level limiting flexibility to take action and the capacity to learning by doing or integrating different knowledge. - Limited opportunities for collaboration and knowledge exchange among actors.	- Learning and knowledge exchange opportunities and collaboration through consultative committees and mangrove restoration projects, but limited to a few community members.	- Opportunities (formal & informal) for collaboration & social learning among actors in multiple levels, participation & communication, trust building, and knowledge sharing	- Flexibility to rearrange processes & procedures in response to changing internal or external conditions. - Capacity to learning from experience, and to incorporate local and academic knowledge.

Linkages among government agencies with jurisdiction in the area are usually limited to situations of crisis, such as oil spills. The fact that aquatic resources (fish and other marine invertebrates) in regional institutional arrangements are the responsibility of the National Fisheries Authority (AUNAD) creates a spatial misfit.

Interviews and the observation of a consultative community meeting in Rincón in May of 2014 indicate that consultative community committees can be a great tool to bring together both the community and government representatives. However, as observed in the meeting, and later confirmed by community participants and members of the NGO Funsabanas, there are limitations due to the lack of personnel or instability of contract staff in government institutions, which results in a lack of interest or capacity to make decisions and provide answers or solutions to community concerns. Thus, although the regional jurisdiction scale may be appropriate to deal with the social-ecological system of interest, there is a lack of sustained consistent integration and interaction among government agencies and stakeholders within and around the area (Table 6.3).

Regional institutional arrangements—particularly DRMIs, where community involvement is fostered through sustainable resource use activities—seem to cope better with change. For instance, the coordination of activities requires less protocol and provides more opportunities and time for communication. With the exception of processes that require the intervention of multiple or national government agencies (e.g., illegal mangrove reclamation), management decisions in regional institutional arrangements do not have to deal with the complex hierarchical clustering that occurs at the national level.

Private-local institutional arrangements

In the case of the Private Natural Reserve (PNR) Sanguare, accountability is related to the responsibility to achieve the management objectives in a sustainable manner. Restoration of the dry forest and mangrove ecosystems, ecotourism activities (accommodation, diving, kayaking), environmental education, research partnerships with universities, use of local products and traditional food recipes, and hiring local people are some of the activities through which Sanguare pursues conservation and sustainability. The importance of these activities and interactions with multiple partners (community, academia, and environmental organizations) for linking different kinds of knowledge (i.e. culinary and medicinal uses of native plants, mangrove surveys) and making better decisions was pointed out in interviews with Sanguare personnel and community participants from Rincón.

Legitimacy and accountability, in this case, take the form of trust between the reserve managers and the communities in the area, as well as the trust of environmental authorities. For instance, as reported by the regional environmental authority and the PNR-Sanguare manager, some wildlife species confiscated from illegal traders are released into the reserve (EA1, EA5). When there are illegal environmental actions taking place within the reserve or in the surrounding areas (mangrove destruction, sand removal, illegal fishing), the reserve reports such events to the regional environmental authority (Table 6.3). This communication, as explained by Sanguare Reserve staff, is not always official and is the result of a long-term relationship of trust between the reserve manager and the regional environmental authority personnel. Furthermore, although the capacity of the

environmental authority to take action in these cases is limited, these one-to-one communications were reported as effective.

On the other hand, the majority of the community members and leaders interviewed from Rincón and Berrugas identified Sanguare Reserve as a place for biodiversity conservation and ecotourism and, as the following quote illustrates, Sanguare Reserve is perceived by some community members as the environmental authority.

> "…People see Sanguare as the authority that protects species even more than Carsucre [regional environmental authority], because the authority in charge does not have an active presence here" (LC9).

However, the active participation of the Reserve's personnel in monitoring, denouncing, and controlling illegal environmental practices in the area have put them, as well as the reserve's equipment, at risk on several occasions, Sanguare employees have been threatened by poachers and equipment has been damaged. These experiences have diminished the willingness of the Reserve to be actively involved in issues happening outside the reserve boundaries.

The legitimacy, accountability and transparency of this institutional arrangement are also validated by legal mechanisms. Natural Private Reserves in Colombia are recognized by the Ministry of Environment and grouped into the Colombian Association of Natural Reserves of the Civil Society (Asociación Red Colombiana de Reservas Naturales de la Sociedad Civil - Resnatur in Spanish). Resnatur is in charge of coordinating actions amongst natural reserves and guaranteeing communication, compliance with the law, and with conservation and sustainability objectives.

The PNR-Sanguare participates in government and NGO initiatives (workshops and meetings), research partnerships with academic and local organizations, and supports local communities through environmental education and capacity-building activities. Sanguare Reserve, for instance, collaborates with the local organization Maria Mulata, supporting its environmental education program. Maria Mulata is a non-profit organization based in Rincón that offers after-school learning and play activities for children and teenagers. The following quote, from a former member of Maria Mulata, illustrates the effects that such collaboration has:

> "The founder of Maria Mulata is a friend of the managers of the Reserve, so when I was 13-14 years old, we were invited to the reserve. I was very impressed by the work they [Sanguare managers and personnel] were doing in the reserve...after that visit, I was trained as a tourist guide in Sanguare. They explained to me how the reserve works and I learned a lot about plants. After that, I created an environmental group in Maria Mulata and…now I am studying to be an Environmental Engineer. They [Sanguare] showed me the path…and the responsibility we have with the planet" (LC9).

Interactions with environmental authorities and local organizations facilitate vertical and horizontal linkages and opportunities for learning and knowledge exchange (Table 6.3). The reserve has also implemented specific actions to create jobs and other income opportunities (e.g., environmental education, motor-boat license, and basket weaving workshops) for the communities in the area, helping to balance the cost-benefit relationship.

The private nature of this institutional arrangement gives it independence and flexibility to make decisions with respect to its area, to evaluate what works and what does not, and to re-arrange processes and procedures without going through extensive bureaucracy or

hierarchical consultations. Learning by doing, scientific and local knowledge from academic research, and local employees drive many of the daily decisions in the reserve (Interviews with employees from Sanguare Reserve). Flexibility and partnerships with communities, government agencies, and academia make the institutional arrangement more adaptable to social-ecological changes.

6.6 Discussion

The analysis of institutional arrangements shows that how MPA governance takes place on the ground goes beyond the *de jure* governance approach applied for the creation and management of MPAs. The analysis conducted here confirms the argument that even slight differences in how MPA institutional arrangements are configured influence governance overall. Regardless of the predominantly top-down approach adopted in Colombian MPAs, institutional arrangement configurations that combine community involvement and livelihood opportunities, and that operate under less complex hierarchical clusters, fit better with social-ecological characteristics and provide conditions for nurturing *de facto* legitimacy, equity, and adaptive capacity. Promoting such characteristics in MPA institutional arrangements may aid in the transition away from top-down governance and toward shared governance.

Some insights concerning how key principles and aspects of governance are nurtured by certain institutional arrangement features, as well as how this can be used for shifting top-down approaches and improving MPA performance, are discussed below.

Community involvement and de facto *governance*

The analysis of key aspects of governance shows that although legitimacy and accountability in national and regional MPA institutional arrangements may be satisfied *de jure*, it is not the same *de facto*. In general, accountability and legitimacy are aspects of governance that are poorly addressed in the national and regional institutional arrangements examined.

De facto legitimacy, or output legitimacy, can be gained through leadership and the achievement of outcomes, or simply by getting consensus among stakeholders (Newman and Dale 2005; Lockwood 2010). However, limited success in achieving conservation and social goals affects the output legitimacy of the national and regional institutional arrangements studied. *De facto* legitimacy may be improved through meaningful stakeholder dialogue and input in decision-making regarding MPAs (Lockwood 2010). However, both *de facto* and *de jure* legitimacy are necessary for effective governance. The bottom-up governance system, based on community-based institutional arrangements in the Gulf of Mexico, is an example of how strong output legitimacy may be vulnerable to free riders without *de jure* legitimacy given by formal government recognition (Cudney-Bueno and Basurto 2009). This resonates with Ostrom's institutional design principles regarding the need of at least minimal recognition of rights.

Institutional arrangements, such as the Regional Integrated Management District in place in Ciénaga de la Caimanera, or even the Private Natural Reserve Sanguare, that include sustainable uses and/or mechanisms for community involvement (workshops, training, and jobs), are important because they recognize the community's livelihood needs, and increase

awareness of actors, access to information, and communication. Such arrangements not only provide mechanisms to address aspects of inclusion and fairness, but also enable governance interactions and community involvement. This type of institutional arrangement facilitates community engagement and MPA acceptability, which are aspects highly correlated with people's perceptions of good governance (Turner et al. 2014). These aspects may help reduce the gap between *de jure* and *de facto* legitimacy and accountability.

Institutional arrangements can facilitate linkages among actors

The analysis of institutional arrangements shows that in regional and private-local arrangements, individuals from the community, government authorities, private industry, or NGOs assume key roles that facilitate information and knowledge exchange through the creation of linkages within and between different management jurisdictions and actors (Galaz et al. 2008). One-to-one relationships between key individuals from the regional environmental authority, community leaders, Sanguare Reserve, and the NGO Funsabanas contribute to developing adaptive capacity through learning and knowledge exchange (Folke et al. 2005). Thus, key aspects of governance are facilitated by the presence and will of key individuals and local organizations.

The NGO Funsabanas, for instance, through the coordination of community consultative meetings, provides opportunities for dialogue and idea exchange among community leaders and government authorities. These meetings bring together government and community, and become "arenas for trust building, social learning, sense making, identification of

common interests, vertical and/or horizontal collaboration, and conflict resolution" (Galaz et al. p 164, 2008).

Characteristics of the institutional arrangement, such as the regional and local jurisdictional scale, as well as opportunities for interactions among actors (communities, private industry, and environmental authorities) may be a factor that facilitates one-to-one relationships among state and non-state actors, as well as the participation of key individuals and organizations. On the other hand, national arrangements, as in the case of the CRSB-NNP, depend on a more top-down hierarchical structure that implies and requires formal interactions among actors. The regional and local-private institutional arrangements examined here are all within the same province (Sucre), while CRSB-NNP not only is under the management of the central environmental government, but is headquartered in a different province. Thus, the administrative and physical (offshore) location of the CRSB-NNP may reduce the opportunities for interaction among offshore and land-based actors, and the occurrence of key individuals and organizations with the capacity to link or bring together different actors. Thus, specific characteristics of the institutional arrangement may influence the overall governance process. This is supported by the findings from Horigue et al. (2016, p 71), which indicate that governance capacity and participation in the Philippine's MPA networks are influenced by "institutional arrangements and the socioeconomic and political contexts of the local governments involved." Yet, expectations regarding the apparent role of certain institutional arrangements in facilitating governance must be realistic, keeping in mind that governance processes may be shaped but not circumscribed by structural arrangements (Turner et al. 2014).

Key individuals and linking organizations play an important role in nurturing and propelling adaptiveness and change as well as facilitating vertical and horizontal linkages (Olsson et al. 2004). This represents an advantage for adaptive capacity in local-private and regional institutional arrangements. Although private institutional arrangements do not always adequately address governance issues, private arrangements that take into account socio-ecological linkages, context, and key actors may be more flexible in comparison with centralized arrangements. Regardless of the theoretically higher capacity of centralized institutional arrangements for promoting coordination among actors, decisions and operations depend on more complex hierarchical systems and coordination with various government entities that might lack a full understanding of which actions need to be taken (Duit and Galaz 2008). Individual actors (often non-state actors) have also been recognized for their leadership in the creation of individual arrangements and for putting them in practice (Young 2008).

Scale misfits & partnerships

A clear case of jurisdictional spatial scale misfit takes place in regional institutional arrangements where the responsibility for the area and its resources is divided between two different government agencies with different jurisdictions. While the regional environmental authority is responsible for mangroves, coral reefs and sea grass ecosystems along the coast and 12 nautical miles offshore (Law 1450 Art. 208/2011), the National Fisheries Authority (AUNAD) is in charge of fisheries within the same area. In this situation, effective management requires a high level of coordination between government agencies

and demands high technical and financial capacity from the National Fisheries Authority as well as from the park authority. Similar mismatches among ecological and management scales have been found in other contexts (Wilson 2006). In those cases, partnerships among state and non-state actors may represent an important tool for the integration of actors, maximization of resources, and knowledge building.

Linking organizations may also be useful to connect actors from different administrative levels and sectors (Galaz et al. 2008). In that regard, Funsabanas, Maria Mulata, and Sanguare Reserve, among other organizations, play the role of linking organizations in regional and local-private institutional arrangements. Although the impact of these organizations is local, they are in a good position to connect actors and agencies on the regional scale (Cohen et al. 2012). Connecting actors from different geographical areas and from different jurisdictional scales and sectors also increases the opportunities for knowledge exchange (Olsson et al. 2004; Cudney-Bueno and Basurto 2009; Cohen et al. 2012).

While understanding the characteristics of institutional arrangements that support collective action for sustainable resource management has been a topic of interest for decades (Ostrom 1990; Agrawal 2001; Cox et al. 2016), many of those research efforts have been mainly focused on extractive and open resource systems (e.g., fisheries and forestry), with fewer studies inquiring about the attributes of the institutional arrangement for effective conservation and MPA governance. Ostrom's institutional design principles point out design attributes that, despite being mainly based on extractive systems, are related to some of the key characteristics that enable governance principles in Colombian MPA

institutional arrangements. For instance, community involvement and livelihood opportunities are related to principles of collective choice and congruence between appropriation and provision rules and local conditions.

Other aspects underpinning the performance of institutional regimes, such as the characteristics of the resource system (type and state of the marine resources) and of the social system (social capital, organization capacity, leadership, and relationships among stakeholders) are also key in the performance of MPA institutional arrangements (Agrawal 2001; Cox et al. 2010). The characteristics of both the resources system and the social system determine the likelihood of the marine ecosystem to support sustainable use activities while contributing to conservation purposes, and of the stakeholders to cooperate and comply with rules.

The analysis of institutional arrangements in MPAs presented here goes beyond the identification of key features or 'institutional principles' supporting resource sustainability and/or conservation. This study demonstrates the fine balance between institutional arrangements design, implementation, context characteristics, and ultimately, in governance and conservation outcomes.

6.7 Conclusions

Although the extrapolation of results based on Colombian MPAs to other geographical areas and contexts must be done carefully, three main lessons can be extracted to enhance the governance of MPAs:

- Promote the diversity of institutional arrangements at different scales: more tailored, flexible, and based on social-ecological characteristics that support community involvement and actor interactions.
- Identify and support key individuals and local NGOs with the potential to link and bring together different actors.
- Facilitate partnerships that provide opportunities to connect stakeholders and maximize capacity and financial resources.

The analysis of MPA institutional arrangements in the four cases studied here shows that the opportunities for community involvement and actor interactions help to reduce the gap between *de jure* and *de facto* principles of governance and provide better conditions for fostering and enhancing governance. For instance, community participation in mangrove restoration and consultative meetings increases *de facto* legitimacy in regional MPAs. Similarly, job and training opportunities offered in the Private Natural Reserve Sanguare to local communities enhance not only the legitimacy of the institutional arrangement but also equity.

Likewise, less hierarchical institutional arrangements that integrate participatory mechanisms, such as the regional DRMI Ciénaga de la Caimanera and the local/private PNR Sanguare, facilitate cross-scale interactions among stakeholders and create conditions for the appearance of key individuals and linking organizations that aid in improving governance. These types of institutional arrangements are better suited than national

institutional arrangements for enabling adaptive capacity, knowledge and learning, and equity.

Yet, a cautionary note with respect to the role of national institutional arrangements is necessary. As Duit and Galaz (2008) point out, in cases of fast change and high unpredictability (e.g., oil spills or floods), government-led approaches may, at least in theory, deal better with complexity. Combining diverse institutional arrangements and building or strengthening partnerships may help to deal with uncertainty and fast change. The crucial role of key individuals and linking organizations in supporting governance is vulnerable when it depends on just one or a few key individuals (Galaz et al. 2008). Therefore, the flexibility and adaptive capacity found in regional and local institutional arrangements are still underpinned by vertical structures of the authority in charge.

To strengthen key aspects of governance and decrease vulnerability of the governance system, both current and new individuals and organizations should be supported, and linkages between regional authorities and community organizations should be enhanced. Vertical and horizontal linkages and interactions need to be increased to better connect national and regional MPAs, scaled down to connect local communities, and scaled out to integrate private and academic organizations among other key partners.

Chapter 7 Conclusions

This chapter summarizes the main findings of this research, as well as its theoretical and empirical contributions. This chapter is organized as follows: first, the goal and purpose of the research are reviewed, followed by a summary of the main findings, research limitations, and an outline of practical and theoretical research contributions. Then, recommendations, opportunities for future research, and final thoughts are presented.

7.1 Thesis Summary

This research was carried out with the goal of developing a better understanding of marine protected areas governance, and specifically to identify the opportunities for, and constraints on, shifting top-down governance approaches to more inclusive and participatory modes of governance with a focus on Colombia.

This doctoral research inquired about governance change in MPAs under top-down models with a special focus on key elements or components of the governance system and interactions among them that influence effectiveness and equity aspects in MPAs.

Four specific objectives guided this research:

1. To characterize MPA governance systems and examine key elements of governance (formal and informal rules, participation mechanisms, organization capacity, and territorial rights, among others) and interactions among them;
2. To identify barriers and opportunities for MPA governance and to make recommendations for improving governance;

3. To explore the implications and opportunities of territorial rights for shifting current MPA top-down approaches to more inclusive and participatory modes of governance; and
4. To examine key principles and aspects of governance in different MPA institutional configurations and assess conditions that facilitate or prevent their occurrence.

The characterization of the governance system in MPAs (objective 1) facilitated the identification of barriers that limit MPA governance and opportunities to move toward more participatory modes of governance (objective 2). Both objectives were addressed in Chapter 4. A comprehensive exploration of community territorial rights as a potential opportunity for transitioning from top-down toward shared governance was undertaken in chapter 5. Exploring how MPA institutional arrangement configurations facilitate or constrain the implementation of governance principles was fully undertaken through chapter 6. The analysis presented in chapter 6 identified key characteristics of institutional arrangements that facilitate governance.

This research used a case study approach that included four marine protected areas located in the Gulf of Morrosquillo in the Caribbean of Colombia. Each of the MPAs is managed through different arrangements with different characteristics, including national and regional jurisdiction, private and government management bodies, and no-take and multiple-uses. The study sites share their biogeographical location and have similar socio-ecological characteristics. The case-study approach facilitated the examination of MPA governance in the region, as well as exploring particularities associated with different institutional arrangements and socio-cultural processes that underpin the overall MPA governance. The use of qualitative tools assisted in getting a comprehensive understanding

of the underlying issues and intricacies in determining the governance process in the studied MPAs. Data collection methods included semi-structured interviews (n=69 in total), focus groups (n=6), document analysis, and direct observation. Documents were analyzed using latent content analysis and an interpretive approach. Semi-structured interviews were conducted with key informants from two main groups: community leaders and resource users (fishers, mangrove harvesters, and tourism operators), and key informants from environmental authorities (the National Park System and regional environmental authority), NGOs, and research institutes. Focus groups were carried out with key community representatives from each of the coastal villages within or next to the selected MPAs.

Data analysis was carried out through content analysis that included inductive/deductive coding. Semi-structured interviews and focus group were coded using the free software for qualitative data analysis, RQDA, and the mind-mapping software, Docear, was used to re-arrange codes and visualize patterns and categories.

Chapter 4 provides a characterization of the MPA governance system and identifies barriers and opportunities for MPA governance. This analysis corresponds to objectives 1 and 2 (See table 7.1 for a summary of findings). The analysis presented in chapter 4 identifies that international conventions and guidelines have been instrumental in leading marine conservation efforts in Colombia and influencing national policies. The integration of local communities in conservation efforts, for instance, responds to the change in the conservation paradigm outlined in the World Parks Congress of 2003, and the improvement in conservation outcomes through planning tools, as well as the emphasis on achieving the

overall effectiveness of MPAs aligned with the Convention on Biological Diversity, particularly Aichi Target 11.

Table 7.1 Summary of findings

	Objective	Key findings
Chapter 4	1. To characterize MPA governance systems and examine key elements of governance (formal and informal rules, participation mechanisms, organization capacity, territorial rights among others) and interactions among them,	• MPA management in Colombia is influenced by international conventions and guidelines (e.g., World Parks Congress, CBD, Aichi target 11). • MPA establishment follows mainly a top-down government-led approach and national and regional MPAs management is designed and conducted by government authorities. In the case of Private Natural Reserves like Sanguare management, design, and implementation are carried out by the Reserve's staff. • Most of the MPAs studied here were created without community participation or consultation. Only in the DRMI Ciénaga de la Caimanera where sustainable use practices are allowed, the community has had more interaction with the environmental authority in charge of the area. • Through the Parks and People Policy islander communities within the National Natural Park Corales del Rosario and San Bernardo interact with the parks authority through environmental education activities and ecotourism. • The levels of community organization and capacity are diverse among the studied MPAs. Fishing practices are intense and in many cases unsustainable.
	2. To identify barriers and opportunities for MPA governance and to make recommendations for improving governance,	• Barriers for MPA governance are linked to government and communities issues (lack of institutional capacity and consensus among organizations, lack of participatory mechanisms, high resource dependency, erosion of self-regulation of fishing practices, limited community organization, among others). • Main efforts for improving MPA management and governance should be focused on achieving consensus; maximizing technical, financial, and organizational capacity; and creating alternative livelihood opportunities for local users while facilitating resource recovering. • Opportunities for enhancing governance include existent partnerships among local community organizations, NGOs, and private industries. These partnerships together with social capital are key foundations for building resilience, bridging organizations, and maximizing capacity. International interventions need to be contextualized to effectively drive national marine conservation efforts and improve capacity. • The recognition of afro-descendant territorial rights is a key opportunity to involve resource users in conservation and sustainability initiatives.

	Objective	Key findings
Chapter 5	3. To explore the implications and opportunities of territorial rights for shifting current MPA top-down approaches to more inclusive and participatory modes of governance	• Afro-descendant rights recognition gives a voice to ethnic communities as political actors and provides a means to recognize them as key stakeholders in MPA planning and management. • Rights recognition also implies sharing management decisions and responsibilities among government and communities. • Building trust between government, communities, and other actors as well as enhancing social capital, and reinforcing environmental awareness and customary practices would be necessary to use this opportunity to move toward shared governance. • Current country development goals, high population density, and resource degradation represent challenges for the effective use of territorial user rights and customary practices as a strategy for enhancing marine governance.
Chapter 6	4. To examine key principles and aspects of governance in different MPA institutional configurations and assess conditions that facilitate or prevent their occurrence.	• Regardless of the predominantly top-down and government-led governance approach followed in Colombia, different institutional configurations give rise to diverse interactions among actors, including formal and informal institutions. Key principles of governance occur also in different forms depending on the characteristics of institutional arrangements. • There is a difference between *de jure* and *de facto* occurrence of principles/aspects of governance between institutional arrangements. For instance, although the regional and national MPAs studied were established by the government the community perceived accountability and legitimacy are low. • Institutional arrangements facilitating interactions among stakeholders and providing livelihood opportunities for communities increase accountability, legitimacy, participation, and knowledge exchange opportunities. • Less hierarchical institutional arrangements integrating participatory mechanisms and facilitating cross-scale interactions among stakeholders were found to be more adaptable to local social-ecological characteristics. This type of institutional arrangement was also found to be more propitious for the appearance of key individuals and linking organizations which have a crucial role in building trust and social capital and in improving the overall quality of governance.

MPA system development in Colombia has been reinforced by these policies; however, governance barriers related to government and community spheres constrain conservation outcomes. These barriers (lack of institutional capacity and consensus among organizations, lack of participatory mechanisms, high resource dependency, erosion of self-regulation of fishing practices, and limited community organization, among others) show the need to integrate efforts and capacities from different actors (community, government,

NGOs, academia, and the private sector) and build trust between actors. These actions are necessary to achieve consensus, maximize technical, financial, and organizational capacity, and create alternative livelihood opportunities for local users while facilitating resource recovery.

Overcoming other governance barriers, such as violence, paternalistic approaches, and the current state of environmental resources requires nationwide policy changes. Recent peace negotiations between guerilla groups and government, as well as active environment versus development debates, which have recently gained momentum in Colombia, provide opportunities for dealing with such barriers (Baptiste et al. 2017).

The analysis of opportunities for enhancing governance pointed to partnerships between local community organizations, NGOs, and private industries, as well as some level of social capital as a key foundation for building resilience, bridging organizations, and maximizing capacity. International interventions need to be better adapted to national realities in order to propel national marine conservation efforts and improve capacity.

One relevant opportunity for improving governance, as identified in chapter four, is the recognition of territorial rights for ethic minority groups. This is an opportunity at the government level, however, because territorial rights claims require a community organization and ethnic community self-identification, it also represents an opportunity at the community level for improving social capital and community empowerment.

Territorial rights claims processes in Colombia, other countries in Central America (Nicaragua, Honduras, and Salvador), and elsewhere are driving changes in community

organization and leadership relevant for environmental governance (Brondo and Woods 2007; Brondo and Bown 2011). These aspects are examined in Chapter 5.

In Chapter 5, the third objective of the thesis is undertaken. The chapter examines the implications of collective territorial rights for MPA governance and the opportunities available to shift from top-down to shared governance approaches. Indigenous and afro-descendant territorial claims have increased in recent decades in Latin America. Although ethnic territorial rights claims in Colombia obey mainly a political objective, given the levels of dependence of these ethnic communities on natural resources and their attachment to the territory, territorial rights are, in these cases, strongly linked to natural resource governance. Lessons drawn from the study of implications and opportunities of territorial rights claims for marine governance are highly relevant to processes taking place in Latin American countries where afro-descendant indigenous people are fighting for their territorial rights, and where these processes are often intertwined with rights to get control and make decisions regarding the management of the territory and its resources (e.g., control over tourism revenue; see Brondo and Woods 2007; Brondo and Bown 2011; Bown et al. 2013).

The analysis of community territorial rights in Colombian MPAs indicated that rights recognition is crucial in order to give a voice to ethnic communities as political actors; therefore, it becomes a means to recognize them as key stakeholders in the planning and management of marine protected areas and other natural resource management interventions. This recognition also implies sharing management decisions and responsibilities among both government and communities. Building trust between

government, communities, and other actors, as well as enhancing social capital and reinforcing environmental awareness and customary practices are, however, crucial aspects required to move toward shared governance.

Current country development goals, high population density, and resource degradation may pose challenges for the effectiveness of territorial user rights and customary practices as a strategy for enhancing marine governance. Static and prescriptive management tools rooted in top-down approaches need to be replaced by more adaptable, flexible, and creative tools that take into account social-ecological linkages and diverse forms of knowledge. In order to move towards more integrative and participatory modes of governance, there is a need to find institutional arrangements that facilitate the integration of social and conservation goals.

Chapter six responds to the fourth objective of the thesis: to examine the key principles and aspects of governance in different MPA institutional configurations and assess conditions that facilitate or prevent their occurrence. The chapter analyzes four different configurations of institutional arrangements, as well as how such configurations contribute to the occurrence of key principles of governance.

The analysis of different institutional arrangements provided guidance regarding the needs and next steps for improving governance through management configurations where key governance principles and other aspects can be facilitated. In Colombia, regardless of the predominantly top-down and government-led governance approach, different institutional configurations give rise to diverse interactions among actors, including formal

and informal institutions (elements of governance). The key principles of governance also occur in different forms, depending on the characteristics of institutional arrangements.

The findings indicate that there is a difference between *de jure* and *de facto* occurrences of the principles of governance between institutional arrangements. For instance, although the regional and national MPAs studied were established by the government, the community-perceived accountability and legitimacy is low. However, institutional arrangements that facilitate interactions among stakeholders and provide livelihood opportunities for communities increase accountability, legitimacy, participation, and knowledge exchange opportunities. Ultimately, less hierarchical institutional arrangements that integrate participatory mechanisms and facilitate cross-scale interactions among stakeholders were found to be more adaptable to local social-ecological characteristics. This type of institutional arrangement was also found to be more propitious for the appearance of key individuals and linking organizations that have a crucial role in building trust and social capital and in improving the overall quality of governance. The major lesson extracted from the analysis of institutional arrangements is that prescriptive models are restrained by socio-ecological characteristics, and the outcomes are difficult to predict; therefore, tailored, flexible, and social-ecological system-based approaches are better suited to adjust to the unique and frequently changing characteristics of governance processes.

7.2 Research Limitations

The identification of research limitations helps to understand the scope of the findings and how they may be applied. This section points out main limitations encountered in this

research, related to the representativeness of participants, the limitations of understanding and capturing the governance process at one point in time, limitations to understand differences among actors' perceptions regarding MPAs effectiveness, and limitations on the extrapolation of the results.

The representativeness of communities and experts from organizations that took part in this research is difficult to determine. Generally, the leaders are easily identified with the help of community members and organizations because they are well known; however, they do not necessarily represent the overall community voice. As this research included a diverse range of participants from the community, as well as key informants from government and non-governmental organizations, and saturation was reached, I am broadly confident in the findings. However, it is possible that other important voices—and perhaps ones with different views—have not been heard.

A second limitation relates to the fact that the information collected for this research represents (roughly) one point in time. Although historical information was collected and analyzed, there are limitations in regards to the validity of the findings in time. Political turmoil, the current peace process in Colombia, and exacerbation of environmental decline linked to climate or anthropogenic causes may modify the current governance dynamic in the study site, thus changing the conservation and MPA governance panorama.

A third limitation is associated with the difficulty to inquire about actors' perceptions on MPAs effectiveness. Understanding how the meaning of MPA effectiveness varies among different stakeholders according with their own worldviews and interests can help to better understand governance interactions and the motivations for decisions and choices in

relation to resource use practices. Some communities in the case study have little knowledge about the MPAs (boundaries, restrictions, objectives) in the region. When conducting interviews, it was found that some participants did not know that there were MPAs in the region and that the places where they go fishing were located within an MPA. So data collection regarding actors' perceptions about MPA effectiveness was limited by the little knowledge that participants had about the MPAs in the region.

Finally, the extrapolation of research findings, even to other regions of Colombia, is restricted by context characteristics and processes that are modulated by a unique combination of social and ecological conditions, such as recent afro-descendant community organization, a long history of disempowerment and violence in the region, high levels of resource exploitation and the influence of market systems, among others. Therefore, although general insights from this research may be used for analyzing governance in other natural resource systems and for identifying options for shifting unsuccessful governance approaches based on top-down approaches, they must be used while thoroughly keeping in mind the social-ecological characteristics of the system of interest.

7.3 Contributions of the Research

7.3.1 Practical Contributions

This research contributes to expanding the knowledge of MPA governance in Colombia, as well as other countries in Latin America with similar processes and contexts. This research provides an overview and analysis of the Colombian MPA system and the main institutions that modulate the system. This is important as it facilitates comparisons between MPA system processes in other countries with similar contexts, and provides key

insights on what works or does not work in order to advance MPA system implementation (Horigue et al. 2016).

The effectiveness of MPAs is a crucial part of the CBD and Aichi goals. There is no point in increasing MPA numbers if they are not achieving the objectives they were created for, or even, on the contrary, are exacerbating social conflicts and demanding technical and financial resources. Thus, assessing and improving the effectiveness of MPAs is fundamental for achieving conservation and sustainability outcomes. The evaluation of PA governance in different contexts is a global need, and a "short- and medium-term priority" for enhancing conservation policies and outcomes (Borrini-Feyerabend et al. 2014, p 22). In that sense, this research provides an empirical approach and offers a way to operationalize governance analysis in MPAs, helping to determine what needs to be improved as well as insights on how it can be done. This research also contributes to providing a detailed analysis of MPA scenarios under top-down governance, and the challenges associated with such a governance approach in the context of Colombia, which is similar in other Latin American MPAs. Moreover, this analysis provides insights (e.g., opportunities and challenges associated with TURFs for MPAs) for moving from traditional top-down governance approaches toward modes of governance that recognize key stakeholders and take into account the influence of socio-economic factors in the performance of MPAs.

This research provides a baseline for knowledge in relation to MPA social-ecological linkages, as well as crucial interactions for the planning and management of effective MPAs. Although in recent years a considerable amount of cooperative research has been undertaken in the central Caribbean for scaling up MPAs (e.g., Alexander 2015, Bustamante

et al. 2014, Turner et al. 2014, McConney and Pena 2012)—mainly in small and developing island states—countries from the southern Caribbean have not been integrated into these processes, and less research has been undertaken on social and governance issues. Thus, the results of this research expand the knowledge of both the social and governance dynamics of MPAs in the southern Caribbean, providing opportunities to connect MPA conservation efforts to the larger Caribbean. Empirically characterizing governance interactions and linkages with marine conservation outcomes in MPAs dominated by top-down governance approaches is another contribution. Although the findings of this research are mainly useful for improving MPA governance in Colombia, the insights for shifting top-down governance towards more inclusive approaches are useful for MPAs in similar contexts in Latin America and the Caribbean.

The identification of opportunities and barriers, as well as recommendations for bringing together different elements of governance to enhance marine conservation and sustainability outcomes in MPAs, provides realistic guidelines for practitioners involved in MPA planning and management. The analysis of the implications of afro-descendant territorial community rights in the marine context contributes to anticipating the challenges of applying TURFs as a complementary management tool in MPAs. Most importantly, this analysis contributes to finding normative alternatives that involve local communities in MPA planning and management, as well as to shared responsibilities that change paternalistic attitudes and empower communities. The recognition of territorial rights for islanders and coastal continental afro-descendant communities creates the need to adopt a shared governance approach between the government and communities. Shared

governance has been previously explored as a solution for improving fisheries management in Colombia (Camargo et al. 2009; Moreno and Maldonado 2010; Saavedra-Diaz et al. 2015) and elsewhere; however, in the case of MPAs, there are normative restrictions for conceding marine rights. This research analyzed territorial rights as a mechanism to address that issue, and examined the underlying issues of the implementation of afro-descendant community rights. Thus, this analysis contributes to elucidating the opportunities and needs for using TURFs in a shared governance approach and for transitioning from top-down to shared governance in MPAs. The debate on granting marine territorial rights is controversial but much needed in Latin-American countries where, regardless of the strong human-nature interactions around marine resources and the low enforcement capacity, the State has total control over the sea. Finally, aligned with research needs as pointed out in a recent literature review of TURFs research (Nguyen Thi Quynh et al. 2017), this research contributes to elucidating the impact of context characteristics in the viability and effectiveness of using territorial rights for improving marine resources sustainability.

7.3.2 Theoretical Contributions

Overall, this research contributes to a better understanding of MPA governance and, specifically, both the means of and adaptation of top-down approaches to improve the performance of MPAs. This research particularly provides insights into addressing equity issues and enhancing MPA governance effectiveness in Colombia, which are major challenges in achieving the Aichi Target 11 and for marine conservation overall. The Aichi Target 11 calls for increasing marine protected areas coverage through the establishment

of ecologically representative and equitably and effectively managed MPA networks by the year 2020. In meeting this target, many countries around the world have made progress in increasing MPAs coverage; however, assuring that new and previously established MPAs are effectively and equitably managed implies an additionally challenge, particularly in countries with developing economies where the management capacity is limited (budget and enforcement limitations) and where MPA systems follow top-down approaches.

The analysis of the governance system, its components, and interactions in MPAs in Colombia identifies the opportunities for, and challenges of, moving from top-down governance towards shared governance approaches, but also puts in perspective the implications of such a transition. A common argument in the protected areas literature is that shared governance approaches are more flexible concerning the accommodation of different management objectives and stakeholders' worldviews, for facilitating stakeholder participation, and for dealing with equity and effectiveness issues more thoroughly than a top-down approach. By better understanding the governance system and identifying opportunities and challenges to address MPA management effectiveness and equity aspects, this research contributes to advancing the protected areas governance literature, particularly in marine environments.

This research characterizes and assesses four different MPA governance systems that share similar context characteristics (history, policy, ecological and socio-economic features) and were established through a top-down approach. This characterization confirms that park managers' insufficient capacity for the enforcement of regulations, together with the lack of stakeholder's rights to participate in decision-making and the

sharing of management responsibilities, are the main barriers for improving MPA effectiveness and community equity. Thus, this characterization contributes to the MPA literature demonstrating how MPAs established through top-down governance approaches, without mechanisms for community participation, result as being ineffective in contexts where communities not only rely on resources from the area, but have a strong cultural attachment, as is the case in the community of El Islote in Corales del Rosario and San Bernardo MPA. This characterization indicates the need to find mechanisms for the improvement of MPA management capacity, the community's buy-in, and community participation in MPAs. This characterization also points out that limitations for MPA governance (e.g., limited rules compliance, enforcement capacity and community buy-in) are associated with the state of the resource system, an apparent erosion of traditional sustainable fishing practices, and socio-economic and the political characteristics of the context, which ultimately undermine governance and management.

The analysis of the governance context helps to anticipate potential problems in governance when designing and facilitating the establishment and management of MPA networks. Thus, knowing how governance contexts limit or facilitate MPA initiatives gives direction for the implementation of networks and helps to predict possible trajectories (Horigue et al. 2016). This research exposes the challenges in regards to MPA development and effective governance in complex contexts, such as Colombia where communities have a strong reliance on marine resources, a long history of armed conflict, high levels of poverty and government corruption, and low levels of customary management.

A second way this research contributes to how to move away from top-down and exclusionary MPAs approaches is exploring the potential role of community territorial rights for enhancing MPA governance. Particularly, examining how afro-descendant community territorial rights resemble Territorial User Rights in Fisheries (TURFs) and may provide mechanisms for community participation in decision-making and community assumption of responsibilities for managing marine resources in MPAs. TURFs have been fairly well-studied in fisheries management, but the role of TURFs in MPA governance is still understudied. In examining the potential role of Afro-descendant community territorial rights for MPA governance, we learned that territorial rights may provide the legal means for a community to be taken into account in MPA planning and management decision-making, and to assume responsibilities for sustainable resource management within MPAs. This analysis also brings attention to the challenges that need to be overcome in order to make territorial rights suitable for addressing MPA equity and management issues. Some of those challenges are associated with competing interests among different community groups (e.g., islander vs. continental communities) whose livelihoods rely on the same fishing sites, community distrust in government institutions and vice versa, and the lack of mechanisms and experience for communities to work with environmental authorities and other government agencies and to participate in decision-making for MPA planning and management.

The study of afro-descendant territorial rights and their implications and linkages with marine protected areas governance also helps with advancing knowledge in relation to the struggle over land and sea rights, sovereignty, indigenous rights, and human rights on the

Atlantic Coast of Latin America. Ethnic minorities' territorial rights claims in coastal and islander communities have become a key strategy for communities to be recognized as political actors. However, community territorial rights claims seem to go beyond mere access rights to natural resources, and instead are driven by decades (in some cases centuries) of human rights violations and racial clashes. Therefore, although territorial rights may be a useful mechanism for improving MPA governance and natural resource governance in general, without addressing the unresolved indigenous and other minority ethnic group issues, community territorial rights may likely increase the challenges for improving MPA governance.

The third way in which this research contributes towards looking for opportunities to improve MPA governance is through the analysis of different MPA scenarios and the examination of how variations in the characteristics of institutional arrangements influence governance attributes, such as legitimacy, equity, adaptativeness, and fit. This research brings together different perspectives on governance principles and key issues of governance from both traditional and modern governance perspectives, and provides a framework for evaluating governance through the use of this blend of perspectives.

The analysis of MPA scenarios illustrates that combining different institutional arrangements may be more effective than adopting single and prescriptive approaches. The differences in institutional arrangement configurations may nurture flexibility, trust among actors, and participation, thus creating more adequate arenas for stakeholders' negotiation and sharing. For instance, management arrangements, such as the Regional Integrated Management District Ciénaga de la Caimanera, where sustainable use of resources is

allowed and stakeholders' engagement mechanisms exist (e.g., community participation in ecological restoration and monitoring activities) facilitate attributes of governance such as legitimacy, accountability, and equity.

A governance perspective was used as a lens to study marine protected areas. In this task, this research contributed to the operationalization of governance as a tool to examine and understand marine protected areas, recognizing the intertwined nature of social and ecological components in marine protected areas and other resource management strategies. Borrini-Feyerabend et al. (2013), and Jones et al.'s (2013) frameworks, the methodological and analytical tools used here, serve as models for analyzing governance processes in MPAs through the observation and analysis of interactions and elements of governance. Using this governance approach, this research demonstrated that even under top-down and highly normative systems of MPAs, informal institutions play a major role in the final MPA governance and conservation outcomes. An example of this is that regardless of the park rules, *de facto* community access and use rights to marine resources determine fishing and other resource use practices within and around the MPAs. Similarly, key actors and personal relationships based on trust as opposed to stipulated interactions among stakeholders (community leaders and personnel from environmental authorities, private companies, and NGOs) influence people's willingness to collaborate and contribute to MPA management.

Ultimately, this research adds to the efforts of the ample existing research in commons resource management led by Ostrom and collaborators by exposing the challenges for the conservation and sustainable use of marine resources in MPAs. Challenges such as the lack

of basic human rights (e.g., livelihoods, water, sanitary services, health, and education), governmental corruption, violence (related to drug traffic and/or guerilla activities that undermine social capital and collective action), displacement, and immigration, among others, are not unique to Colombia, and are rather becoming more common in other countries of Latin America.

7.4 Recommendations

Based on the case study analysis, seven recommendations are suggested. These recommendations should be useful for improving MPA governance effectiveness in multiple contexts.

7.4.1 Political mandate that provides clear direction for MPA management

Although almost 50% of the Colombian territory corresponds to marine waters, the country's economic development has been mainly centered around continental activities. Consequently, the marine sector has received less attention. For instance, the Colombian fisheries policy Law 13 from 1990 does not completely address aspects of illegal fisheries, and in 2016, a debate in the Colombian congress concerning a new Bylaw to control illegal fishing was initiated. Thus, revising and updating fisheries management regulations in accordance with the new reality of the country and the fisheries' current conditions is an urgent need.

In regards to marine conservation, the main guidelines for the selection and establishment of MPAs in Colombia have been taken primarily from protocols applied to terrestrial ecosystems. In addition, there has not been a clear political mandate regarding

marine biodiversity conservation. Recent efforts to consolidate a subsystem of MPAs in Colombia have helped to develop tools for selecting and managing MPAs, and have increased awareness of marine conservation needs within the institutions involved in the marine sector. Yet, those efforts have been mainly driven by international mandates, such as the Aichi Target 11, and supported by international organizations (Global Environmental Facility, the Nature Conservancy, Conservation International, and WWF). To further support marine conservation and the progress made through the consolidation of the subsystem of MPAs, a political mandate inserted in the country's National Development Plan is needed. Such a political mandate should be backed up by a national policy stating the country's marine conservation goals and defining mechanisms to reach those goals. A marine conservation policy will not only provide a clear direction for planning and management efforts, but will also allocate resources for that purpose (Cvitanovic et al. 2014). Finally, the political mandate should not only consider international conservation compromises, such as Aichi Target, but should adequately adapt those compromises and priorities to the national context to ensure that they match local and national interests, needs, and realities.

7.4.2 Adopting a social-ecological system approach for designing, planning, and managing MPAs

MPA systematic planning tools (e.g., Marxan), developed and promoted by international NGOs in the last decades, have been instrumental in guiding conservation efforts in Colombia and elsewhere. Yet, socio-economic aspects and social-ecological linkages need to

be incorporated in the initial phases of MPA design. The use of planning tools based on a social-ecological system approach should identify marine conservation priorities more precisely, and take into account social and ecological costs (Ban et al. 2009; Carmargo et al. 2009). As suggested by Ban et al. (2009), data availability is usually a limitation in developing a comprehensive systematic plan that incorporates biophysical and socio-economic aspects; however, as demonstrated by Ban et al. (2009), in areas where ecological data is scarce, proxies for socio-economic costs (e.g., artisanal fisheries models, population density, and industrial fisheries) may provide better planning for MPA scenarios than models based exclusively on the limited ecological data.

A social-ecological system (SES) approach for designing, planning, and managing MPAs means identifying links between the ecological and socio-economic systems where MPAs are immersed, and taking them into account during all stages of planning, implementing, and managing MPAs. This task requires the use of an interdisciplinary approach and collaborative work among government agencies in charge of the subsystem of MPAs, such as the Special Unit of the System of National Natural Protected Areas, regional environmental authorities, research institutes, such as the Marine and Coastal Research Institute-Invemar, universities (Universidad del Magdalena, Universidad Jorge Tadeo Lozano, Universidad de los Andes, and Universidad de Antioquia, among others), as well as NGOs and communities.

7.4.3 Promoting meaningful community participation

The involvement of coastal (continental and islander) communities in Colombian MPAs is essential, particularly given their high reliance on marine resources for their livelihoods. However, community participation may entail different levels of involvement. Yet, in the case of MPAs, only through meaningful participation and engagement in MPA management decisions can stakeholders' concerns and needs be recognized and responsibility for the sustainable management of environmental resources be assumed. To achieve meaningful community participation, the first step is to identify and include all key stakeholders. In the case of the Corales del Rosario and San Bernardo Archipelagos, the identification of stakeholders before the creation of the park and the MPA was incomplete. Only recently, through the consolidation of afro-descendant community groups within the MPA, did the State identify these groups as stakeholders. Although this is a significant advancement, in order to nurture meaningful community participation, government agencies involved in resource management and marine conservation (e.g., the fisheries authority AUNAD, the regional environmental authority Carsucre, Parks authority, Ministry of Environment) need to create mechanisms to build community capacity and understand community differences (routines and lifestyles) and interests. Investing in social capital and leadership, basic infrastructure and development (income opportunities), as well as environmental awareness are also crucial actions for fostering collective action and community involvement in MPA management decisions and for assuming responsibilities in relation to resource use practices. Although assuring community participation should be a task for the

environmental authorities in charge of the MPAs, capacity, expertise, and financial support from NGOs and universities is also essential.

7.4.4 Creating new partnerships and strengthening the existing ones with diverse partners

Partnerships have a fundamental role in reducing financial and institutional gaps while supporting legitimacy, accountability, and trust among stakeholders. Collaboration among key stakeholders and support provided by partnerships may change command and control authority's attitudes and nurture the community's disposition to assume responsibility for sustainable marine resource management. As shown in this research, local NGOs, such as Funsabanas, help to improve communication between the environmental authority and communities. This kind of partnership among regional authorities such as Carsucre, local NGOs (which can play the role of boundary organizations), and communities may help to connect and bring together stakeholders with divergent worldviews and interests.

To maximize the opportunities related to partnerships, they should include a diverse set of actors, including universities (e.g., Universidad de los Andes), the private sector (e.g., Ocensa), grassroots groups, governments (Parks authority and regional environmental authorities such as Carsucre), and community associations, among others. Because MPAs in Colombia follow a top-down governance approach, there have been few opportunities for promoting partnerships; however, the network created through the collaborative work among NGOs and government agencies involved in the consolidation of the subsystem of MPAs may represent an opportunity for a starting point to build up those partnerships.

7.4.5 Promoting sustainable resource harvesting practices

Despite steady gross domestic product (GDP) growth in Colombia during the last decade, almost 50% of the Colombian population lives below the poverty level, particularly in rural areas (Singh 2013). Moreover, Colombia is ranked as the seventh highest country with the most unequal income distribution in the world, and the second among Latin American countries (Singh 2013; World Bank 2016). Globally, it has been found that rural areas where community livelihoods rely mainly on natural resources often coincide with biodiversity hot spots, but also within the areas with the highest biodiversity loss rates (Barret et al. 2011). Thus, poverty and biodiversity loss are frequently intertwined (Barret et al. 2011) and Colombia is, by no means are an exception.

Strategies to tackle the poverty-biodiversity loss issue are often based on the paradigm that if a community's livelihoods are improved, natural resources will be conserved. Although new livelihood opportunities to reduce the increasing reliance on marine resources are needed in Colombian MPAs, the possibility that the improvement of community's livelihoods does not directly or necessarily translate into the adoption of sustainable fishing practices or the halting of resource harvesting needs to be considered. As demonstrated by Brashares et al. (2011), changes in resource harvesting practices, such as bush meat consumption, are not only associated with the improvement of livelihoods, but also with factors such as distance to markets, prices, food preferences, and opportunity costs. Therefore, livelihood opportunities alone do not guarantee a reduction in resource use harvesting or the adoption of sustainable use practices.

Accordingly, although creating new livelihood opportunities for communities—as well as better access to basic rights—is required, there is also a need to foster sustainable use practices among communities within and around the MPAs. In this regard, the National Park System has made some progress: through the Parks and People program, it has engaged islander communities within the MPA in environmental awareness activities and supported the community in order to provide services to tourists. However, there is still a need to further support these activities and involve all continental and islander communities both within and in the adjacent zones to MPAs, as well as to promote mechanisms that align with sustainable harvesting practices to help increase the value of marine resources. The regional environmental authority Carsucre and the national fisheries authority AUNAD could join efforts with the national parks authority to promote such sustainable harvesting practices.

7.4.6 Promoting diversity of institutional arrangements

Findings from this research suggest that institutional arrangements that operate at different scales, that are tailored and flexible, and that support community involvement and actor interactions provide conditions for nurturing legitimacy, equity, and adaptive capacity. Particularly, institutional arrangements that offer community involvement and livelihood opportunities and operate under less complex hierarchical clusters may fit better with socio-ecological characteristics than centralized arrangements that do not offer any opportunities for community involvement and require the coordination of various agencies in order to create and implement daily management decisions (see chapter 6 p. 211).

Even though, in Colombia, the establishment and management of MPAs follow mainly a top-down government-led approach, decentralized MPA arrangements, such as Regional Integrated Management Districts (DRMI) and Private Reserves that allow some sustainable use practices in combination with centralized and no-take institutional arrangements provide management scenarios that can be much more flexible and increase opportunities for nurturing key governance principles.

The strategy of combining different management arrangements has been used in recent years to establish at least three new MPAs in Colombia. These MPAs are located in culturally-sensitive areas where minority ethnic groups live and depend on marine resources. Regardless of the challenges of coordination and collaboration between the National Park System, regional environmental authorities, and the communities that this approach requires, fostering such a mosaic of institutional arrangements is certainly a strategy that the National Park System should foster for addressing MPA equity, effectiveness issues, and to improve governance.

7.4.7 Identify and support key individuals and local NGOs with potential to link and bring together authorities, communities, and other key actors

Key individuals and local NGOs can, in many cases, play an important role in bringing together communities and authorities and facilitating dialogue between them. This function is key for strengthening the linkages between regional authorities and community organizations, and for decreasing the vulnerability of the governance system.

Although very few NGOs working on environmental topics were identified in the studied MPAs, it was found that the existence of NGOs (e.g., Funsabanas, Maria Mulata) is a point of reference for communities and environmental authorities, and contributes to promoting and supporting community organizations, community leaders, and environmental awareness. These NGOs are based in the region, which apparently is a key factor in facilitating the interaction and close relationship with community representatives and environmental authorities. Supporting local NGOs in the region and identifying key actors with the ability to bring together different stakeholders is desirable to build trust among and within communities and environmental authorities and to enable dialogue and participation.

7.5 Future Research

A governance perspective offers multiple opportunities as an analytical framework for understanding social-ecological linkages and interactions in natural resource systems. This approach may provide practical insights for achieving conservation, sustainability, and human wellbeing. The governance perspective applied in this research is useful for examining top-down MPAs with high human interactions.

Future research should be focused on deepening the understanding of key governance barriers, as well as mechanisms to overcome them and improve governance. For instance, examining the role of women in governance may provide insights for enhancing MPA governance. Although this research intended the inclusion of both male and female participants, activities related to marine resources management and use in the case-study

areas were mainly conducted by males, resulting in a low participation of females in interviews. In this case-study, women were generally involved in post-capture activities, such as fish preparation and commercialization. Inquiring further into how these activities, mainly performed by women, affect governance might provide useful information for improving MPA governance. This knowledge gap was recently pointed out by Harper et al. (2017), who identified that the contribution of women to fisheries has been overlooked. The authors suggest that a broad definition of fishing activities and a better understanding of gender roles in marine resource management are needed to improve sustainable resource management policies.

Another important area of research is the study of network configurations and interactions. Governance network analysis has been demonstrated as a useful tool in identifying the existence and role of bridging organizations in governance outcomes (Berdej and Armitage 2016), as well as supporting governance transitions (Alexander and Armitage 2015). Examining how MPAs within the same region, or differing regions, are or can be integrated and contribute to improving governance overall will provide key information for improving the MPA system governance. A governance network analysis might be used to conduct such an examination.

Further analysis of which conditions nurture the appearance and permanence of key individuals, as well as linking organizations, is a topic that deserves further attention in order to learn how such conditions can be promoted in MPAs. Research that focuses on how the independence to choose how to manage resources influences stakeholders' decisions

and willingness to collaborate may shed light on how to improve collective action in local communities where customary management has been eroded.

Finally, ethnographic research focusing on achieving a deeper understanding of customary practices is necessary for supporting the integration of customary practices and territorial fishing user rights in MPAs. In the case of the communities around or within the MPA studied in this research, the identification of existent or lost customary resource use practices and the reasons why these practices have been developed, maintained, or lost, may provide the basis for recovering them or supporting the development of resource use practices that are coherent with communities' worldviews and interests that, at the same time, contribute to conservation and sustainability purposes.

7.6 Final Thoughts

Important efforts to promote the creation of marine protected areas for pursuing marine conservation and sustainability of marine biodiversity are underway in Colombia. These efforts are mainly framed by the consolidation of a subsystem of marine protected areas through which planning tools and institutional arrangements have been incorporated and new MPAs have been established. The consolidation of the subsystem of marine protected areas has been an initiative supported by international funding provided by the Global Environmental Facility (GEF) between 2011 and 2016. This initiative aligns with the goals of Aichi Target 11, protecting marine biodiversity and ecosystem services through representative and well-connected networks of MPAs. Yet, the Aichi Target 11 not only calls for expanding the network of ecologically representative MPAs, but also emphasizes that

MPAs need to be effectively and equitably managed. The fact that most of the Colombian MPAs, such as the ones studied in this research, overlap with fishing areas that local communities rely on creates conflicts that undermine social equity and the effectiveness of the areas in protecting marine biodiversity. Although MPAs established in the last decade in Colombian cultural sensitive areas (e.g., the Bahia Portete MPA established within the territory of the indigenous group Wayuu, MPAs established in places that overlap with afro-descendant territorial areas in Acandi in the Caribbean, and Bahia Malaga in the Pacific region) have intended to address these issues through the use of various institutional arrangements (combining no-take and multiple-use MPAs), equity issues and ineffective sustainable practices are still a major concern in older MPAs established without taking into account socio-economic and cultural aspects.

MPAs shortcomings in achieving effective governance are not only related to the ineffective implementation of participatory mechanisms and the lack of integration of context characteristics. The current participatory Policy Parks and People is framed within a top-down approach omitting the explicitly inclusion of stakeholders in MPA planning and management activities.

Resolving conflicts and negotiating different interests in new and old MPAs require the active participation of key stakeholders, which under top-down schemes is not feasible.

Even though some types of institutional arrangements may create opportunities to enhance MPA governance (e.g., Private Natural Reserve Sanguare, Regional Integrated Management Districts-DRMI Ciénaga de la Caimanera, which include some opportunities

for resource use), these institutional arrangements are framed in a top-down context, and mechanisms for community participation are not explicitly defined, or are insufficient.

Although top-down governance approaches may work in some circumstances (Jones et al. 2013), in the Colombian context a shared-governance approach may offer a more viable scenario to reflect and put into action new conservation tendencies.

The current top-down approach needs to shift towards a participatory and inclusive model that provides mechanisms to incorporate stakeholders' interests and needs and to deal with conflict. Otherwise, the subsystem of MPAs in Colombia may increase in protected areas coverage, but the lack of effectiveness and equity will only be exacerbated.

Although the recognition of territorial rights for afro-descendant communities within and around MPAs offers an important opportunity for supporting a shift of governance approach, there are crucial barriers that need to be overcome. Some of these barriers include the incipient community organization, the erosion of self-regulatory fishing practices, and the potential conflict among both islander and continental communities competing for fishing rights within the same area. In contexts such as Colombia, with a long top-down system management tradition, there is a risk that devolving or sharing power and achieving equity can fail if community elites and leaders take advantage and community voices are not widely and meaningfully incorporated (Béné and Neiland 2004; Berkes 2010). Different levels of community organization capacity and leadership skills among members in the communities studied are clearly a factor influencing their access to funding, training, and participation opportunities.

Lack of coordination and consensus among government institutions, environmental authorities' mindsets rooted in command and control paradigms, limited technical and financial capacity, and a history of conflictive relationships between the environmental authorities and communities limit current MPA governance in Colombia. All these barriers add complexity to a governance shift. Therefore, many structural and behavioral changes at both the government and community level are required in order to achieve success in shifting the MPA governance approach.

To facilitate this, reinforcing existing partnerships between the government, NGOs, the private sector, and communities, as well as building new partnerships to enable cooperation between the authorities and communities are necessary. Local and national NGOs close to the communities have the potential to reach them and bring them and the environmental authorities together. A major role of academic and research institutions in developing long-term participatory action research projects will also foster community capacity, bridging traditional, local, and scientific knowledge, and producing innovative alternatives for management and livelihoods.

Ultimately, dealing with the challenges associated with the dynamic process of governance and the transition towards a more inclusive and participatory mode requires more than new policy and laws. Only through *de facto* collaboration between government and communities, and the identification of common objectives, will a governance shift be possible and suited to equally accomplish conservation and social goals.

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Appendix A. Information Letter

Date

Dear _____

Date

Dear _____

I am a doctoral student in the Department of Geography and Environmental Studies at Wilfrid Laurier University (Canada). The purpose of my research is to identify opportunities and constrains for bringing together coastal communities and government authorities for advancing current management approaches toward more collaborative and integrative arrangements that improve conservation and social outcomes in marine protected areas (MPAs) of Colombia.

To complete this research, I will conduct interviews with representatives of environmental authorities, non-governmental organizations, research institutes, and local communities' members related to marine and coastal resources management.

You are invited to participate in this research as an interviewee. Participation is voluntary and if you accept to take part on this research you can decline to answer any question or withdraw from the study in any moment without any consequence. If you decide to withdraw from the study, the information that you provide will not be included in the research and will be destroyed. The duration of the interview is approximately two hours. Date, time and place will be arranged at your convenience.

With your permission the interview will be audio recorded for facilitating the data collection and analysis. If you do not want to be audio recorded, notes will be taken to register the information. If you agree to be audio recorded, the interview will be transcribed for further analysis. A code will be used instead of you name to identify the interview. Your name will not appear associated with the interview in any moment. Codes will be keep in a separate file from the transcriptions and to access it a security password will be needed. Taking part in this research does not have any anticipated risk for you or family. If you have any question or concern about the interview procedure or the research you can contact me to the e-mail rami9920@mylaurier.ca or phone number 313-651-6881.

This project has been reviewed and approved by the University Research Ethics Board. If you have any complain, feel you have not been treated in agreement with the information specified in this letter, or your rights as participant have not been recognized in this project , you may contact my supervisor Professor Scott Slocombe (Department of Geography and Environmental Studies, Wilfrid Laurier University) at the phone number 1(519) 884-0710 x2781or e-mail sslocomb@wlu.ca, or Dr. Robert

Basso (Chair, University Research Ethics Board, Wilfrid Laurier University) at the phone number 1(519) 884-1970 x5225 or e-mail rbasso@wlu.ca.

The information obtained through interviews and focus groups will be used in my PhD dissertation and may also be used in scientific publications as well as part of presentations in national and international conferences. It is anticipated that research results should be available for April 2015. The key findings of this research will be accessible to local communities, environmental authorities, and other stakeholders interacting with marine protected areas and adjacent areas. To facilitate this, I plan to present the key findings in an open meeting in each study site. In case you would like to be formally invited to this meeting and receive further detail of the results, you might provide your contact information at the end of the interview.

Luisa Ramírez, PhD Candidate
Department of Geography and Environmental Studies,
Wilfrid Laurier University, Waterloo, Ontario
75 University Avenue West, Waterloo, Ontario, Canada N2L 3C5

Appendix B. Consent Form

I have read the information letter about the research being conducted by Luisa Ramírez, a doctoral candidate at Wilfrid Laurier University. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses. I am also aware that extracts from the interview may be included in the thesis and/or publications to come from this research or used in academic presentations, with the understanding that I may choose whether quotations are used, whether anonymously or attributed. I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed and approved by the University Research Ethics Board. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in this research have been violated during the course of this project, you may contact Dr. Robert Basso, Chair, University Research Ethics Board, Wilfrid Laurier University, (519) 884-1970, extension 5225 or rbasso@wlu.ca

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

YES NO

I agree to have my interview audio recorded.

YES NO

I agree to be identified in any publications resulting from this study.

YES NO

I agree to the use of direct anonymous quotations in any thesis or publications or presentations that comes of this research

YES NO

Participant Name: _____

Participant Signature: _____

Witness Name: _____

Witness Signature: _____
Date: _____

Appendix C. Interview Protocol and questions

1. Interview Guide

Before proceeding with the interview, the participants will receive the information letter and will be informed about the consent form and the confidentiality statements of the study. An explanation about the purpose of the interview will be provided in plain language as well as the details about why he or she has been chosen as participant, expected duration of the interview, how the information will be kept confidential and only will be shared with the academic advisor and committee members. It will be clarified that the information included in reports, thesis manuscript, articles or presentations will not identify the interviewee as the respondent, unless he/she requires the opposite. The reason for using the digital recorder will be also explained. Finally, it will be recalled to the participants that they do not have to answer all the questions if they do not want to and they may end the interview at any time.
The following questions will be used as guide of the semi-structured interviews. They may be slightly modified if it is needed when conducting the interviews.

Questions for community members?

1. It is my understanding that your work is related to marine and coastal resources. What kind of activities do you do and for how long have you been doing that?
   (if yes) a. Do you fish or offer tourist services?
   b. Is it your main source of income or a complementary economic activity?

2. Could you tell me for how long you have been living in this area and how you did learn to fish/dive/be tourism operator?

3. Does any family member (parents, sons, daughters, uncles, etc.) take part in similar activities?
   (if yes) a. Tell me please about that, who is involved in these activities and which activities are included?

4. Can you mention some practices that you or other members of the community do that help/affect the availability of marine resources? (internal rules, traditions) Please provide some examples.

5. Are you part of any association or social group?
   (if yes) a. What group is it?
   b. Which is the main purpose of this group?
   c. For how long have you been part of it?

6. Have you noticed changes in the fishing activity or other activities related to the marine protected area (this answer could be in terms of ecological aspects (i.e., changes in the mangrove, lagoon, fish diversity and abundance) or socio-economic aspects)? (if yes) a. Could you please provide some examples?

7. Do you or the group(s) that you mentioned have a part in any of the process to establish or manage the MPA?

8. When did you learn first about the marine protected areas established in this area?
   (if yes) a. What does the MPA mean for you?
   b. How do you think the MPA has affected or is affecting your life (fishing activity)?

9. Do you know the people that work for the environmental authority in charge of the MPA? (if yes)
   a. Have you taken part in any workshop or meeting related to the MPA?
   b. Who organized the meeting? and what was the meeting for?

10. Do you know of other organizations taking part in the management of the MPAs or research?

11. Do you know the rules/restrictions related to the MPA?
    (if yes)
    a. How did you learn about those rules?
    b. Are those rules similar to the fishing practices that you have?
    c. Are the MPA rules easy to follow?
    d. Do the rules affect you (your livelihoods) in any manner (positively or negatively)?

e. Do you think that the rules established by the environmental authority adequate to protect marine biodiversity? Could you please explain your answer?

Questions for environmental authorities and other organizations

1. This is my understanding that your work is related to marine conservation in protected areas. Is that correct?

2. Could you please tell me for how long you have been working in this position?

3. From your perspective, what are or should be the goals to be achieved in the MPA?

4. According to your experience, are the existent mechanisms for marine conservation enough to assure the goals of the protected area? For instance the rules established by the environmental authority are adequate to protect marine biodiversity?

   a. Are there any obstacles or limitations for achieving a better MPA performance?
   b. What else would be needed to enhance MPAs? Is there any change that could be done to enhance the MPA management rules and increase compliance?

5. Have you ever been in a workshop or meeting with the local communities or other stakeholders? a. Do you know who organized that meeting?

6. How is the MPA acceptance by the community/stakeholders? Why do you think the acceptance is good or bad?

7. How do you see the role of other organizations different from the government to facilitate the MPA management and to improve MPA performance?

Appendix D. Focus Groups Protocol and Guiding Questions

The focus groups activities will start with an introduction of each participant and the investigator leading the activity. A short explanation of the research project, the goal of the focus group and the dynamic of the activity will be explained. The rights of the participants as well as the confidentiality procedures explained in the invitation letter will be reminded.

Guiding Topics

1. Expectations from the MPAs.
    - What are the expectations with respect to the marine protected areas in the region?
    - What is for you success in terms of the MPAs? When is it achieved?
    - What kind of outcomes or changes will you expect from the MPAs and how those changes affect your life style?
2. Perceive role of stakeholders to achieve MPAs goals.
    - How could you contribute or participate in achieving the outcomes that you expect from the MPA?
    - How do you see should be your role in the MPAs?
3. General knowledge of formal regulations in MPAs and other informal strategies of management or implicit practices at the local level.
    - Do you know the regulations in relation to the MPA?
    - Can you identify any similarity or difference between the management rules imposed by the MPA and the internal or traditional rules that the community follow as fishing practices? Please provide examples.
    - Which are those internal rules that the community have for using marine/coastal resources?

4. What do you think is the best mechanism to assure marine conservation?

Appendix E. Manuscript Copyright Waiver

Article:	Marine Protected Areas in Colombia: Advances in Conservation and Barriers for Effective Governance
Corresponding author:	Luisa F. Ramírez
E-mail address:	rami9920@mylaurier.ca
Journal:	Ocean and Coastal Management
Our reference:	OCMA3886
PII	S0964-5691(16)30030-8
DOI:	10.1016/j.ocecoaman.2016.03.005

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