

AN ABSTRACT OF THE DISSERTATION OF

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The mangrove ecosystem has served as a life-support system to large populations of coastal dwellers in Ecuador for many generations. Diverse communities comprised of multi-racial and multi-ethnic groups have formed along the edge of the mangrove forests throughout the Ecuadorian coast. These groups self-identify as being part of an “ancestral” *pueblo* of the mangrove ecosystem. As is the case of many rural frontier lands in the Global South, the coastal regions of Ecuador have experienced an influx of various large-scale economic activities over recent decades that resulted in a vast biophysical transformation of these landscapes. While these developments have environmental implications, they have also resulted in complex social and cultural impacts. This dissertation examines the people-mangrove relations of the inhabitants of a community in southern Esmeraldas, Ecuador that has historically relied on mangrove resources to subsist. Semi-structured interviews, household surveys, participant observation, and geolocation data were collected in Bolívar, a mangrove community in Muisne, Esmeraldas to gain an understanding of the ways in which the community perceives, utilizes, and interacts with the mangrove forests. It further identifies how the introduction of new spatialities to these mangrove spaces – shrimp aquaculture and mangrove conservation – affect the spatiality of the ancestral mangrove users. An examination of these contemporaneous spatialities reveals that they conflict, converge, and complement one another in variegated and often insidious ways. This dissertation argues that because the mangrove forests are being appropriated for the extraction of resources, whether through shrimp aquaculture or state-led conservation, the introduction of these spatialities pose comparable social and cultural impacts on the mangrove users who have historically depended on mangrove resources. Loss of access to mangroves has resulted in the loss of spaces traditionally used by the community to sustain nutritional needs, to carry out livelihood practices, and to foster cultural and personal identity, which has resulted in complex social and cultural changes. Furthermore, the findings of this dissertation indicate that the impacts of these processes are not evenly spread among all mangrove users, but rather further marginalize vulnerable groups, particularly the women of the community.

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Disputed Spaces: *Concheras*, Shrimp Aquaculture, and Conservation in the Mangrove
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Melva B. Treviño Peña, Author

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1. CHAPTER 1: Introduction

1.1. Overview

As in many rural frontier lands of the Global South, the coastal regions of Ecuador have experienced vast biophysical transformations in recent decades. This is mainly due to the introduction of industrial activities to these areas, particularly shrimp aquaculture (Bravo 2003). The expansion this sector entailed large-scale transformations along the country's coastal environments, greatly reducing the extent of inter-tidal ecosystems, including mangrove forests. These developments not only had detrimental environmental effects, but they also effected the surrounding human populations. In Ecuador, mangrove communities along the coast have historically depended on resources extracted from mangrove forests to subsist (Latorre 2014). The loss of mangrove forests due to the expansion of industrial activities sanctioned by the state has impacted local groups' access to spaces traditionally used to sustain their nutritional needs, to carry out livelihood practices, and to foster cultural and social development. In recent years, state interest in the intertidal areas of the country has been reignited, but this time not for the expansion of industrial activities, but rather to expand the nation's network of protected areas (Government of Ecuador 2014). Although the ecological impacts of creating an enclosure for a protected area are very different from those imposed by the creation of an artificial shrimp pond, restricting a group's accessibility to spaces traditionally used to sustain its livelihoods in the name of "conservation" could lead to similar social and cultural effects as those caused by the shrimp aquaculture sector.

Using the case of Bolívar, a mangrove community in southern Esmeraldas Province, Ecuador, this dissertation provides insight on the local impacts that result from the introduction of different spatialities – uses of a defined space – into the mangrove forests. This dissertation seeks to identify how seemingly contradictory processes such as an industrial activity and a state-led conservation initiative can cause similar impacts on mangrove communities' access to, and control over, natural spaces. Using data from interviews and observations collected in the field, this work seeks to illuminate what these processes mean for the local groups who have historically depended on mangrove

resources to subsist. Ultimately, this dissertation seeks to understand how spatial transformations within these mangrove forests are achieved, why some actors have power to make these decisions and other do not, how locals cope with these processes, and the types of livelihood strategies that they adopt as a response to various types of environmental change. Taking a political ecology approach, this dissertation seeks to identify the sources of tension at the intersection of gender, class, and resource use, and how these are affected by the introduction of new spatialities into the mangrove forests of southern Esmeraldas. Furthermore, taking a feminist political ecology approach, this research digs deeper into this by exploring the gendered impacts of losing access to the mangrove resources.

1.2. Research context

1.2.1. Contested space: The mangrove forests

Mangroves are a genus of tidally influenced wetland forests found in tropical and sub-tropical regions of at least 125 countries (Kauffman et al. 2014). These forests not only support high levels of biodiversity, but also provide numerous ecosystem services (Mukherjee et al. 2014). However, mangrove forests are also among the most threatened tropical ecosystems. Over the latter half of the twentieth century, it is estimated that global mangrove cover decreased by 30-50 percent (Donato et al. 2011). Agricultural activities, coastal development, and overuse from various forms of economic activities have largely contributed to their decline, but the expansion of the aquaculture sector has had the most notable impact on these ecosystems (Kauffman et al. 2014). At least 52 percent of global mangrove loss is attributed to the global aquaculture industry, with an estimated 38 percent resulting from “shrimp farming alone” (Walters et al. 2008, 228). The decline of the mangrove forests in Ecuador is higher than the global average. By the 1990s, between 40 and 60 percent of Ecuador’s original mangrove cover had disappeared (Veuthey and Gerber 2012). In some parts of the country, such as in the northern province of Esmeraldas, this figure is believed to have reached as high as 80 to 90

percent (Mera Orcés 1999). In Ecuador, mangrove deforestation and degradation have mainly resulted from the stress artificial shrimp aquaculture ponds put on the surrounding environments (Bravo 2003).

1.2.2. Pueblos del manglar

Mangrove forests grow along all the river-mouths that reach the Pacific Ocean in Ecuador; these are dispersed throughout five major river basins (SNAP Ecuador 2015). Diverse communities comprised of multi-racial and multi-ethnic groups have formed along the edges of these forests. These groups self-identify as the “Ancestral Peoples of the Mangrove Ecosystem” (Spanish acronym PAEM); they consider themselves to be an ancestral *pueblo* (a people) unified through their connection to a natural space – *el manglar* (the mangrove) – as opposed to through a shared ethnicity or race (Latorre and Farrell 2014). In Ecuador, the word “ancestral” does not mean the “original,” or native inhabitants of an area; rather, it refers to a people who have historically occupied a territory (García and Walsh 2009). Contemporary mangrove dwellers may not be the direct descendants of the original inhabitants of mangrove zones in Ecuador (this is especially true for those in the province of Esmeraldas, where most of the population is of mixed indigenous and African descent), but their families have inhabited mangrove zones for multiple generations (Mera Orcés 1999). An ancestral territory, then, is the physical space through which a community has “historically generated” a social, cultural, and spiritual identity, and developed its own economic activities and means of production (Government of Ecuador 2016). The Ecuadorian constitution protects ancestral *pueblos* from being displaced from their territories and protects their right to pass on ancestral knowledge and traditions (Asamblea Constituyente 2008, Article 57). As such, *pueblos ancestrales* can be granted collective rights to ancestral territories (Erazo 2013).

Various species of Ecuador’s mangrove have historically been a dietary staple of all the PAEM (Latorre 2014). Aside from providing a means for subsistence, mangrove forests also provide spaces that allow for the formation of social values and cultural identity through the development of trades based on the use of different mangrove

resources (Mera Orcés 1999). The peculiarities of these vary from region to region, but subsistence and livelihood activities practiced by the PAEM have customarily been defined along gender lines. Although it is now illegal to log mangrove trees, activities surrounding mangrove wood processing were considered “masculine” tasks. *Madereros* would log the mangroves for lumber (used for building houses), and *carboneros* made charcoal with the mangrove wood (Field Data 2017). Mangrove bark was also extracted. This was used for tannin production, and until the late 1970s it was shipped from southern Esmeraldas to the port cities of Manta, Manabí province, and Guayaquil, Guayas Province (H2, m). In Esmeraldas, tasks practiced by women (and children) traditionally revolved around gathering shellfish from the mangroves, predominantly *conchas* – mangrove cockles (*Anadara tuberculosa* and *A. similis*), (Figure 1 and Figure 2). Mangrove cockles are consumed in the household as well as sold to generate a source of income. People who gather *conchas* as a source of livelihood are called *concheros*.¹ A *conchera* is a female cockle gatherer, and a *conchero* is a male cockle gatherer.



Figure 1: Mangrove cockles, saltwater bivalves.

¹ The plural of female cockle gatherers is *concheras*. The plural of male cockle gatherers is *concheros*. The plural of male and female cockle gatherers is also *concheros*. Hereafter, to differentiate between these words, when talking about men who are *concheros*, the term “male *concheros*” will be employed and “*concheros*” on its own will be used to refer to a group of cockle gatherers comprised of both genders.



Figure 2: A *conchera*'s "catch of the day."

Many coastal zones in Ecuador modernized with the introduction of various industries in recent decades. The introduction of new jobs diversified local economies, lessening the dependence of mangrove communities on mangrove resources – to an extent. However, emerging employment opportunities disproportionately benefited male populations. Subsequently, the female populations developed a greater attachment to the mangrove forests. Aside from being able to provide nourishment for their families, having access to mangrove resources presented women an “employment opportunity,” as well as a means to attain personal growth and economic independence (Field Data 2017). In recent years, dependency on the mangrove ecosystem has grown among the inhabitants of mangrove communities in general. This is because there is a scarcity of employment opportunities in Ecuador, particularly in impoverished coastal regions (Latorre, Farrell, and Martínez-Alier 2015). This has pushed many people in mangrove communities to turn to traditional subsistence practices to sustain their livelihoods, including the male populations. For example, until a couple of decades ago, “going to *la concha*” – the local term used to refer to the action of gathering mangrove cockles – in Esmeraldas was a practice almost exclusively practiced by women, but now there is a

growing number of male *concheros* engaging in this productive activity (Field Data 2017).

1.2.3. Shrimp aquaculture in Ecuador

Despite local practices and ancestral uses of the mangrove forests, intertidal areas were generally perceived as “wastelands” by the Ecuadorian government. The prospect of industrial aquaculture was seen as an opportunity to incorporate these “unusable” zones into the national economy (Latorre 2013, 70). As in other parts of the Global South, farmed shrimp was promoted as a “desirable export commodity” and the ideal development strategy for cheap and readily available lands in the “developing” world (Warne 2011, 32). In Ecuador, the introduction of this economic activity was spearheaded by the private sector, but strongly supported by the state and by international development agencies. The World Bank supported the expansion of the shrimp aquaculture in Latin America and promoted the idea that these types of “non-traditional” goods could be used “to repay the external debts” of cash poor countries like Ecuador, allowing them “to enter the path for export-led growth” (Martínez-Alier 2002, 80).

Industrial shrimp aquaculture was introduced to Ecuador in 1968, in Santa Rosa, El Oro Province. The first boom of the shrimp aquaculture industry occurred in the early 1970s, when the industry spread from El Oro Province to the Guayas Province. There was a second boom, when industrial shrimp farming extended to Esmeraldas Province in the early 1980s. In 1974, it is estimated that 600 hectares were used to produce farmed shrimp; by 1999, at the peak of the shrimp aquaculture industry, there were at least 175,253 hectares of shrimp ponds in Ecuador (Schwarz 2005). By 1987, not even two decades after the establishment of the first shrimp farm in El Oro Province, the aquaculture sector had become one of the most profitable industries. At the time, Ecuador was the largest producer of shrimp in the Western hemisphere (Latorre 2014). The peak production year of Ecuadorian farmed shrimp was 1998, when shrimp exports accounted for 114,795 tons (Schwarz 2005). However, the following year, farmed shrimp production drastically dropped. Like any type of monoculture, large-scale aquaculture is

vulnerable to disease. In the early 1990s, a common marine bacterium that affects shrimp (the bioluminous *Vibrio harveyi*) began to spread throughout the shrimp farms of the country. Lethal viral infections such as the Taura syndrome virus (TSV), and the yellowhead disease (YHD) became a serious problem by the mid-1990s (Warne 2011). These outbreaks were a prelude for the devastating white spot syndrome virus (WSSV) which was first reported in Esmeraldas on May 28, 1999. By the end of the year, the virus had spread to the other shrimp-producing provinces, decimating the production of thousands of ponds. This epidemic caused a large shock to the industry, dropping the production of shrimp by two-thirds (Schwarz 2005). The industry regained the productivity levels of 1998 by 2006, but due to a decline in international markets for shrimp, it has not regained a monetary value comparable to that of the late 1990s (Veuthey and Gerber 2012). Nonetheless, the shrimp aquaculture sector is one of the most lucrative industries in Ecuador; occupying the third largest exporting sector, it accounted for 15 percent of the total export value in 2016 (OEC 2016).

1.2.4. Mangrove conservation

Intertidal areas in Ecuador have always been public lands, but until the introduction of industrial activities to the coastal areas, these lands were largely in the periphery – geographically, economically and politically (Veuthey and Gerber 2012); this is especially true for Esmeraldas Province. Considered to be unusable lands, the state had limited economic interest in these areas. This changed with the introduction of shrimp aquaculture. Initially, artificial shrimp ponds were established on areas covered by salt marshes (Schwarz 2005). In the 1960s, salt marshes are estimated to have encompassed 53,705 hectares (ha), but by 2006 there were only 3,705 ha left, accounting for a loss of almost 93 percent (Bravo Cedeño 2010). Running out of salt marshes in a matter of years, the construction of ponds was subsequently extended to other intertidal zones in the early 1970s, predominantly the more expansive mangrove forests (Bravo 2003). It is estimated that 90 percent of artificial shrimp ponds in Ecuador occupy spaces previously covered by mangrove forests (Vázquez 2007). Although the extent of mangrove cover in the country prior to the introduction of shrimp aquaculture is not entirely known,

approximately half of Ecuador's original mangrove cover had disappeared by the 1990s (Warne 2011). In some parts of Esmeraldas, this figure is estimated to have been as high as 90 percent (Mera Orcés 1999).

State interest in intertidal zones – especially mangrove forests –was reignited again in recent years, as scientific discoveries have shown that mangroves have some of the highest carbon stocks among tropical ecosystems (Kauffman et al. 2014). With the international community mobilizing to address causes of anthropogenic climate change, the conservation of mangroves has gained significant importance at the global scale (Herr, Alban, and Howard 2015). In 2014, the Ecuadorian state launched a mangrove conservation initiative called *Socio Manglar* (“Partner Mangrove”) modeled after the UN-REDD+² program which incentivizes the conservation of carbon-rich forests and sustainable use of forest resources through performance-based payments. Ostensibly, the aim of *Socio Manglar* is to protect mangrove forests and promote sustainable uses of mangrove fisheries. The project entails creating partnerships with the Ministry of the Environment (MAE) and selected local groups contracted to partake in mangrove conservation efforts (Field Data 2017).

1.2.5. Summary

While the shrimp aquaculture sector in Ecuador is a highly profitable industry, the costs and benefits of expanding this industry to remote coastal areas are not evenly distributed among all the actors involved in these processes. The environmental changes that have occurred in the mangrove zones of southern Esmeraldas are the result of decisions made by actors at the national and international scales, but these are having an impact on the local ecosystems and the surrounding communities. Moreover, these decisions are driven by political and economic factors, as well as by a changing imaginary of how mangrove forests have been understood by different actors.

² UN REDD+ is the United Nations Reducing Emissions from Deforestation and Forest Degradation Program.

Consequently, to truly understand the human-environment interactions within these spaces, it is important to understand the social, political, and economic drivers that inform how the mangrove forests are perceived and utilized by different actors.

Understanding the effects these processes can have on a local environment not only allows a researcher to gain insight into how, but *why* these may result in environmental degradation (Bryant 1998). A research approach informed by the framework of political ecology can be employed to investigate how spatial transformations within natural landscapes like the mangrove forests of southern Esmeraldas Province are achieved, and why some actors have power to make these decisions and other do not (Robbins 2011). Moreover, one can gain insight into how local groups cope with these processes, and the strategies they adopt as a response to various types of environmental change (Zimmerer 2006).

1.3. Theoretical framework

1.3.1. The lens of political ecology

Political ecology is often described as the fusion of cultural ecology and political economy because the main scope of research carried out within the discipline focuses on analyzing how states and markets influence the environment and how these interactions affect local (often marginalized) populations (Neumann 2009). In a way, the discipline emerged as a theoretical approach to address apolitical discourses about the environment and their accompanying explanations for environmental degradation. Robbins explains that the difference between a political and an apolitical ecology lies in “identifying broader systems rather than blaming proximate local forces” for explaining environmental degradation (2011, 5). Another tenet of political ecology is to challenge the researcher to first identify what is meant by environmental “change” and *who* determines what this “change” refers to (Robbins 2011, 208). This approach requires seeking a plurality of narratives to thoroughly explain the influences of political, economic, and social factors that inform ecological processes (Bryant 1998). Derived

from poststructuralist philosophy, the concept of “plurality” promotes the notion that “truth” and “reality” are produced by what we think and what we do; consequently, all individuals may have a different sense of truths and realities (Peet and Watts 1996; Cresswell 2013).

Political ecologists argue that environmental change is characterized by distinctive spatial components and temporal patterns. Therefore, to fully understand the dynamics of environmental change and the human components of these processes, political ecologists emphasize the value of exploring human-environment relationships across multiple scales of space and time (Bebbington and Batterbury 2001). This multi-scalar approach is a “hallmark of political ecology” (Neumann 2009, 6). Based on the “intellectual heritage” of cultural ecology, political ecologists apply a “case study” approach to analyze the environmental politics of a place not only through space, but through time. The historical analysis allows the researcher to gain a deeper insight into human-environment interactions through time, and thus identify how the introduction of exogenous natural resource management practices transforms human-nature relations in a place. By relating local occurrences to broader processes, political ecologists can identify causal connections between local decision-making and regional or global developments (Goldman, Nadasdy, and Turner 2011).

Influenced by a range of academic disciplines, including geography, anthropology, biology, ecology, forestry and political science, the transdisciplinary approach of political ecology to research presents an idiosyncratic lens to examine the interactions between the ecological, social, economic, and political realms. This dissertation uses this theoretical approach to examine cases of contested resources in the Ecuadorian mangroves. This approach can be exceptionally valuable to study the human dimensions of environmental change because political ecology dismantles the wall between people and nature that was discursively constructed by modernist ideologies. This is exceptionally important because through the critical analysis of this discourse, political ecologists have unveiled that “powerful modern institutions and individuals...have gained undue and disproportionate power” by creating “boundaries

between human and non-human nature” (Robbins 2011, 213). Using this approach, my research seeks to provide insight into the underlying reasons for environmental change in coastal Ecuador. Furthermore, this work includes the perspective of the local inhabitants, of the groups that have been historically marginalized, traditionally excluded from political and economic decision-making processes, and whose narratives are obscured by alternate narratives presented by more powerful actors. Employing this approach grants political ecologists elasticity, a spatial flexibility. Emphasizing a plurality of perspectives can allow the researcher to identify networks and connections of actors in different places, and to uncover preexisting ontologies, or explanations for environmental change from the perspective of actors that would otherwise not be consulted, subaltern narratives, the voices of the people who are typically affected by environmental change but who are not always consulted about these processes (Robbins 2011).

1.4. Conceptual frameworks

1.4.1. Feminist political ecology

In the late 1970s, with the rise of feminist movements in the West, feminist scholars began to argue that feminism had been misinterpreted in modern theories and that there was a need for alternate epistemologies within feminist ideology (Cresswell 2013). The feminist theory evolving at that time was largely influenced by postmodernist and poststructuralist thought; it promoted an approach that “demystifies theory that ignores subaltern experiences,” particularly that of women (Escobar 2006, 11). Rejecting the approach of “easy dichotomies” (Rocheleau and Edmunds 1997, 1356), feminist theories aim to dismantle the patriarchy by promoting a paradigm shift away from the patriarchal dualistic discourse that creates a divide between man and woman, positioning the masculine apart from the feminine as a systematic approach to subordinate women. According to feminist theory, the powerful force of the patriarchy supersedes other types of social identities such as race, socioeconomic status, nationality, or age, allowing men all over the world to have a shared domination of women (Cresswell 2013). As feminist

theory expanded, it began to transcend to other disciplines of the social sciences, leading to the emergence of new conceptual frameworks such as ecofeminism, feminist environmentalism, socialist feminism, and feminist post structuralism, among others (Rocheleau, Thomas-Slayter, and Wangari 1996). Feminist theory also began to inform established theoretical frameworks, including political ecology. A feminist perspective on political ecology recognizes that not only general social relations influence power-dynamics, but that gender relations can also be “a critical variable in shaping access to, and the knowledge and organization of, natural resources” within a society (Escobar 2006, 10).

Theoretically founded on the fields of feminist cultural ecology, political ecology, feminist geography, and political economy, the conceptual framework of feminist political ecology was developed to explore how gendered perceptions of nature are produced and in turn how these affect access to natural resources (Rocheleau, Thomas-Slayter, and Wangari 1996). Feminist political ecologists argue that gendered notions of the natural world are not rooted in biology but imposed by existing social constructs of gender based on “social interpretation[s] of biology” (Rocheleau, Thomas-Slayter, and Wangari 1996, 3). Therefore, scholars employing this framework promote a pluralistic research approach with a focus on feminist struggles to study the intersectionality of gender with class, race, culture, and national identity. Political ecologists seek to identify how these factors affect human-environment interactions such as development interventions, environmental degradation, ecological scarcities, distribution of land, property rights, and access to and control of resources (Escobar 2006; Neumann 2009). Since gendered experiences of the environment are informed by social constructs including culture, class, and race, these are highly variable from place to place. For this reason, feminist political ecologists commonly employ a place-based research approach and the use of ethnography to construct a framework for analyzing the experiences of women from all around the world and assessing how gender relations inform human-environment interactions in different places (Rocheleau, Thomas-Slayter, and Wangari 1996).

1.4.2. Production of space

Geography was established as a field to study the “inhabited world” – or as the Greeks called it, the *ecumene* more than 2,000 years ago. Inherently, geography became the study of inhabited spaces and places, but what constitutes “space” or a “place” has not remained static in geography; the conceptual definitions of these terms have evolved with the field. The foundations of contemporary geographic theory – more specifically, the concepts of “space” and “place” – were developed by Greek philosophers Plato and Aristotle. Plato referred to the concept of *kenon* to describe “the void in which all other things exist,” a limitless, homogeneous realm that would become the basis for the contemporary geographical concept of “space” (Cresswell 2013, 19). The *chora* was the concept used to refer to the process in which existence emerges “out of the void of *kenon*,” the stage wherein a space is in the process of becoming a place. Aristotle used the concept of *topos* to describe the final product, “an achieved place” (Cresswell 2013, 19). Early geographers were mostly concerned with studying the *chora* and the *topos*. Understanding how places were formed and where they were located became a focus of the field in pre-modern history, during a time when discovery and exploration of the “inhabited world” had great value.

In modern geographic thought, “space” (in the sense of *kenon*) became again a central theme of the discipline. The concept of “absolute space” was introduced; in a sense, it could be described as a fusion of the *kenon* and the *chora*. “Absolute space” is where processes happen spatially and temporally in relation to one another, and thus, the spatial and temporal location of such processes can be identified. Using this information, geographers could study how objects – or places – in a space come to be. The notion of “absolute space” became especially important at the peak of modernity, and a central concept in the spatial sciences in particular (Cresswell 2013). However, with the emergence of postmodernist theories, geographers began to question whether the concept of “absolute space” fully encompassed the role “space” has in the “becoming of places,” and vice-versa, how those continuous processes of becoming influence the space itself. Moving past the Cartesian “absolute” representation of space in which a space can be

delineated with a boundary and where everything that happens within can be located, measured, and modeled, postmodernist geographers introduced the concept of “relative space.” Under this paradigm, space is not only regarded as a backdrop where humans and non-human actors interact with one another, but space has an active role in these interactions and vice-versa. In “relative space,” space does not exist independently from what is in it but is formed as a reflection of the objects within it. Here, space then becomes relational – it is the “distance between the objects” found within it (Cresswell 2013, 220). In relative space, relational space gives the objects meaning, and those objects in relation to one another are the reason why the space exists.

While some geographers emphasized the relationship between objects in a space, French philosopher Henri Lefebvre and other postmodernist scholars proposed that space does not only exist in relation but is *produced* in relation (Lefebvre 1992). Under this logic, to truly understand a space then, one should not only be concerned with studying the objects found within the space (or their location), but also focus on studying the processes that produced those objects, and concurrently, that space. Focusing on the relative space might provide insight on the spatial and temporal distances between objects within a space, but this approach might only provide a partial understanding of the evolution of that space. Conversely, studying the processes that contribute to the changes within a space can provide a more holistic understanding of how spaces are produced and transformed, and how these processes affect the objects and actors found within it. Emphasizing this approach to studying a space means acknowledging the role of humans in the processes that produce space. In this context, Lefebvre introduced the notion of space as being socially produced – the concept of “social space” (Lefebvre 1992). Consequently, “different spaces emerge from different sets of social relations” (Roth 2008). Being aware of the social dynamics among different groups occupying a space (or that have some agency on how that space is used) and of the power relations that exist among different actors can provide insight into how social drivers influence the production and reproduction of spaces.

1.4.3. Spatiality

“Spatiality” is a concept employed to explain the production and evolution of spatial arrangements – “and the processes of how and why they form” (Zimmerer 2006, 9). Simply put, a spatiality is the “way in which space is used” (Agnew 2008, 2). The introduction of a new use of a space does not entail the creation of a new space, but rather it involves the reconfiguration of existing spaces (Lefebvre 1992). This reconfiguration – or spatial rearrangement – is part of a process that is constantly evolving as a response to the social inputs that inform it. Spatialities, then, are the reflection of ever-changing social, political, economic, and ecological processes that inform how spaces should be materialized – how they come into being (Roth 2008). Exploring the development of these processes can provide insight into the social drivers that influence how spaces are organized and transformed, both spatially and temporally. Leitner, Sheppard, and Sziarto (2008) argue that within the hegemonic paradigm of socio-spatial theory there is a tendency to reduce the focus of inquiry to one spatiality, as if a space can only be given a single use at a time. However, some spaces, – particularly natural environments – are highly complex and multiple spatialities are co-present and interact with one another across various scales of space and time (Roth 2008). Furthermore, employing an approach that examines how multiple spatialities coexist in the same space can uncover the undercurrent conditions that allow for different spatialities to be introduced to a space, the spatial transformations they entail, and the different ways in which they evolve, conflict, converge, and complement one another.

Contrary to many perceptions of biophysical environments, these spaces are also socially produced, as these “are both materially and culturally constructed” (Gezon 2006, 11). What this means is each space is a reflection of the physical attributes that characterize it and the social organization of the space; this combination results in the creation of that natural environment (Lefebvre 1992; Escobar 1998). Therefore, when studying natural landscapes, it is imperative to look past the spatial reconfigurations that occur within the physical realm and into the social relations that inform spatial configurations of a physical space. Zimmerer (2006, 9) refers to this as the fusion of the

“physical extent” with the “social intent.” Employing this approach can uncover the complexities that lie behind spatial transformations in natural environments and can provide insight into why natural spaces change by identifying the specific processes that contribute to these changes.

1.4.4. Market environmentalism

Market environmentalism emerged in the 1980s as a movement proceeding from ecological modernization theory. Ecological modernization theory promotes the notion that the modernization of the environment can be a means to better meet economic demands while simultaneously addressing the ecological impacts of economic growth (Kosoy and Corbera 2010). According to ecological modernization theorists, the challenges posed by environmental crises present opportunities for scientific and technological innovation. Subsequently, market environmentalism presents the market as the solution – not the cause – of environmental problems; environmental degradation is perceived as a potential source of economic growth rather than a constraint (Bakker 2009). This ideology is the foundation of what McAfee (1999) refers to as “green developmentism” – an approach to development that “blames” environmental problems on “abstractions” such as “market failures” and “policy failures” (McAfee 1999, 151). This is the model currently driving the paradigm of the “green economy,” which is part of the “post-neoliberal” development agenda, an approach developed to address the shortcomings of capitalism under neoliberal influence. The “vision” of the green economy – as opposed to that of “brown” economic development approaches that deplete the world of its natural resources – is of an “ecological modernization” where economic growth and conservation of natural resources “work in tandem” (Fairhead, Leach, and Scoones 2012, 240).

Proponents of the green economy model argue that addressing the depleting stocks of nature’s services – widely referred to as “natural capital” – is the path to solving the salient problems humanity is facing. Hence, the “vision” of the green economy is of an “ecological modernization” where economic growth and conservation “work in

tandem” (Fairhead, Leach, and Scoones 2012, 240). However, investing in the conservation of nature under the green economy is not necessarily motivated by a drive to protect nature, but rather to preserve economic assets – nature capital stocks. This is because under the green economy, nature does not have a central role. Although its importance is widely emphasized, nature’s contribution is based on the monetary value that it can provide. Thus, it is nature’s services that are pertinent to a green economy, not nature itself (Buonomo et al. 2013). In a green economy, the conservation of nature – protecting its valuable ecosystem services – is promoted as a means to generate economic growth. Subsequently, the continuing degradation of nature is translated as being an economic loss (Arsel and Büscher 2012). While it is a global movement, the model of the green economy has been widely promoted in the Global South, where many countries possess high levels of “natural wealth” (Pagiola, Bishop, and Von Ritter 2004). Effectively managing this natural capital is being promoted as a means for “developing” countries to pay back external debts or to address internal economic crises (Marcos and Fernández 2013). Furthermore, McAfee (1999) explains that the development model of the green economy has been widely applied by countries adopting a post-neoliberal agenda as an approach to address the shortcomings of neoliberalist agendas that promoted “brown” economic growth, resulting in widespread environmental and ecological crises, particularly in the Global South.

1.5. Research questions

Seeking to understand the human-environment interactions that have resulted in spatial transformations within the mangrove forests of southern Esmeraldas, Ecuador, this dissertation employs the theoretical framework of political ecology. The aim of this dissertation is to investigate what actors have power to make these decisions, and in turn, how actors who are affected by these developments respond to the environmental changes they experience through these processes. Furthermore, informed by a feminist political ecology approach, this research explores the role that gender plays in these

dynamics to gain insight into the gendered experience of environmental change. Using concepts of space and spatiality, this dissertation expands on the factors that contribute to spatial transformations in the mangrove forests of southern Esmeraldas, and how the introduction of new uses of a space affect the surrounding environment and the social groups who depend on these ecosystems to subsist. Conservation ideologies based on market environmentalism are examined to explore the ways that scientific knowledge and politics influence how a natural space is perceived and subsequently, how these developments inform decisions about nature conservation and the environment. The central research question which I address in this dissertation is:

How do existing spatialities within the mangrove forests of southern Esmeraldas, Ecuador conflict, converge, and complement one another?

This question is addressed through the following sub-research questions:

1. *How do how ancestral mangrove communities in southern Esmeraldas, Ecuador perceive, utilize, and interact with the mangrove ecosystem?*
2. *What factors contribute to the introduction of different spatialities within the mangrove forests of southern Esmeraldas?*
3. *How has the introduction of different spatialities within the mangrove forests impacted how these ancestral mangrove communities perceive, utilize, and interact with the mangrove ecosystem?*

1.6. Research methods and study site

1.6.1. Study site

1.6.1.1. Site selection process

To explore the human-environment interactions in mangrove communities in Ecuador, I selected the town of Bolívar, in the municipality of Muise, in Esmeraldas Province as my study site (Figure 3). The site selection process entailed taking two exploratory trips to Ecuador. The first was a two-week trip in September 2015 and the second a month and a half trip in July-August 2016. The purpose of the first trip was to visit areas I had previously identified as potential locations for fieldwork. During this

trip, I visited three mangrove zones in Esmeraldas: San Lorenzo, close to the border with Colombia, Muisne, the capital island town of the Muisne municipality, and Bolívar, a smaller community in southern Esmeraldas, close to the border with Manabí province. For the second trip, my objective was to identify communities I could safely work in to meet the objectives of my research. I revisited the town of Bolívar, as well as explored the possibility of conducting fieldwork in the mangrove zones of southern Ecuador, so I visited the Puerto Bolívar, a town in the municipality of Machala, in El Oro Province. During the second trip I conducted pilot interviews in both sites to gain insight into each community and assess the adequacy of each potential research site.

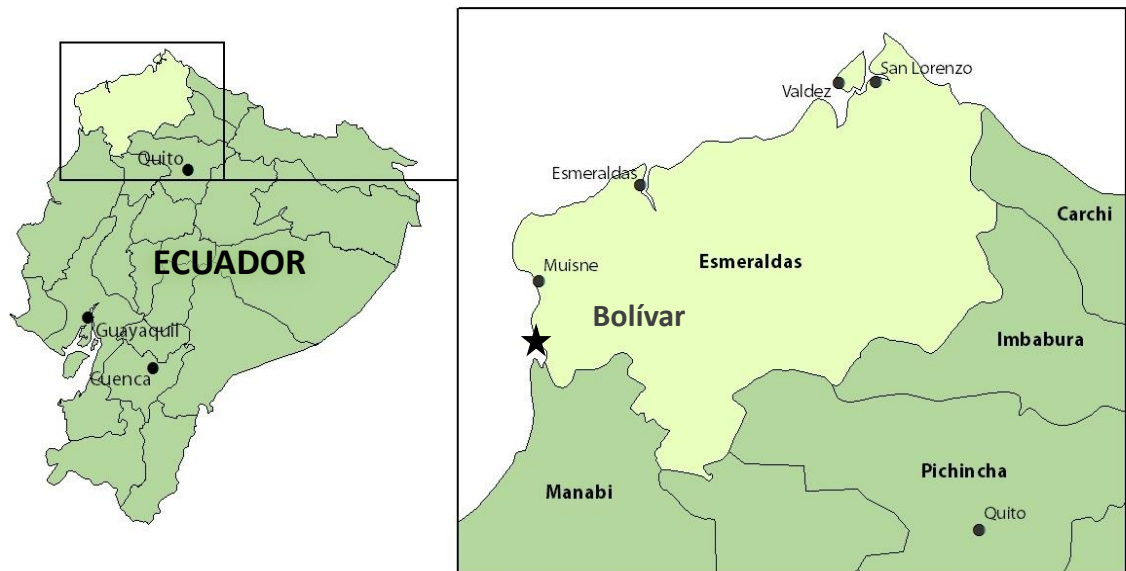


Figure 3: Study site.

When I first visited Ecuador in 2015, I met Lider Góngora, director of C-CONDEM (Coordinating Body for the Defense of the Mangrove Ecosystem), a Quito-based non-governmental organization (NGO) that works with artisanal fishing and shellfish gathering associations along the Ecuadorian coast. My introduction to the communities I visited was facilitated by C-CONDEM. The NGO put me in contact with community leaders and its affiliates at each location. However, even with those contacts, due to matters of personal safety, I discarded the possibility of working with communities

in San Lorenzo and Puerto Bolívar for this research. In recent years, the northern and southern national borders, have become areas of concern due to the presence of drug trafficking and drug-related violence, especially along coastal zones (El Telégrafo 2017; El Universo 2017a). At the time, I did not feel I had the adequate experience or training to conduct fieldwork alone, as a woman, in such places. Moreover, due to time constraints, I decided to not conduct a comparative study of mangrove communities in different regions, but instead to focus on conducting a more in-depth study of the mangrove community of Bolívar, in southern Esmeraldas.

1.6.1.2. The study site

The town of Bolívar is located on a small island locally known as Zapotal Island (Figure 3). I conducted a community census and household surveys (April-May 2017) and found that the community was comprised 501 people.³ The majority of the inhabitants of Bolívar – referred to as *Bolíveños* – are the descendants of people who arrived on the island at least 150 years ago (Field Data 2017), although the town was only officially recognized on March 16, 1913. In 1954, Bolívar was designated a *parroquia* (parish) of the Muisne municipality (GAD Parroquial Bolívar 2017). This municipality has one of the highest poverty rates in the country (Vázquez 2007). This is reflected in Bolívar; the community does not have access to running water, and there is no sewage or garbage collection system. Until the early 2000s, there was not a drivable path connecting the community with the road further inland that parallels the coast, the “*Ruta del Spondylus*” (named after a genus of bivalve mollusks). To get to and from Bolívar, people had to travel by boat on the mangrove estuaries to get to the road, or by sea to get to other coastal locations. The construction of the dirt road “*Vía de Bolívar*” (“Path of Bolívar”) substantially facilitated movement to and from the community. When traveling to Bolívar using public transportation (the means of transportation of the majority of the community), one must get off the bus at the stop that is known as the “entrance of

³ Data was gathered from 113 out 129 households. According to that information, there were 501 inhabitants at the time the household surveys were concluded.

Bolívar.” There, one must wait for one of the private trucks that drive commuters to and from Bolívar every hour. On the truck, the trek of approximately 4.5 km takes about 15 minutes to complete. Once the end of the path is reached, one must get on a boat to cross the river; depending on the tide, this distance is approximately 30 to 70 meters (Figure 4). After that, one has reached the community.



Figure 4: The crossing at low tide, standing at the entrance of Bolívar, looking out to the end of Vía de Bolívar. Here, some concheros wait for a boat to take them to a site to work in the mangroves.

1.6.2. Data collection

I conducted the main component of the fieldwork in March-June 2017. Oregon State University’s Institutional Review Board (IRB) approved this study. To conduct this work, I adopted a mixed-methods approach (see below) heavily based on ethnographic techniques. I engaged in participant observation “by immersion” (Hay 2010, 6) for 14 weeks in Bolívar, leaving only when I needed stable access to the internet or when I had to go off-site for an interview. Living off-site was not an option I considered; having the

ability to stay in town not only allowed me to rapidly create rapport with many members of the community, but it also allowed me to be time-efficient during the data collection period since I did not have to spend hours commuting into town. I had established a relationship with some members of the community during my second trip to the field site, including the host family I stayed with (I had stayed with them for 2.5 weeks during my previous site visit), which facilitated my re-entry into the community. Although this approach was physically and mentally intensive and draining at times, it allowed me to rapidly form meaningful relationships with many community members. I would visit with many families, chat about everyday life, eat with them, and get to know some of them well. I also went into the mangroves to gather cockles with three different groups of *concheras*. Having this level of connection with some people allowed me to create strong bonds with numerous individuals, and to develop a deeper understanding of the community, its day-to-day life, as well as a more thorough understanding of the information I was collecting in my interviews (Hay 2010).

1.6.2.1. Interviews

I conducted 31 semi-structured interviews with 24 *concheras* and 11 male *concheros*. Of these interviews, 27 were conducted in a one-on-one setting, while the other four were conducted in groups of two participants. I focused on interviewing *concheros* because I wanted to hear their voices, to understand how this sub-group of the community understands its reality as a *conchera* or a male *conchero*. I sought to learn the underlying reasons a person becomes a *conchero*, to be able to identify what factors make a person dependent on this type of productive activity. I also wanted to learn the perspectives of the shellfish collectors on issues affecting the *conchero*⁴ community and learn how they perceive the mangrove resources, the changes they witnessed in mangrove resources over space and time, and the impacts of these changes have had on themselves or the community at large. These in-depth interviews allowed me to get to know each

⁴ Male and female *concheros*.

participant on a more personal level and provided me with insight on the variability that exists from one *conchero* to another. As I built relationships with certain individuals, I felt more comfortable asking them to assist me in gathering geolocational data to map how they work in the mangroves (explained below). I also interviewed a variety of expert informants during 12 open-ended one-on-one or small group interviews, including five elders of the community, four community leaders, three NGO workers, and two employees of the MAE.⁵ The purpose of interviewing people from these different groups was to get a broader perspective on the history of mangrove governance, to learn about different perspectives of the mangrove resources, of the work of the *concheros*, of the conflicts that emerged from the divergent views of Socio Manglar, or any other type of information that these experts could provide regarding the status of mangrove forests in the area. A list of the research participants can be found in Appendix 1 and are cited throughout this dissertation by their participant identification code and their gender (example C1, m would be *conchero* 1, a male. See Appendix 1 for more details).

To recruit participants for the semi-structured interviews, I employed a hybrid sampling method. I initially relied on criterion sampling since I was trying to restrict my interviews to *concheros*. Once I identified a *conchera* or *conchero* I would simply introduce myself and ask if I could interview them in the near future. I also employed a snowball sampling method since I got *concheras* or male *concheros* I had interviewed to put me in touch with a *conchera* or *conchero* I had not met yet. For the expert interviews I relied on criterion sampling and opportunistic sampling (Hay 2010). As I identified people that fit the criterion for these interviews, I would attempt to set up an interview with them. All interviews were audio recorded; the length of each interview varied from 24 minutes to 125 minutes. I had an interview guide I used while conducting these interviews, but due to their semi-structured nature, I also asked questions specific to the conversation during the exchange with each person when it was relevant (See Appendix 2). I

⁵ *Ministerio del Ambiente del Ecuador* (MAE), the Ministry of the Environment of Ecuador.

took a flexible approach, allowing the interview to flow naturally in conversation, giving the participant an opportunity to carry the conversation where they felt was important, but then bringing the conversation back to the questions on the interview guide. In other words, although I prepared specific questions for each of the expert informants before the interview took place, these interviews were highly conversational in nature; I allowed the participants to take the conversation where they wanted and then I would ask questions as I saw fit.

1.6.2.2. Household surveys

Surveys are tools for quickly and efficiently obtaining socio-demographic data. Investigators can gather information pertaining to the conditions under which people live in a place, their access to or lack of basic needs, economic data, and other types of specific information relevant to particular research objectives that might not exist elsewhere (United Nations 2005). I conducted household surveys to generate a census of the community, but more than that, to collect detailed information on the size and composition of each household in Bolívar. The survey was comprised of a short questionnaire (Appendix 3) that took the form of a structured interview, as each was conducted face-to-face with the household head, or a consenting adult in their place. Through these surveys, I sought to identify the head of each household, gather information on the main productive activities that each member does, and to gain an understanding of the roles of all the household members in general. I also wanted to identify the main sources of food for the household, determine whether the household was food insecure, and assess what factors contribute to this. Conducting the household surveys also allowed me to identify *concheros* in the community, and thus find potential interview participants. At the time I conducted the household surveys (April-May 2017), there were 129 inhabited households in Bolívar; I conducted a household survey of 113 of those households (88 percent completion rate).

1.6.2.3. Geolocational data

Selected *concheros* were asked to carry geolocation data loggers to collect real-time geographic location information while they walked to and from, and within, mangrove spaces. The devices used to collect this data were the DG-100 GPS+Data Logger by Globalsat^{T.M.}; because they are not water-proof, they were put inside water-proof cell-phone cases (Figure 5). Twenty-two *concheros* volunteered to do this – 15 women and 7 men. To get a recording of their trajectories, people were instructed on how to carry the devices with them while they walked to and from different gathering grounds within the mangroves and while they moved within them as they searched for mangrove cockles (and other resources). These data were collected to obtain information regarding a) the different routes *concheros* take when they go to the mangrove forests, b) the location of spaces they frequent to gather mangrove resources, c) the ways in which they navigate within these spaces, and d) how *concheros* interact with one another in the mangroves – their work spaces.

To collect the data, *concheros* carried the GPS loggers for different durations of time. This varied due to the tides (how much time people could spend working) as well as on personal choice (how long each person decided to gather cockles for that day). Each *conchero* or *conchera* was asked to take the GPS logger with them for at least six consecutive days (a typical work week for the *concheros*), or at least as many consecutive days as possible (not all participants went many days consecutively). Moreover, to ensure a maximum representation of the spaces frequented by the *concheros* in a given day, in the cases where people were going to the mangroves in a group, one *conchero* or *conchera* per group would be asked to take a GPS logger with them.



Figure 5: GPS data logger in water-proof case.

1.6.3. Data analysis

I transcribed and translated the original Spanish audio recordings from the interviews into English. The interview transcripts were analyzed using Dedoose,TM a qualitative data analysis software. The interview transcripts were coded in two rounds to identify themes and patterns in the data. The first round used an “open” coding approach, which is grounded on the data. This entails identifying themes in the text by looking for words or phrases that were used repeatedly, or sections that spoke about the same topics. In other words, this means letting the data guide the codes applied. The names of the codes applied during the first round were assigned using the language or terminology used by the participants, or what is referred to as “in vivo” coding (Bernard 2011). The second round of coding employed a “content analysis” approach, which is based on “deductive coding.” This method entails using the data to test a hypothesis. This could also mean having a predetermined idea of what to look for in the data and seeing whether or not the data supports it (Bernard 2011). I applied the first round of coding to identify emergent patterns in the data and the second round of coding seeking to verify whether or not the narratives of the participants were congruent or not with the theory that informs my research.

The household field data were also analyzed using Dedoose.TM This mostly entailed organizing the results to the survey questionnaires into relevant categories. This allowed me to quantify some of these data as well as to identify patterns and key findings in the data. These results of the categorization process in DedooseTM were further analyzed using Excel.

The geolocational data were downloaded from each GPS logger daily while in the field as a CSV file. These files contained date, time and geographic location data, so they had to be edited to add information about each user, including the name of the person that collected the data, their gender, and age. The data were analyzed using ArcGIS from ESRI to create visualizations of the data.

1.7. Structure of dissertation

The structure of this dissertation is divided into three stand-alone papers (Chapters 2, 3, and 4) that draw from the theoretical and conceptual frameworks that inform this research to address the research questions that motivate this work. Each chapter addresses a different research question. The response to the overarching research question of this dissertation – *How do existing spatialities within these mangrove forests conflict, converge, and complement one another?* – is answered on the last chapter of this dissertation, Chapter 5. Chapter overviews follow.

CHAPTER 2: Los concheros de Bolívar: The ancestral users of the mangrove ecosystem in southern Esmeraldas, Ecuador

This paper attempts to answer the first research sub-question of this dissertation: *How do ancestral mangrove communities in southern Esmeraldas, Ecuador perceive, utilize, and interact with the mangrove ecosystem?* By presenting findings from the field data, this paper provides insight into the ways that mangrove users in the study site – the community of Bolivar – perceive, utilize, and interact with (and within) mangrove forests. Rather than drawing from a theoretical or conceptual framework to expand on

this, this is a descriptive paper that seeks to illustrate to the reader the rich and deep relationship that the mangrove users in Bolívar – the *concheros* – have with the mangrove ecosystem. Concurrently, this paper also highlights the value of the mangrove ecosystem to the community and thus provides insight into what it would mean for the mangrove users to lose access to mangrove spaces.

CHAPTER 3. A reorganization of space: Spatialities in the mangrove forests of southern Esmeraldas Province, Ecuador

This paper seeks to answer the second sub-research question of this dissertation: *What factors contribute to the introduction of different spatialities within the mangrove forests of southern Esmeraldas?* Employing the theoretical framework of political ecology, this paper expands on the spatial transformations that have occurred in the mangrove forests of southern Esmeraldas in recent decades. To do this, the paper provides insight on the processes that have led to the establishment of different spatialities by using narrative accounts of the participants who were interviewed for this study, supplemented with existing literature. Drawing from Lefebvre's (1992) conceptualizations of physical, mental, and social spaces, this paper examines how different mangrove spaces are produced and reproduced by different actors. This paper uses the concept of "spatiality" to identify the processes that have facilitated the "spatial arrangements" – in the physical, mental, and social contexts – within the mangrove forests of southern Esmeraldas, province. In addressing the ways that human inputs inform how these natural spaces are materialized, the argument set forth in this paper is that the physical manifestation of "nature" – or natural spaces – is not only contingent on biological and ecological factors, but can also be influenced by social, political and economic drivers, transforming "nature" into a socially produced concept. Furthermore, this paper identifies the ways that these factors influence how mangrove spaces are materialized, by looking at the role of social relations and power dynamics among the groups that occupy or utilize these spaces.

CHAPTER 4: Dominated spaces: Shrimp aquaculture and state-led conservation in the mangrove forests of southern Esmeraldas, Ecuador

This paper attempts to answer the third research sub-question of this dissertation: *How has the introduction of different spatialities within the mangrove forests impacted how these ancestral mangrove communities perceive, utilize, and interact with the mangrove ecosystem?* This paper draws from Lefebvre’s concept of “dominated spaces” to investigate the ways that the spatiality of shrimp aquaculture and the spatiality of state-led conservation epitomize the insertion of a “dominated” space in the mangrove forests of southern Esmeraldas. Using findings from the field data, this paper provides an overview of the local impacts of the shrimp aquaculture sector, both on the environment and the mangrove users. Also drawing from the field data, this paper provides insights on how the community perceives the spatiality of state-led conservation and the impacts community members see this spatiality imposing on the inhabitants of Bolívar. By providing narrative accounts of how two seemingly different spatialities could have similar social impacts on a community, this paper examines the increasingly convoluted relationship between industrial extraction practices and natural conservation models based on market environmentalism. Furthermore, informed by the framework of feminist political ecology, this paper seeks to identify how gender (and other social identity factors) further affect how sub-groups of the community are affected by these processes.

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2. CHAPTER 2: *Los concheros de Bolívar*: Ancestral users of the mangrove ecosystem in southern Esmeraldas, Ecuador

2.1. Abstract

Mangroves are tidally influenced wetland forests comprised of diverse salt-tolerant flowering trees and shrubs that support high levels of biodiversity and abundance of species (Kauffman et al. 2014). Mangroves also provide an array of other ecosystem services, including: wood and timber, fiber sources, coastal protection (against storms and natural hazards), sediment regulation, erosion control, nutrient cycling, food, fisheries production, and aesthetic value (for ecotourism and recreation), among others (Duke 2011; Mukherjee et al. 2014). With an estimated 314 ha, the Bolívar community has one of the largest mangrove forests along the Muisne River estuary in southern Esmeraldas, Province (E1, m). The resources provisioned by this forest has served as a life-support system for this community for multiple generations. Thus, the community self-identifies as being a *pueblo del manglar* – a people of the mangrove ecosystem. The inhabitants of Bolívar (referred to as the *Bolíveños*) have a deep and meaningful relationship with the mangrove ecosystem. Historically, the mangrove ecosystem has sustained the community nutritionally, and in recent decades, mangrove resources have become a source of local livelihoods too. This paper examines the relationship between the *Bolíveños* and the mangrove forests by providing an overview of the ways that the community perceives, utilizes, and interacts with the mangrove ecosystem. To do this, this paper presents findings from the field on the diverse ways that the community is connected to the mangrove ecosystem.

Keywords: ancestral communities, Esmeraldas, Ecuadorian mangroves, mangrove cockles, women

2.2. Introduction

The mangrove zones of Esmeraldas Province, Ecuador have been inhabited by different groups of human populations for millennia (Bravo 2003). Although the present-day inhabitants of these territories may not be direct descendants of those groups, they are considered “ancestral” communities of the mangrove ecosystem. In Ecuador, the term “ancestral” has a sociopolitical connotation. It is not used to denote that a person (or group of people) is “native” to a place, but to refer to a people who has historically occupied a territory and whose cultural and social values are tied to that land (García and Walsh 2009). In Esmeraldas, ancestral mangrove dwellers are the descendants of coastal indigenous groups and African slaves who escaped a slave trader and settled along the coastal areas of Esmeraldas. In fact, people claim that the slave ship crashed on Portete beach, four kilometers north of Bolívar. This is why many of the inhabitants of mangrove communities in southern Esmeraldas identify as being of African descent (Field Data 2017).

While the land that constitutes present-day Esmeraldas has been part of the Ecuadorian territory since Ecuador became a nation-state in 1830, these frontier lands have historically been outside of state control (Latorre, Farrell, and Martínez-Alier 2015). In southern Esmeraldas, until the introduction of industrial shrimp farming in the early 1980s, many mangrove communities were on the periphery – not only geographically, but also politically and economically. For several communities in the municipality of Muisne, this continues to be the case today; at least politically and economically, they are on the margins (E5, m). Thus, environmental governance in these communities was locally defined until a few decades ago. Therefore, how mangrove resources were extracted, utilized, and allocated was decided by the mangrove users. However, no single group or actor ever had exclusive rights to these spaces, but “the mangroves belonged to [the community]” (C36, f). With the introduction of outsiders – or “non-ancestral” peoples – less than 40 years ago, the communal nature of these spaces began to be replaced by private property regimes, vastly changing the people-mangrove dynamics in these spaces.

In Bolívar, although not everyone in the community lives directly off mangrove resources, they all consider themselves to be part of a *pueblo conchero* – a people who live off the mangrove cockles (Field Data 2017). The *Bolíveños* have a deep and meaningful relationship with the mangrove ecosystem; this paper examines this relationship. Based on narratives from the field, this paper seeks to answer: *How do how ancestral mangrove communities in southern Esmeraldas, Ecuador perceive, utilize, and interact with the mangrove ecosystem?* Concurrently, by highlighting the various types of values that the mangrove ecosystem represents to the community, this paper also seeks to provide insight into what it would mean for the mangrove users of Bolívar to lose access to mangrove spaces.

This paper presents findings from field data conducted in April-June 2017. This includes semi-structured interviews with 35 mangrove users from the community. These data were collected to gain insight on the work of *concheros*⁶ – mangrove cockle gatherers – in the mangroves, their perceptions of the mangroves, the environmental changes they have seen in regard to the mangrove forests and the town in their lifetime, and the impacts these environmental changes have had on themselves and the community. Other “expert” participants were also interviewed, including five elders of the community, four community leaders, three NGO workers, and two employees of the Ministry of the Environment.⁷ These additional interviews provided a broader perspective on the mangrove-people relations in this area, the political and economic developments in the region and the impacts these have had on the community, and about future mangrove conservation initiatives. A list of the research participants can be found in Appendix 2. This paper also presents findings from a community census. These data were collected in person in the form of household surveys (Appendix 3). This paper also

⁶ A *conchera* (*concheras* in plural) is a female cockle gatherer, and a *conchero* (*concheros* in plural) is a male cockle gatherer. The plural of male *and* female cockle gatherers is also *concheros*. Hereafter, to differentiate between these words, when talking about men who are *concheros*, the term “male *concheros*” will be employed and “*concheros*” on its own will be used to refer to a group of cockle gatherers comprised of both genders.

⁷ *Ministerio del Ambiente del Ecuador* (MAE), the Ministry of the Environment of Ecuador.

presents visualizations of the spaces *concheros* work, around and within the mangrove forests. To collect these data, *concheros* carried geolocational data loggers to collect real-time geographic location information while they walked to and from, and within, mangrove spaces. These data were collected to obtain information regarding the different routes *concheros* take when they go to the mangrove forests, the location of spaces they frequent to gather mangrove resources, the ways in which they navigate within these spaces, and how *concheros* interact with one another in the mangrove forests – their work spaces.

2.3. Bolívar: Pueblo del manglar

2.3.1. The community

In Bolívar, the majority of the population is directly descended from people who have inhabited mangrove zones for multiple generations. Although the town was only officially recognized on March 16, 1913, some families arrived to the island at least 150 years ago and the majority of the inhabitants of Bolívar – referred to as *Bolíveños*⁸ – are the direct descendants of the founders of the town (Field Data 2017). According to the field data, Bolívar is comprised of 129 households and a population of slightly over 500 inhabitants (Figure 6). The town's population was larger some decades ago, but with the decline of the local banana industry and other agricultural crops in the late 1970s, many people began to sell their *fincas*⁹ and migrated to urban areas seeking better employment opportunities and schooling for their children.

The scarcity of jobs has been an ongoing problem since then, and today “those that have more possibilities,” continue to leave, “to move their businesses, to educate their children” (E4, f). By the early 2000s, less than half of the “original” families were still living in Bolívar (C33, f). Some of the people that migrated thrived in the city, but

⁸ Inhabitants of Bolívar.

⁹ Small farms people grow crops on.

others became “impoverished over there” (H5, f); “they were not prepared, did not know how to subsist in the city...they were not ready to make the *campo*¹⁰-city transition” (E4, f). As a result, some of the families that had left have returned to Bolívar. The introduction of government assistance programs targeting rural communities also contributed to this. The “Vía de Bolívar” (the 4.5 km dirt road connecting Bolívar to the highway) was built in the mid-2000s, and a middle school was constructed in 2010.¹¹ Also in 2010, people with legal titles to a plot of land could apply for state-funded grants¹² to construct a cement house. “Some young families were able to get empty lots, or wherever it was their parents could give them land, and they had their houses built there” (E4, f). A total of 46 houses were constructed through this program.

¹⁰ “The country.”

¹¹ Prior to 2010, the highest level of education offered at the local school was grade 6.

¹² Program of the Ministry of Urban Development and Housing (Ministerio de Desarrollo Urbano y de Vivienda, Miduvi).

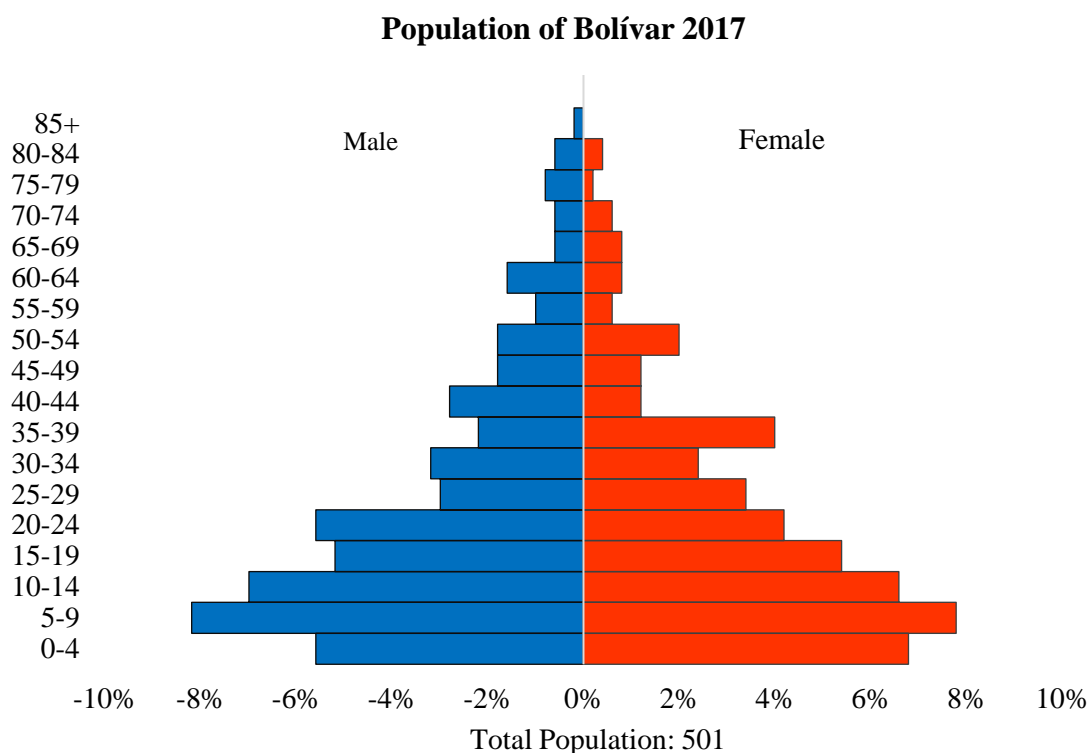


Figure 6: Population pyramid of Bolívar based on census data collected in April-June 2017. Population breakdown: 257 adults (140 male, 117 female) and 244 minors (17 and under) (Data source: Field Data 2017). The percentage values indicate the proportion of the population per age group.

2.3.2. The local economy

As in other coastal areas in Ecuador, the economy of southern Esmeraldas “modernized” and became more diversified through the introduction of various industries over the last decades, including shrimp aquaculture, palm oil, and more recently, a growing tourism sector. However, the supply of available employment opportunities does not meet the demand of the local population. In the case of Bolívar, with the return of families that had migrated to the cities, access to work became ever more limited in recent years. Although most adults work, only 13 percent of them are employed in the formal sector, while more than two thirds of them work in the informal sector (Figure 7).

Adult Occupation by Employment Sector

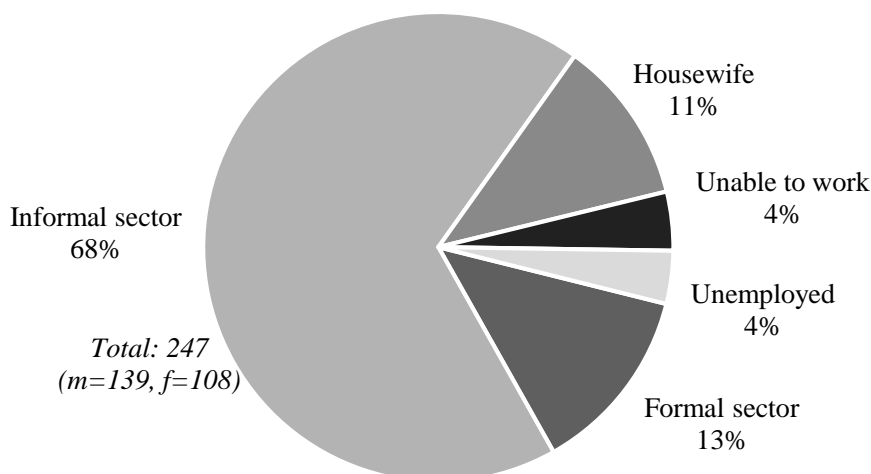


Figure 7: Employment information was collected for 247 out of the 257 adults living in Bolívar. The breakdown of jobs classified as being in the “Informal sector” are further defined in Figure 9. Those categorized as “Unable to work” (n=10; 2 men and 8 women, ages 59-83) were unable to work due to old age. Those under the “Unemployed” category (n=9; 5 men and 4 women, ages 18-30) are adults able to work but not employed at the time the census data was collected (Data source: Field Data 2017).

Employment opportunities for the *Bolíveños* are scarce in general, but this is especially true for the women of the community. Customarily, gender determines what types of resources a person can have access to. Traditional livelihood strategies such as artisanal fishing (in the estuaries and out at sea) and the extraction of wood resources (for timber or charcoal making) are considered “masculine activities.” The gathering of mollusks (predominantly mangrove cockles, *Anadara tuberculosa* and *A. similis*) has traditionally been a task for women, often in the company of their children. However, these gendered lines around livelihood strategies are not as strict for men as they are for the women of the community (Field Data 2017). Men have generally had more livelihood options than women because of a double standard. While men have access to resources found in the estuaries, on land, and at sea, they also can work in the mangroves gathering mangrove resources, as well as extracting mangrove wood for lumber or charcoal-

making. Currently, men can also participate in a variety of economic activities, such as fishing, work in agriculture, at shrimp farms, in construction, or in tourism – so-called “activities for men” – as well as partake in economic activities traditionally performed by women, specifically those associated with extracting mangrove species from the mangrove forests. However, the inverse is not possible; culturally, women are not able to work in “male activities” (Field Data 2017).

More recently, aligned with the strategies of industrialization and agricultural development programs proposed for the Global South (Isla 2013), employment opportunities in the emergent economic sectors in coastal Ecuador have historically been centered around the work done by men. Consequently, since the late 1970s, jobs within the formal sector in southern Esmeraldas have disproportionately benefited the male populations. As in other parts of the rural global south, omitting women’s productive roles from development discourses has left the women of these coastal communities with very limited access to employment opportunities in the formal sector (Isla 2013) (Figure 8 and Figure 9). The mangrove forests traditionally filled that void for many women. However, in recent years, changing cultural norms around resource use regimes have exacerbated women’s access to that source of income.

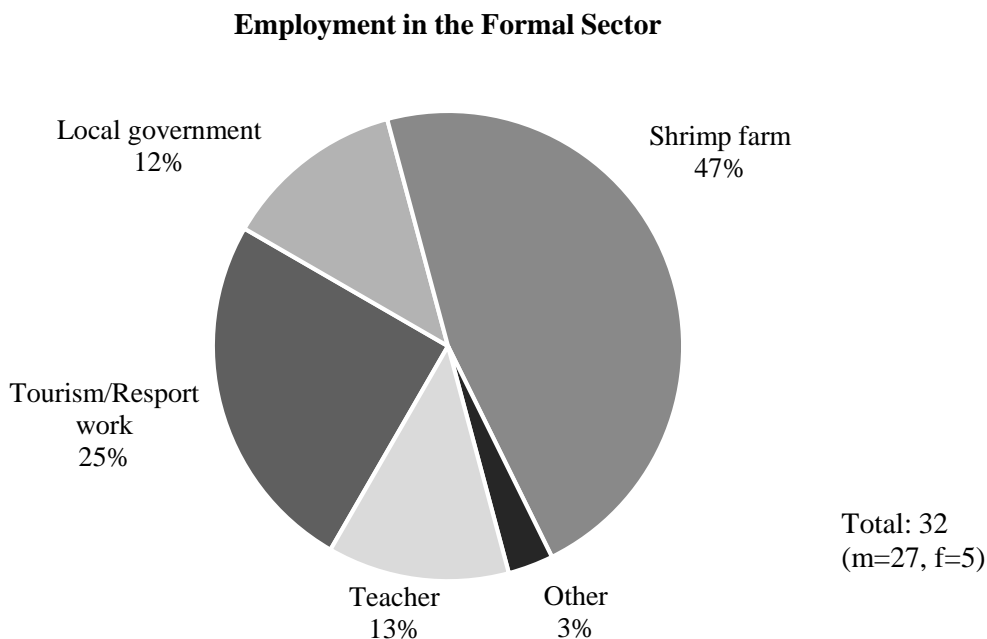


Figure 8: Eight people (m=7, f=1) work in the tourist/service industry¹³, as gardeners, servers, or in housekeeping/ maintenance. All adults working in the local government (n=4) and at a shrimp farm (n=15) were male. All the teachers (n=4) were female. “Other” is one man who works as a guard at the local clinic (Data source: Field Data 2017).

¹³A one-hour walk from Bolívar, or a 10-minute boat ride, Royal Decameron Mompiche is “a wonderful destination surrounded by 6 types of mangroves.” It is part of the Decameron chain of hotels and resorts(www.decameron.com).

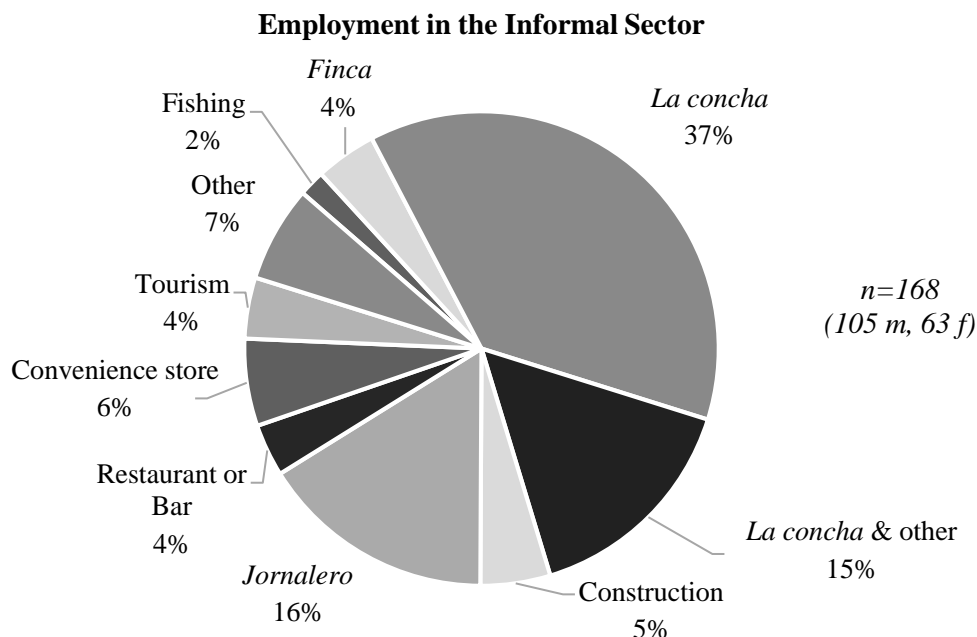


Figure 9: Those working in fishing (*n*=3), in tourism¹⁴ (*n*=7), in construction (*n*=8), or as a *jornalero*¹⁵ (*n*=27) were male. Those working in *la concha* – work gathering mangrove cockles – were men (*n*=18) and women (*n*=45), while those in “*la concha & other*” (*n*=26) were mostly men (*n*=19) who gather mangrove cockles part-time, and work part-time elsewhere, such as fishing, in tourism, in construction, or seasonally at a shrimp farm. Those who work at a *finca* (*n*=7) work their own land (also mostly male, *n*=6). In the category “other” there were 3 women (in the service industry) and 8 men (working in transportation driving people in and out of Bolívar, as property caregivers, among others) (Data source: Field Data 2017).

2.4. Who are the *concheros*?

People who gather mangrove cockles are referred to as *concheros*. The word for a female cockle gather is “*conchera*” and the word for a male cockle gatherer is “*conchero*.” In Bolívar, the *concheros* are different types of people. A *conchera* might be a woman seeking to contribute to (or sustain) her household’s income, a woman seeking an activity that allows her to get “a break” from the household chores, a high school

¹⁴ Men working in “tourism” transport tourists (usually from Decameron) around on their personal boats.

¹⁵ A *jornalero* is a day laborer but the term is only used to refer to male laborers.

student seeking to make money to pay for her weekly transportation costs to get to school, or a young girl who has the desire to learn a trade practiced by her mother, her grandmother, and maybe even her great-grandmother. A *conchero* could be a young man who cannot find stable employment, or who needs extra cash to pay a debt; it could be a teenager looking to get out of the house for some hours, or a boy who wants to make money to pay for his school lunch. Essentially, anyone in the community could be a *conchera* or *conchero*. While there are many reasons why a person might gather cockles, those that practice the activity as a source of livelihood ultimately do it because they have economic need. However, most *Bolíveños* have gathered cockles (and other mangrove species) at some point in their life. In mangrove communities of Esmeraldas, going to *la concha*¹⁶ is an activity that has traditionally been passed down to children by women – their mother, grandmother, or another older female relative, – in some cases going back as far as five generations. Therefore, the activity is an ancestral practice of the *pueblo Bolíveño*. Some adults only engaged in this activity as children, but others may continue to go to the mangroves to gather edible species, even if only done as a family outing, or to get some *conchas pa' mojar el arroz* (“cockles to wet the rice” – to have something to eat) (Field Data 2017).

She was 16, I was 12. She made me a *tarro* (Figure 10) and in this broken canoe we borrowed from the guy over there, we went [to the mangroves]...The first two days she filled up my *tarro*, but after that I didn't want to stay at home, I wanted my cockles. My cousin would teach me, how to stick my hand in there, how to move it around. This is how [she] made me a *conchera* (C6, f).

¹⁶ Going to the mangroves to gather cockles is referred to as “going to *la concha*,” which literally translates to “going to the cockle.”



Figure 10: Bucket of cockles.

According to the results of the household surveys conducted in April-June 2017, 70.5 percent (91 out of 129) of all households in Bolívar had at least one active or “retired”¹⁷ *conchero* or *conchera*. Of these, the active *concheros* lived in 75 of the households (57.4 percent of all households) and 17 households (13.1 percent) had a “retired” *conchera* or *conchero*. At the individual level, 168 people were actively or had previously gathered cockles to sustain their livelihood in Bolívar. Excluding the 33 minors (aged 17 years and younger), and the 29 “retired” adult *concheros* (11.4 percent of the adult population), the total number of active adult *concheros* was 106 (41.7 percent of the adult population) (Table 1).

About half of the active adult male and female *conchero* population (n=50) rely on *la concha* as the primary source of income (Activity Levels 3 or 4, Table 1), while for the remaining adult *concheros* (n=56), the mangrove resources only provide a secondary source of household income (Activity Levels 1 or 2, Table 1). This does not mean that the remaining population of adults (those not classified as “active” or “retired” *concheros*)

¹⁷ “Retired” *concheros* are people who gathered cockles to sustain at least part of their livelihood at some point but were currently not going to *la concha*. Reasons for being on hiatus from the activity included: recovering from an illness, an injury, or childbirth; physically not able to go due to old age; being currently employed in another sector.

have never gone to the mangroves to gather cockles, but rather that they do not identify as being a *conchera* or *conchero*. In other words, this group (119 people, or 46.9 percent of the adult population) has never had to depend on *la concha*¹⁰ as a source of income (Table 1).

Table 1: Breakdown of the population in *concheros* in Bolívar by gender and age. Levels indicate the regularity with which a person works in the mangrove. Level 0: “retired” *conchero/a*; Level 1: <1 time a week; Level 2: 1-2 times a week; Level 3: 3-4 times a week; Level 4: >4 times a week (Data source: Field Data 2017).

Breakdown of the population of <i>concheros</i> in Bolívar						
	Level 0	Level 1	Level 2	Level 3	Level 4	Total*
Adult concheras	22	20	9	8	18	55
Adult m. concheros	7	14	13	12	12	51
Total (adults)	29	34	22	20	30	106
Minor concheros	0	22	9	1	1	33
Total (adults and minors)	29	56	31	21	31	139
Average age adults	47.6	30.1	35.5	33.8	32.3	32.9
Average age minors	—	11.8	12.7	12.0	17.0	13.4
Average age (total)	47.6	22.9	28.9	32.8	31.8	29.1
Youngest (total)	19	6	10	12	17	—
Oldest (total)	83	59	74	62	50	—

*Total excludes values from Level 0 category

2.5. Perceptions of the mangrove ecosystem

2.5.1. Mangroves are life

The mangrove ecosystem has served as a life-support system to the inhabitants of Bolívar and the surrounding communities for multiple generations, providing them with resources to sustain their nutritional needs, and in more recent decades, to contribute to their household income. Although these mangrove dwellers recognize the “services” and local economic benefits provided by these forests, to many *Bolíveños* the mangrove ecosystem “does” more than supply resources like food or a source of income; to them,

these forests represent the community's source of life. These ecosystems are "like a father and a mother" that provide for their children (H2, m). Hence, people do not directly speak about the benefits of the mangrove forests in purely economic terms. When they do acknowledge in conversation that they do indeed receive monetary benefits from the work they do in the mangroves, many *concheros* continue to reference the goods and services that they are able to access with that money, rather than talking about the money itself.

I think mangroves are better than money, because money gets you out of a lot of things, but the mangroves help us a lot, because be it however it is, when we go to the mangroves, we sell the cockles to make money, but we do this to benefit our children, to benefit ourselves, and for our nourishment, for our health (C9, f).

Although only a part of the adult population might rely on gathering mangrove resources to sustain its livelihood, all *Bolíveños* claim that the "entire community" lives off the mangroves. While all *concheros* benefit directly from the mangroves, the rest of the community benefits indirectly from their work because the local economy is dependent on the money that "flows from the cockles" (H5, f, 74 years old). However, the community not only recognizes the value of the mangrove ecosystem only for its contributions to the local economy, or the goods and services they are able to access through the work they do in the mangroves, but also for the intangible benefits they receive from this ecosystem. When asked "*What benefits do you or the community receive from the mangroves?*" the research participants provided a list of "benefits." Although they did not utilize the language of environmental economics, the types of benefits they believe the mangroves provide for the *pueblo* fit into the categories of the "ecosystem services" framework widely used in that field (Figure 11). For example, there was an earthquake¹⁸ in 2016 that caused devastating damages to many of communities nearby, but in Bolívar, only one concrete house fully collapsed (others had cracked walls

¹⁸ Earthquake of April 16, 2016, magnitude 7.6, with the epicenter in the city of Pedernales, Manabí, which is less than 45 kilometers (direct distance) away from Bolívar.

and some raised wooden houses slightly tipped). People believe that the mangrove forests protected them from this natural disaster.

Ecosystem services are “conceptualizations” (or “labels”) used to refer to the ecosystem functions that contribute to human well-being (Braat and de Groot 2012, 5). Hence, when employing the conceptual framework of “ecosystem services,” Pagiola, Bishop, and Von Ritter (2004) argue that there is an anthropocentric rather than a biological connotation. In this context, nature is presented under a utilitarian framing as a “service provider” (Sullivan 2013, 205). However, to the *Bolíveños*, the mangroves are not necessarily service providers, but *el manglar es vida* – the mangrove is life.

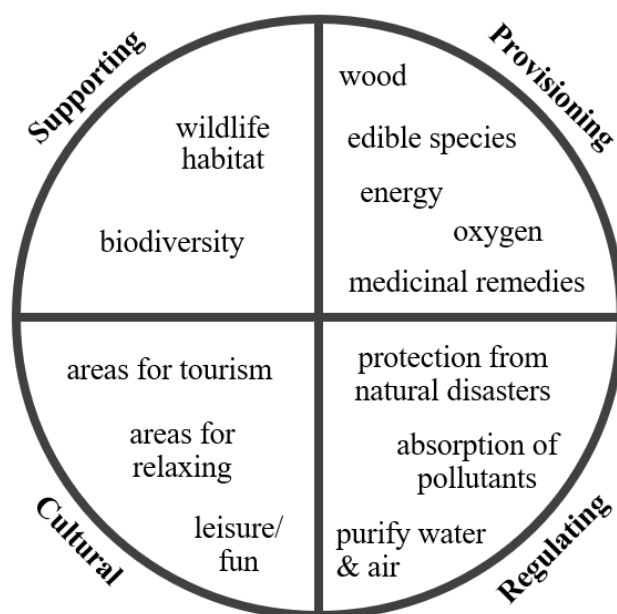


Figure 11: Types of “ecosystem services” provided by mangrove forests, as described the research participants (Data source: Field Data 2017).

2.5.2. Part of the mangrove ecosystem

The *concheros* do not believe they have a one-sided relationship with the mangrove ecosystem. The mangroves provide “services” for the inhabitants of Bolívar, but in return, they provide “services” for the mangroves too. This is a mutually beneficial, reciprocal relationship that exists between the mangrove forests and the

pueblo. Subsequently, many *Bolíveños* believe that they are part of the mangrove ecosystem; as such, they have functions within it. This is especially true for the *concheros*, who go into the mangroves daily; this is their ecosystem, because they interact with it every day and see themselves as an extension of it (Field Data 2017). As part of the mangrove ecosystem, when asked what their function within the ecosystem is, most will respond: “to take care of the mangrove” (Table 2), because all “who receive life from the mangrove, should protect it” (C23, f).

Table 2: List of responses to the question “*What do you do to take care of the mangroves?*”

Actions taken to take care of mangroves	Methods employed to undertake action
Stop deforestation from loggers	Get <i>pueblo</i> together to address them; report logging to the authorities
Careful not to harm branches or roots, educating people on this too	Not using harmful methods to <i>conchar</i> (e.g. using a machete to cut roots)
Not allowing the use of chemicals by the shrimp farmers	Get <i>pueblo</i> together to call on a meeting with the shrimp farmers
Letting mangroves rest	Not going to <i>conchar</i> in certain areas for up to two weeks (employing a rotation system)
Allowing for the reproduction of juvenile cockles	Not taking small cockles
Not contaminating mangroves; keeping mangroves clean	Not throwing inorganic waste in the waterways; collecting waste when found
Restoring deforested areas	Reforesting areas previously logged
Restoring degraded areas	Replanting mangroves on eroded banks

Being able to care for and protect the mangrove forests goes beyond nurturing the reciprocal relationship the community has with these forests. Caring for the mangrove forests is what allows them to be an extension of the mangrove ecosystem; if they stopped performing this function, then they no longer would be part of the ecosystem (C36, f). To the *concheros*, this ecosystem was left in their care by God, for the use and

well-being of the community. As such, they must ensure that they do what they can to protect the mangrove forests, because if the mangroves are cared for, this contributes to the well-being of the mangroves and this is beneficial to the community (E2, f).

That is what God left us, two hands and the mangroves...that is what my great grandparents, my grandparents, and my parents survived off. And now me, I am living [off] it too (C29, f).

2.6. Uses of the mangroves

2.6.1. Mangroves provide nourishment

Mangrove fisheries have historically provided a source of nourishment for the mangrove dwellers of southern Esmeraldas. Walking around Bolívar, one can see the fossilized remains of seashells all over the town. The *Bolíveños* claim these are the remains of mangrove (and sea) products consumed by a people who lived on the island long ago, before any of “*los antiguos*”¹⁹ arrived to establish the town (Field Data 2017). Mangrove species have been a part of the *Bolíveños*’ diets since the first settlers of the present-day population arrived. There are a variety of mangrove species – including different types of fish, mollusks, and crustaceans – that nutritionally sustain the community (Table 3 and Figure 12).

¹⁹ “The ancient ones” – term used to people who have passed away, as well as to the people who founded Bolívar.

Table 3: Summary from household surveys: List of mangrove products currently consumed in Bolívar from the surrounding mangrove forests and estuaries (Data source: Field Data 2017).

Mangrove (and estuary) species consumed in Bolívar			
Type	Common name in Bolívar	Common name in English	Scientific name
fish (estuary)	lisa	flathead grey mullet fish	<i>Mugil cephalus</i>
	chame	Pacific fat sleeper	<i>Dormitator latifrons</i>
	pargo	Colorado snapper	<i>Lutjanus colorado</i>
mollusks (mangroves)	concha prieta, concha hembra	mangrove cockle	<i>Anadara tuberculosa</i>
	concha macho		<i>Anadara similis</i>
	sanjara, pata de burro	ark shell	<i>Anadara grandis</i>
	chorga, mejillón	mangrove mussels	<i>Mytella strigata</i>
	churo	mangrove periwinkles	<i>Littoraria fasciata</i>
crustaceans (mangroves)	guariche, cangrejo rojo	mangrove crab	<i>Ucides occidentalis</i>
	cangrejo azul	mouthless crab	<i>Cardisoma crassum</i>



Figure 12: Mangrove species consumed in Bolívar. *Common name in Bolívar* – Common name in English (*Scientific name*). Top left: *lisa* – flathead grey mullet fish (*Mugil cephalus*); Top middle: *chame* – Pacific fat sleeper (*Dormitator latifrons*); Top right: *concha* – mangrove cockle (*Anadara tuberculosa/A. similis*); Bottom left: *sanjara* – ark clam (*Anadara grandis*); Bottom middle: *chorga* – mangrove mussels (*Mytella strigata*); Bottom right: *churo* – mangrove periwinkle (*Littoraria fasciata*) (Data source: Field Data 2017).

Almost half of the households in Bolívar (49 out of 113 households surveyed) consume mangrove products at least 2-3 times a week. While there are some households that only consume one or two meals made with mangrove products a month, there are some people who depend on mangrove species as a daily source of nourishment, cooking mangrove products at least once a day every day of the week (Figure 13). In this sense, the mangrove is like a community *Tía*²⁰ (H2, m), but they “don't complain that [people] go asking it for food” (C11, f).

²⁰ Popular supermarket chain store in Ecuador.

If we don't have something to *parar la olla*²¹ with, then I can go to the mangroves. I know my family is waiting for me, and when I get back, I can have enough to buy rice, or anything else we need (C5, m).

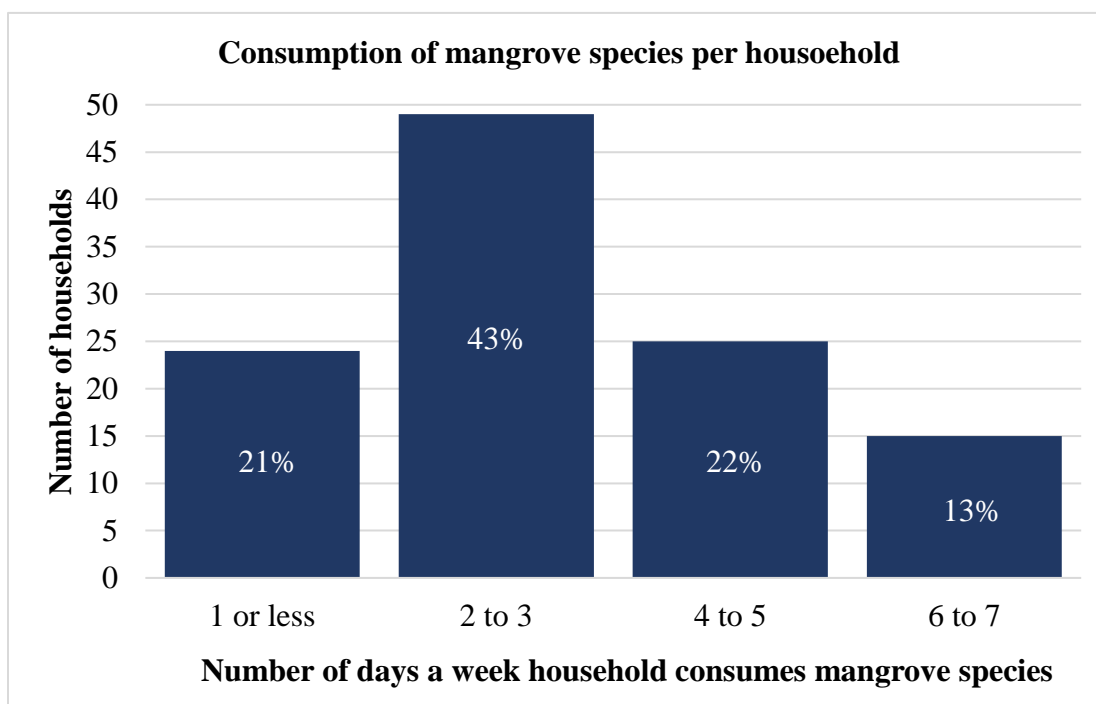


Figure 13: Consumption of mangrove species per week, per household. Total number of households surveyed: 113 (Data source: Field Data 2017).

Many traditional dishes made with mangrove products have been consumed by the *Bolíveños* for many years, and their recipes are passed down from generation to generation. Some of these dishes have also gained more mainstream popularity in recent years and can be consumed in restaurants all over the country, especially along popular tourist destinations along the coast (Figure 14).

²¹ Something to cook.



Figure 14: Traditional dishes cooked with mangrove products. Top left: *Estofado de pescado*, dish made with flathead grey mullet fish (*Mugil cephalus*). Top middle: *Encocado de churros*, coconut milk stew with mangrove periwinkles (*Littoraria fasciata*). Top right: Fried Pacific fat sleeper (*Dormitator latifrons*) with boiled plantains. Middle left: *Concha* and lentil soup. Middle: *Tamales de concha*, plantain dough *tamales*. Middle right: *Panda*, Pacific fat sleeper (*Dormitator latifrons*) steamed in plantain leaves. Bottom left: *Arroz con conchas*, fried rice and cockles. Bottom middle: *Estofado de concha*, cockle stew and rice. Bottom right: *Ceviche de concha*, raw cockles pickled in lime juice and boiled plantain (Data source: Field Data 2017).

2.6.2. Mangroves empower women

Having access to mangrove resources has always been a priority for the women of mangrove communities across Esmeraldas Province because gathering mangrove cockles – and other edible species from the mangroves – allows women to provide their families with nutritious food, as well as a means to financially support their families (C24, f). However, despite being “considered to be the hardest activity among the productive activities related to the mangroves,” gathering mangrove cockles is not a glorified activity; it has traditionally been practiced as a livelihood strategy by people of low status in the community (Mera Orcés 1999, 84). It is also poorly paid, and the earnings of this work usually barely supply the basic household needs. Nonetheless, selling mangrove cockles grants cockle gatherers access to “*plata caliente*” – “quick cash on the spot” (C25, m). Women in mangrove communities in particular value the “work” opportunities these spaces provide for them because *la concha* is one of the few viable sources of income to them. This is especially true for women with young children, as they have a more difficult time accessing alternate livelihood strategies than men, or women who can afford to leave Bolívar for work (C33, f).

Working in the mangroves grants women the flexibility of being able to go to *la concha* for a few hours then return home to spend time with their children and tend to the household’s non-income earning needs – clean, cook, do laundry, “whatever needs to get done” (C26, f). Some women try to supplement their household income by doing other types of work (usually selling cooked food), but this does not supply enough earnings to support their household needs. Consequently, having access to the work in the mangroves is especially important for women who live alone, single-mothers, or women whose partners do not provide them the financial support that they and their children need. As is typically the case of the mangrove communities in Esmeraldas, caring for children is the responsibility of women (Mera Orcés 1999). Even when a couple separates, the father is not accountable to provide for the children, meaning that “women are the ones who always end up taking care of the family” (E2, f).

I have been alone with my children for five years, but I thank God that I have the option of going to the mangroves and being able to get 50, 100 cockles...I try to get as many as I can for the benefit of my house (C9, f).

Although not always acknowledged, mangrove communities in Ecuador “have been fundamentally supported by the work of women” (Bravo 2003, 3). Women-led households are more dependent on *la concha*, but even in cases where the man is seemingly the main provider, it is the work women do through *la concha* that ultimately supports the household. This is even true in households where the man has a well-paid job in the formal sector, as they normally get paid monthly or bimonthly (C26, f). Selling cockles may not generate high earnings, but this work does not require that a person wait weeks to get paid, which is something that not all people of the community can afford to do (C9, f). Anyone in financial need can go to the mangroves and earn some “*plata caliente*” on any given day (C15, f), because the mangrove never “closes its door” (C8, f). Thus, in male-headed households where it may seem like a *conchera*’s income is secondary, it is their earnings that keep the household going on a day-to-day basis, because with this money, the family can survive until the man collects his paycheck (C21, f).

Having the ability to sustain their households economically has been empowering for the *concheras*. Even though the work is not highly paid or well-regarded, and is physically demanding, women like being able to contribute to (or support) their household’s income. Furthermore, *la concha* also gives some women the opportunity to generate an income when a man is economically failing to help her to support their children. Although it does not mean that they are living luxuriously, working in the mangroves can allow a woman to sustain herself and her children. This is not only something to be proud of, but in some cases, it can be very empowering, because having economic independence may mean having the ability for a woman to leave an abusive relationship.

My husband maybe hit me three times...that is why I began to work, because I learned that working gives you freedom. Because if I support my household, why do I have to live with a man who beats me? Just for a plate of food? (E4, f).

2.6.3. Mangroves provide commercial products

Before mangrove cockles began to be commercialized outside of the community, mangrove cockles were consumed in the home and some people would barter them for goods or other types of food (Field Data 2017). The value of the cockles began to grow in Bolívar as they began to be exported to port cities in Manabí Province in the 1970s. At the time, *la concha* was only a small-scale activity, and in southern Esmeraldas, it was traditionally an occupation dominated by women. By the early 1980s, as the demand for cockles increased, *la concha* transformed into a significant source of income for some households in Bolívar, but the practice was still predominantly performed by women (Field Data 2017). There were fewer *concheros* then, and people did not gather mangrove cockles to the extent they do today (C8, f).

Today, mangrove cockles (*Anadara tuberculosa* and *A. similis*²²) are in high gastronomic demand in Ecuador (El Universo 2010); they are the most commercially traded mangrove products in the country, and in some cases they are also consumed internationally (El Universo 2016). More than half of the cockles consumed in the country come from the mangrove zones of Esmeraldas Province; the mangrove forests of the Muisne River estuary in southern Esmeraldas account for 10 percent of the total national supply. Other mangrove cockles are extracted from Guayas Province and El Oro Province (MAGAP 2013). From these coastal regions, the mangrove cockles travel as far as the eastern provinces of the Amazon. Also, from Guayas Province cockles are exported to Peru, and from north Esmeraldas to Colombia (E7, m). From Bolívar, the mangrove cockles are sold in markets in nearby coastal cities such as Sua, Atacames, and

²² There are two species of mangrove cockles commercially traded in Ecuador – *Anadara tuberculosa* and *A. similis* but of the two, *A. tuberculosa* is the most abundant species in the Ecuadorian mangroves (Mora and Moreno 2009).

Tonsupa (to the north) and towns in the province of Manabí such as Pedernales, Canoa, San Vicente, and San Isidro.²³ Several cockle merchants live in town, but most cockle buyers live outside the community and go to Bolívar weekly or bi-weekly to purchase mangrove cockles. The number of cockles extracted from the mangrove forests surrounding Bolívar is not rigorously monitored, but according to one of the local cockle merchants, at least 15-20,000 cockles are exported from Bolívar every week (C2, m, 42 years old). The current price of a *ciento* – 100 cockles – is about \$10 USD, but in times of high demand – such as, holidays and peak tourist seasons – cockle merchants may purchase a *ciento* for \$12 USD (Field Data 2017). The growing demand for mangrove cockles has meant increasing employment opportunities for *concheros*.

2.6.4. Mangroves are a source of employment

“Most people work in *la concha*” (C30, m) because “there is not another source of income” in Bolívar (C28, m). However, this has not always been the case for this community, especially for the male population. Throughout the twentieth century, the men of the community were employed in different areas of the local agricultural sector or sustained their livelihoods by fishing out at sea. However, the productive activities performed by the *Bolíveños* began to shift in the early 1980s as a response to national economic policies that introduced large-scale industrial activities to the southern regions of Esmeraldas. At first, this created new employment opportunities for men, while the women continued working in the mangroves. The employment “boom” did not last for more than a decade though; access to jobs has been in decline since then (Field Data 2017). An effect of these developments has been an increased dependency on mangrove resources as a source of income for the *Bolíveños* (and inhabitants of surrounding communities).

²³ All of these are popular vacation destinations for the *serranos*, Ecuadorians who live in the Andean highlands. Canoa is also a well-known destination for North American and European tourists.

Despite the recent influx of employment opportunities in emergent economic sectors, there are many people who are not able to find a secure or a well-paying job. Aside from there being a general lack of jobs, most of the adults in Bolívar also have limited opportunities because they have little to no work experience and low education level. Until less than 10 years ago, the highest level of education a person could obtain in the local school in Bolívar was sixth grade. In recent years, an increasing number of the working-age population has turned to extracting resources from the mangrove forests to sustain their livelihoods.

Truly the industry that employs all people, without asking for any requirements, without looking at your age, if you're in good shape or if you're sick, it's the mangroves (C8, f).

While gathering mangrove cockles has traditionally been an activity done by women (and children), *la concha* has gradually become “the main source of income of Bolívar” (E2, f). An increasing amount of men are turning to gathering cockles as a livelihood strategy because it is “the only work available” for many people of the community (C28, m). Although the men of the community are less dependent on *la concha* than the women (because men have fewer limitations in accessing other types of livelihood strategies (see Figure 8 and Figure 9), often the jobs they can obtain are not reliable or well-paid. For example, working at a shrimp farm is seasonal; men are only hired for a few days during harvest seasons (up to four times a year per farm), and only a few men are hired to do this work. Likewise, other jobs such as in construction are not always available, and workers are not paid in full until days or weeks later (Field Data 2017).

More young men have been drawn to work in the mangroves, but this work does not have the same meaning for them as it does to the women of the community. Men face fewer limitations in obtaining access to other jobs, so to some of them *la concha* is mostly a second choice, something to fall back on when other opportunities are not available. For women, on the other hand, it may be the only form of employment available. Thus, men will go to the mangroves for one week if they are unable to find

work, “but if another job comes up, they will [not go] to *la concha* and go do that instead” (C33, f). Hence, men have the privilege of being able to choose which job to do when, and this privilege grants them access to more income opportunities. Some men can go *la concha* one morning, and after that work somewhere else. (Women however typically rush to get home to take care of the children and the household chores, and other forms of non-paid labor.) Having the option of doing some other type of paid work – or extra time for leisure – is a reason some men are attracted to the work of *la concha*. Also, there are men who are fairly competent at the work in the mangroves and can easily generate at least the daily equivalent of working in other jobs. So ultimately, working in *la concha* is a more ideal option for them, because they work fewer hours for a comparable (if not a greater) pay. For example, a young man can make \$10 or \$15 working for someone for a day, but if they go to the mangroves they can get 100 or 150 cockles, and make the same amount (or more, depending on their daily catch), and get paid in *plata caliente*. Furthermore, “working for someone may entail working from 6 a.m. until 4 p.m. but going to *la concha* may only take half the day” (E4, f).

2.6.5. Mangroves pay for education

Providing an education for their children is a high priority for many *concheros*. From their perspective, “unlike them,” if their children can get an education, then they can have “a better future” (C19, m). Mothers put their kids through school through the work of *la concha* “so that they can move ahead...so that they can become someone in this life” (C13, f). Many *concheros* are second, third, fourth, even fifth generation mangrove resource users. This is how their parents provided them schooling, and now, they are also doing this with their children. Therefore, many young *concheros* with children see the mangrove cockles not only as a source of money, but a source of education for their children.

The mangroves to me are everything because I get [money] for the schooling of my children. I also did that, because I have a high school

degree and I paid for my studies *conchando*.²⁴ So now I am doing that with my children (C9, f).

With the money they make from selling mangrove cockles, *concheros* can buy school supplies, uniforms, and whatever else their children need (C21, f); *la concha* is one of the primary means by which parents can pay for the schooling of their children in Bolívar (C12, m). On the days leading to the start of the school year, one will see men, women, and children flocking to go to the mangroves. People are trying to try to make as much money as possible these days, so that when they get the list of school supplies, they can have enough money to pay for these expenses. Having a source of daily cash in hand is especially important for those parents who have children in high school, because the closest high school to Bolívar is in Chamanga, 30 km away. Putting a child through high school is an economic burden for most families because daily these students need at least \$3 USD to cover their transportation costs. With the money they make from selling cockles, *concheros* with children in high school are able to pay for the daily commute of their children to get to school.

While some students practice the activity as a pastime, an increasing number of the youth gather cockles during the school-year (Figure 15 and Figure 16). Depending on the tide,²⁵ students will go to the mangroves in the afternoons or on the weekends. Although some will only gather a couple dozen, there are some young *concheros* who gather enough cockles to supply a significant contribution to the household income and help their parents pay for their schooling expenses (Field Data 2017).

Sometimes as parents when we don't have enough, or if a person is sick, the children go and gather their 100 cockles, and they come [and sell them] and make their money (C29, f).

²⁴ Working gathering cockles.

²⁵ People gather cockles at low tide, when the mangrove roots are exposed. During the school year, students can only go to *la concha* when the tides are low in the after school hours or on the weekends.



Figure 15: *Conchera* going to the mangroves with her children, nieces, and nephews.



Figure 16: Cousins in the mangroves, gathering cockles after school.

2.6.6. Mangroves are spaces of cultural identity and social development

To many *Bolíveños*, the mangrove ecosystem is “like a national flag,” it represents who they are as a people (H2, m). This is especially true for the *concheros* whose productive occupation is based on the extraction of mangrove resources. “*La concha* has been there for many years,” it is something the community has always been able to access (C30, m). Without the mangrove forests, “there would be no *concheros*” in Bolívar (C12, m). In this context, the mangrove ecosystem is more than a source of material extractions, but it is a source of cultural identity for the mangrove communities of southern Esmeraldas. Having access to these provides people spaces where they can share their traditions with younger generations, allowing ancestral cultural practices to be passed on, “so that they too can be a part of the mangrove ecosystem” (C13, f). The *Bolíveños* are proud to be part of a *pueblo del manglar*. There are festivals that celebrate the mangrove forests, and people of the community will sing self-authored songs or read poems they write about the mangrove ecosystem (Field Data 2017).

To me the mangrove means everything, I have [it] like a symbol of being a *conchera*, so many memories that I have. And when I look at it, I fill up with happiness, because the mangrove aside from giving us life, it makes us shine, like *concheras*. Because if those mangroves were not there, we would not be able to say we are *concheras*, because there would be no mangroves to gather cockles from (E5, f).

Mangrove forests also provide spaces for people to socialize, as the work is traditionally done in groups. Despite it being strenuous and physically demanding work, people can “have fun gathering cockles” (C3, f). For example, they will make bets with one another to see who gathers the most cockles in a given period of time. There is no prize, other than “having the satisfaction of knowing that you won” (C4, f). Others talk about how they enjoy that they are able “to laugh with the people [they] go with” (C32, m). For the women of the community, the mangroves have always been places where they can “spend time with *compañeras*” – female friends (C7, f). Because women carry most of the household responsibilities, they are typically too busy with doing chores or caring for the children, so they are not able to make much time to socialize with one

another. In the mangroves, however, they work and socialize simultaneously, and they can share with another without “wasting any time.”

When a friend tells you "*Fulana*²⁶ let's go to *las conchas*," you may think your friend is going through a similar time as you...and you go together. And if another friend sees you going and asks to join you, you all go. And all three of us understand that all of us are enduring the same situation, that we didn't have [money] that day....And we don't waste time, when we get back each goes on to their domestic chores, to clean, or whatever, because in *las conchas* we are *conchando*²⁷ but also sharing our problems with one another (C8, f).

2.7. *Conchando* in the mangroves

Concheros from Bolívar gather cockles in mangrove stands that are near the community. To get to different gathering locations, people may have to travel as far as 3-4 kilometers north of the town, or 4-5 kilometers to the south (Figure 17). Depending on how much time a person has that day, their physical ability, or who they are traveling with, they will walk. However, more often people get to *conchales* – areas in the mangroves known to have cockles – through the estuary on a canoe or a *bongo* – a small motor boat (such as the one shown in Figure 15). Depending on the day, others also use a combination of both methods.

Most *Bolíveños* do not own any type of boat (only 20 percent of the households do). As a result, they depend on people who have one to take them. If they are going with a close relative on a canoe, they may go with them for free, however, those who own motor boats – unless they are taking a member of their immediate family – charge a transportation fee per *conchero*. Depending on the distance, the price is 10-15 cockles (a value of \$1-1.50) per person, per day. Thus, there are some men in the community whose source of income is sustained by transporting *concheros* to and from gathering grounds in

²⁶ Spanish slang word to talk about a woman without saying her name. Could be translated as “so-and-so.”

²⁷ Gathering cockles.



Figure 17: Extent of gathering grounds and *conchero* work trajectories. The square ponds shown here are shrimp farms. When *concheros* travel by foot, they walk on the “walls” of the ponds to get to different *conchaes*.

the mangrove forests (women can navigate a canoe on their own, but culturally, a woman would not be able to use a motor boat on her own). *Lancheros* – boatmen – will take a group to a location and agree on a time to come back to pick them up. *Concheros* who do not want to pay this fee, or who are able to get to good *conchaes* by foot will walk.

Going to *la concha* is customarily a group activity. There are groups of people who regularly go to the mangroves together. These are usually comprised of relatives, but neighbors or people who are close friends will also go together (Figure 18). There are also some *concheros* who will go “with whoever is going” (C21, f). Traditionally, women went in groups of 3-5, or as many as could fit on a canoe. Today, with motor boats, people are able to go to the mangroves in larger groups. Once they are dropped off by the *lanchero*, people may work together in close proximity (Figure 19), while others like to disperse, as to not invade “one another’s space” (Figure 20).



Figure 18. Two groups of *concheros* going to the mangroves on canoes. Once they get to a location, the group may split up, but they will get to that location and get back to the town together, following one another, as is shown in this image.

It is common to see women taking their children (or children of relatives), but male *concheros* rarely would take children with them. Male *concheros* regularly go with their wives (or domestic partners), or with 1-2 other men, but many of them also go alone (Figure 21). As a male *conchero* put it, he likes to “go the mangroves for what he needs to do” – gather cockles. Some *concheros* claim that going with other people can be distracting and slows them down. This attitude mostly applies to the men, as it is rare to see a woman go on her own, but increasingly more women (those that usually gather 200-400 cockles in one day) are starting to go alone. As a result, the work of *la concha* is changing. In a way, for some people going to the mangroves is more of a “job” rather than a social activity that provides additional economic benefits. Nonetheless, the “shared nature” of the mangroves remains. Even if people are not going in a group, they will often find one another in the mangroves. They may end up working alongside the people they run into that day or heading back to the town as a group (Figure 21).



Figure 19. *Concheras* gathering cockles together.

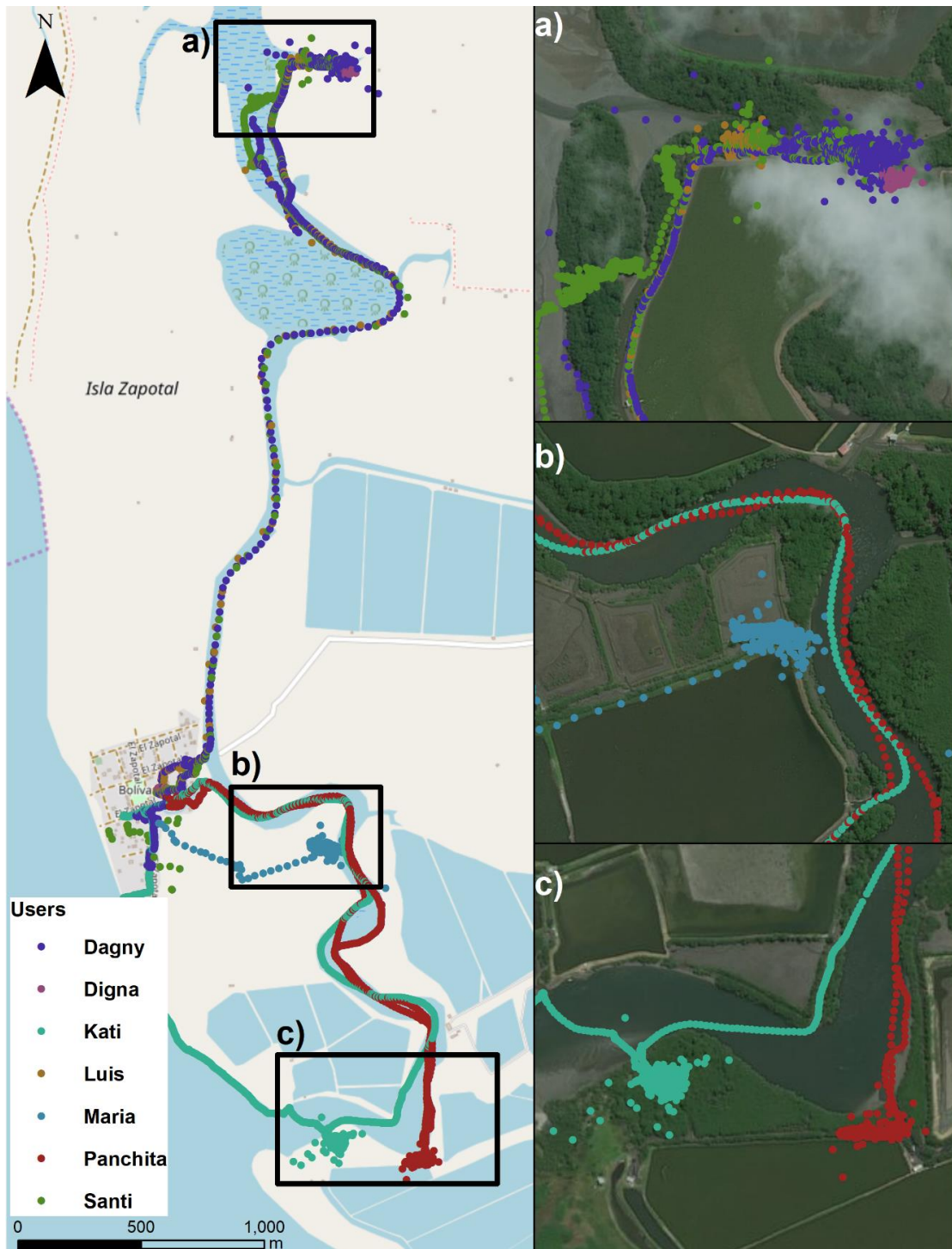


Figure 20: Shared spaces. a) A group of *concheros* was taken by the same *lanchero*. They were dropped off in the same location and stayed relatively close to one another. b) A *conchera* walked a short distance to get to a *conchal* not too far from her home; she was accompanied by her two children. c) In red, this person went to an area right off a shrimp pond. In teal, this person went with a group and walked back along the beach.

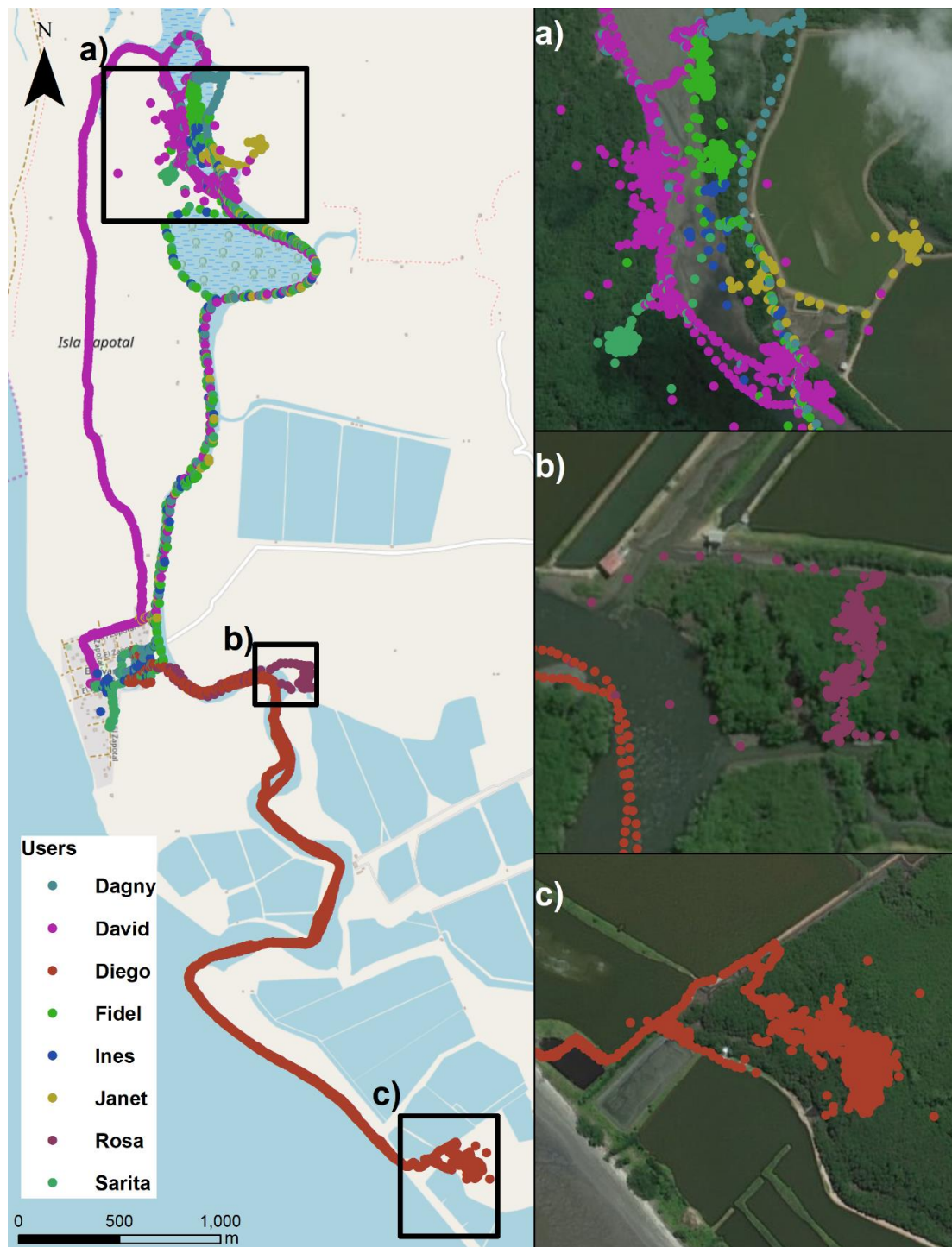


Figure 21: Different paths, same spaces. a) A *conchero* who had walked on his own found a group that had been dropped off by a *lanchero*; he went back with the group on the boat. b) A *conchera* was dropped off near a shrimp pond canal and was picked up on the other side of the mangrove stand. c) A *conchero* went by canoe to the end of the estuary, then walked on the beach to get to a *conchal* on the other side of a shrimp pond.

2.8. Conclusion

Communities that belong to subaltern groups within a society – such as the landless and those who depend directly on having access to specific types of natural resources – tend to have a higher dependency on common property resources (Armitage 2002). As a result, these populations have a different experience of development than the rest of society does. This is particularly true for women, a subaltern group that has globally been invisible from development discourses and whose access to natural resources is limited “virtually everywhere” (Rocheleau, Thomas-Slayter, and Wangari 1996, 291). In the case of Bolívar, although part of the population has access to some land (mostly this extends to having a plot of land to build a house on), most of the community is highly impoverished. The majority of working-age adults are highly limited when it comes to having access to employment opportunities in the formal sector, especially the women. Subsequently, the mangrove forests have filled these income voids for many families. However, as some *concheros* put it, they are merely able “to survive” with these wages. While there are a few *concheros* who are able to make \$30-40 USD a day, there are some who only make \$5-10 USD a day; the rest are somewhere in between. Moreover, even those working in jobs in the formal sector rarely make over \$400 USD a month (Field Data 2017). Therefore, even if people wanted to, it would be difficult for them to invest in the economic sectors in the region (for example, shrimp farming). These are large-scale operations that require large upfront investments; they are not meant to be for the profit of local populations. This is why the mangrove forests are so valuable to the community, because historically they have presented opportunities for the landless (and the jobless) populations of the community to have access to spaces through which to sustain their livelihoods. In Bolívar, these types of populations – or subaltern groups – have historically been defined by gender lines, however, as more young men are increasingly unable to find access to paid labor, the mangroves have become a main component of the local economy (Field Data 2017).

“...to survive, it's the mangrove....If we don't *conchamos*,²⁸ we wouldn't have the cockles we sell to make the money we need to buy the things we need” (C26, f).

Mangrove forests are places where “the people who need it the most, the poorer ones” of the community, can find a means to provide for their families (C26, f). Through mangrove resources, people are directly and indirectly nourished, because with the income they can generate from selling these resources, *concheros* can buy other food. People are also able to provide their children “a better future” as they can generate an income to pay for their schooling (C19, m). *Concheros* can also supply other household needs; this is why “everything depends on [the mangroves]” (C24, f). However, as this paper has shown, the *concheros* have a deep relationship with the mangrove forests; they perceive this ecosystem as being the provider of “life” for the community. Therefore, despite the undeniable economic benefits that mangrove forests provide to Bolívar, not everyone sees these spaces solely as resources they can profit from. To the *concheros*, having access to the mangroves means more than simply having access to a “job,” because these are spaces that provide everything to them “an education, health, nutrition, all of that” (E2, f).

Concheros interact with the mangrove ecosystem from an early age, just as their ancestors did (C16, f). In Bolívar, there are some people who are fourth or fifth generation *concheros*. As a result, the community has developed social and cultural ties to the mangrove ecosystem that have been passed down generationally. These factors allow the *Bolíveños* to claim they are part of a *pueblo del manglar*. Vice-versa, the community perceives the mangrove forests as being a part of who they are as a people. A third generation *conchero* talks about the mangrove being “like a father, like a mother, like family, like [their] ancestors” (E2, f); it is a part of who they are as a people. In this sense, the community has a monist view of nature; they are part of the mangrove ecosystem and the mangrove ecosystem is a part of who they are. Thus, these forests also

²⁸ Gather cockles.

have both a personal and an emotional meaning to many *Bolíveños*. A *conchera* argues that the mangrove is “like a friend you have to pay visits to,” because when you are unable to do that, “the mangrove becomes sad” and produces “less life” (C6, f). Losing access to these spaces would then mean losing a part of who they are as a people, and as individuals. This is particularly true for women, a marginalized group who through the mangrove ecosystem found a voice and a means to liberate themselves through personal growth. Therefore, to the *Bolíveños*, it is important that the mangrove ecosystem can carry on with its natural cycles so that they can continue having these forests to care for, and so that future generations can also have access to these forests and continue to be a part of these ancestral spaces.

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3. CHAPTER 3: A reorganization of space: Spatialities in the mangrove forests of southern Esmeraldas Province, Ecuador

3.1. Abstract

This paper examines the spatial transformations that have occurred in the mangrove forests of southern Esmeraldas, Ecuador since the latter half of the twentieth century. Taking a political ecology approach to develop a holistic understanding of these processes, this research explores the social, political, economic, and ecological drivers that have contributed to the production of different spatialities within these natural landscapes. Moreover, using Lefebvre's (1992) notion that "space does not exist in relation, but is produced in relation," this research presents these natural spaces – the mangrove forests – not only as a backdrop where humans and non-human actors interact with one another (Cresswell 2013), but rather as spaces that have been produced and reproduced by these actors. Subsequently, this paper examines the social relations among different groups and actors that inhabit or utilize these mangrove forests to gain insight into how these relations inform and influence the spatial reorganizations that have occurred in these spaces. This paper is informed by historical accounts from the literature as well as largely based on empirical data gathered through interviews with community members of Bolívar, a mangrove community located in southern Esmeraldas, and with representatives of local and regional state and non-state institutions. The main argument set forth in this paper is that the introduction of new spatialities in the mangrove forests are the result of evolving perceptions of these spaces, which influence how different landscapes are (re)constructed. Furthermore, different spatialities should not be simply perceived as conflicting uses of a space, as contemporaneous spatialities can also converge and complement one another.

Keywords: conservation, mangroves, political ecology, shrimp aquaculture, spatiality

3.2. Introduction

According to Lefebvre (1992), space can be divided into three categories: physical space, mental space, and social space. Each of these has a form, a structure, and a function, and the reality – or materialization – of a space is formed through the peculiar combinations of these three spaces; collectively, these produce diverse and unique places. This theory also applies to what is thought of as a “natural” space. A natural space is created by the geophysical conditions and natural processes found within a space, making it biologically and ecologically unique, with environmentally defined characteristics and boundaries. However, although these components are “nonmanipulable,” nature can also be “socially produced” (Peet and Watts 1996, 262). What this means is that nature is *created* without human input, but human society can transform these creations to *produce* (and reproduce) natural spaces reflective of that society’s values and desires and informed by its social and mental spaces. A society’s social spaces are produced by living everyday life; they are convoluted and heavily-shaped by local customs. The mental spaces are the ideal representations of a space; these are informed by individual values and personal beliefs (Lefebvre 1992). Using these concepts, this paper argues that the physical materialization of mangrove spaces in southern Esmeraldas, Ecuador is the result of biological and ecological components, but combined with the social and mental spaces of the actors that have agency over these forests, this results in the production and reproduction of varying iterations of mangrove spaces, introduced in the form of different spatialities.

A spatiality refers to the “range of types of spatial arrangements” that can be observed within a defined space and “the processes of how and why [these spatial arrangements] form” (Zimmerer 2006, 9). On that account, this research emphasizes an examination of the role of actors – or users of a space – in introducing a spatiality – a defined use of a space. Exploring how power differentials among different groups that inhabit, occupy, or utilize the mangrove forests of southern Esmeraldas can provide insight into the spatial transformations that have occurred in these natural landscapes in recent decades. The research questions this paper ultimately aims to answer is: *How have*

various factors contributed to the introduction of different spatialities within the mangrove forests of southern Esmeraldas?

To answer this question, this paper explores existing literature and ethnographic data collected during April-June 2017 in the study site, Bolívar, a mangrove community in southern Esmeraldas Province, Ecuador. The field data consists of participant observation and active participation, household surveys, and interviews with people representing different groups, including mangrove users,²⁹ community leaders, elders, and representatives of local community organizations,³⁰ and of regional state³¹ and non-state organizations.³² Through this fieldwork three spatialities were identified: ancestral³³ mangrove users, shrimp aquaculture, and mangrove conservation. This paper first introduces the long-standing spatiality of the ancestral mangrove users within the mangrove forests of southern Esmeraldas. Second, this paper identifies the factors and processes that have contributed to the introduction of new spatialities— shrimp aquaculture and mangrove conservation – into these mangrove spaces. In the context of this research, the introduction of new spatialities refers to how spaces are conceptualized and then materialized by different social groups. Thus, this paper argues that the introduction of a spatiality is driven by human decisions, which in turn affect the physical attributes, or the *reality*, of a space. Furthermore, this approach can provide insight on how transformations of these physical spaces influence the social relations among the groups that are producing and reproducing the different representations of the mangrove spaces.

²⁹ Mangrove cockle gatherers.

³⁰ Members of local mangrove fisherfolk associations.

³¹ Regional representative of the Ministry of the Environment of Ecuador.

³² Local, national and international non-governmental NGOs.

³³ In Ecuador, the word “ancestral” does not mean the “original,” or native inhabitants of an area, but is it a term used to refer to a people that has historically occupied a territory (García and Walsh 2009).

3.2.1. New spatialities

The introduction of a spatiality does not always entail the creation of a new physical space with its own social and mental components, but it does involve a reorganization of how the space is used and perceived by the actors within that space (Lefebvre 1992). In the case of the mangrove forests of southern Esmeraldas, the emergence of new spatialities may or may not mean a complete physical transformation of the mangrove forests, but in every case, it transpires as a reorganization of the space to allow for the introduction of new uses of that space. Subsequently, any type of “spatial reorganization” of a natural space has ecological and social outcomes (Roth 2008). Studying how spaces are reorganized from a broader scale can provide information about how a space has changed over space and time. However, to gain a holistic understanding of these changes, it is imperative to understand the processes that produce certain spatial reconfigurations, as well as the effects this may have on existing spatialities – the previous uses of the space. Empirical accounts of these processes can provide insight into these developments. Therefore, aligned with the framework of political ecology, this approach allows us to extend beyond recording observations of spatio-temporal environmental change to developing an understanding of the underlying causes – and ultimately the effects – of these processes on the human and non-human populations that are found in a changing space.

This research is premised on the idea that the spatial transformations observed (and that continue to occur) in the mangrove forests of southern Esmeraldas are largely the result of processes pertaining to the social and mental spaces of the individuals that have control over these natural landscapes. These social actors are generally understood as the people living within the boundaries of these spaces; however, in recent decades, external actors have also become involved in the decision-making processes that impact these forests. This paper proposes three existing (and seemingly competing) spatialities in the mangroves of southern Esmeraldas by exploring the processes that contributed to the establishment of each spatiality. This paper also investigates how social relations among the different groups that introduced each spatiality have developed over time, how these

affect the physical and discursive attributes of the mangrove forests, and thus how these spaces are perceived and utilized by these groups. By providing a historical, social, and economic context of the processes that have contributed spatial reconfigurations in the mangrove forests of southern Esmeraldas, this paper explores the complex relationships of contemporaneous spatialities in these forests.

3.3. Spatialities in the mangroves

3.3.1. The mangrove ecosystem

Mangroves are tidally influenced wetland forests comprised of diverse salt-tolerant flowering trees and shrubs growing along the coastal areas of at least 125 tropical and sub-tropical countries (Duke 2011; Kauffman et al. 2014). These ecosystems support high levels of diversity and abundance of species, fostering nursery and feeding sites for a wide array of arboreal and marine species, including fish species that supply subsistence and commercial fisheries (Lee 1999). Mangroves also provide other ecosystem services for humans, including: wood and timber, fiber sources, coastal protection (against storms and natural hazards), sediment regulation, erosion control, nutrient cycling, food, fisheries production, and aesthetic value (for ecotourism and recreation), among others (Duke 2011; Mukherjee et al. 2014). However, mangrove forests have been among the most threatened coastal ecosystems for decades. Over the latter half of the twentieth century, it is estimated that global mangrove cover decreased by 30-50 percent (Donato et al. 2011). This decline has been more pronounced in developing countries, where more than 90 percent of mangroves are found (Kaly and Jones 1998). In the case of Ecuador, it is estimated that between 40 and 60 percent of mangrove forests had disappeared by the end of the 1990s (Veuthey and Gerber 2012). In Esmeraldas Province this figure is closer to 80 or 90 percent (Mera Orcés 1999). Diverse activities threaten these ecosystems, including the expansion of agribusiness, coastal development and urbanization, aquaculture practices, and overuse from other forms of economic activities (Kauffman et al. 2014). In Ecuador, the loss of mangrove forests (and

other tidal ecosystems) can be attributed to the expansion of industrial shrimp aquaculture activities (Bravo 2003).

3.3.1.1. Governance of mangrove forests in Ecuador

The term “environmental governance” refers to “the broad range of political, economic, and social structures that shape and constrain actors’ behavior toward the environment” (Bumpus and Liverman 2008, 128). Environmental governance informs and is informed by political-economic relationships among the actors and institutions that govern a natural space, including the state, communities, private actors, non-governmental organizations, among other groups. Consequently, how environmental governance is applied from place to place is variegated in form and is context-dependent. Strategies of environmental governance adopted in a place are informed by existing statutory laws that dictate how a natural resource can and cannot be used; however, customary laws also have an important role in these processes. While established policies and regulations dictate how mangrove resources should be used in Ecuador, the actions of local actors and institutions often challenge this, which ultimately reshapes how environmental governance is applied in different mangrove regions of the country.

The laws and regulations regarding access to and use of mangrove spaces have been historically “vague” and inconsistent in Ecuador (Veuthey and Gerber 2012). Intertidal zones³⁴ did not become integrated into a legal and regulatory framework in Ecuador until 1960 with the Code of Maritime Police³⁵ when the state declared intertidal lands to be “national asset[s] of public utility.” As such, these areas could be used by any Ecuadorian citizen but only according to laws and regulations prescribed by the state (Latorre 2014, 549). In 1975, the state established a stewardship concession-system based on 10-year renewable leases – or *custodias* – referred to as “Agreements of Sustainable Use and Custody of the Mangrove.” These concessions grant an actor (or collective group

³⁴ Areas between the land and sea that are covered by water at high tide and uncovered at low tide.

³⁵ *Codigo de Policia Maritima* in *Registro Oficial* S1202, August 20, 1960.

of actors) the right to impose their own system of governance and regulations over the area for which the concession was approved (Gravez et al. 2013). In Ecuador, mangrove forests are administered by three ministries – the Ministry of the Environment (MAE), the National Ministry of Defense, and the Ministry of Aquaculture and Fisheries.³⁶ Ultimately, the approval of a concession lies in the jurisdiction of the MAE (Veuthey and Gerber 2012).

Although laws have been established to regulate the use of mangrove forests for over fifty years at the national level, resource use regimes have been implemented differently at the local levels. Most intertidal areas in Ecuador have been historically managed under local customary practices largely based on common property regimes (Veuthey and Gerber 2012). In more remote parts of the country, such as Esmeraldas Province, this continued to be the case until the introduction of shrimp aquaculture in the early 1980s (Field Data 2017). How different groups along the coastal areas of the country perceive, utilize, and interact with mangrove forests is largely based on local customs. Because the culture and heritage of mangrove communities varies, local uses of mangrove resources vary from region to region in Ecuador. This is also influenced by the different development histories of each area (Latorre 2014). Therefore, while there may be some similarities among mangrove dwellers in Ecuador, how the mangrove communities of Esmeraldas Province have traditionally managed mangrove forests, as well as how the more recent “mangrove users” – shrimp farmers and the state – make use of these resources is unique to this region.

3.3.2. Spatiality of the concheros

Globally, many coastal communities are characterized as being geographically isolated and plagued by economic “chronic poverty.” Consequently, coastal dwellers largely depend on marine resources to subsist. In the case of mangrove communities,

³⁶ Mangrove forests were previously under the jurisdiction of the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (*Ministerio de Agricultura, Ganadería, Acuacultura y Pesca*, MAGAP) but in 2017 the state created the Ministry of Aquaculture and Fisheries (*Ministerio de Acuacultura y Pesca*).

mangrove fisheries provide a substantial source of nourishment, often a “main source of protein in their diet” (Walters et al. 2008, 222). This is the case of the mangrove communities in Ecuador, where different groups have subsisted on mangrove resources in Ecuador for millennia (Bravo 2003). Coastal dwellers in this country consume a variety of edible mangrove species and many of the traditional subsistence practices developed by mangrove communities are based on the direct extraction of mangrove resources.

In southern Esmeraldas, mangrove dwellers rely on gathering edible species from the mangroves, predominantly *conchas* – mangrove cockles (*Anadara tuberculosa* and *A. similis*) – to sustain their household’s nutritional and economic needs (Field Data 2017). People who gather mangrove cockles are referred to as *concheros*; a female cockle gatherer is “*conchera*” and a male cockle gatherer is “*conchero*.”³⁷ While historically the mangrove cockles were only consumed locally, they are currently widely commercialized and provide a direct source of income to a portion of the community. Traditionally an activity for women, in recent years there has been a growing number of male cockle gatherers, as young men increasingly find themselves without access to other forms of income. According to the household surveys conducted in Bolívar, 55 men and 51 women (106 in total, or 41.7 percent of the adult population) sustain at least part of their household income through the activity of gathering mangrove cockles (Field Data 2017). In the past, there were other types of livelihood strategies that revolved around the mangrove forests. *Madereros* would log the mangroves for lumber (used for building houses), and *carboneros* made charcoal with the mangrove wood. However, as mangrove forests have become protected in recent years, mangrove logging practices at all scales have been banned (H2, m).

³⁷ Hereafter, to differentiate between these words, when talking about men who are *concheros*, I will use the term “male *concheros*” and to refer to a group of cockle gatherers comprised of both genders, I will use the term “*concheros*.”

The mangroves are the source of employment to us, and a source of life, because without the mangroves we can't eat, we can't buy whatever our children need. Everything depends on them (C24, f).

The mangrove ecosystem has played a role in the development of local cultural and social values, as well as contributed to the economic well-being of the mangrove dwellers. However, to the community, mangroves forests “do” more for them than supply resources like food or a source of income; the mangrove ecosystem is “the source of life in Bolívar” (C14, f). These spaces also allow for the development of cultural and personal identity, and social values. Mangrove users have a monist view of nature; they consider themselves to be part of the mangrove ecosystem. Thus, to survive – physically and culturally – *concheras* and *concheros* believe they must care for the mangrove forests (Field Data 2017). Therefore, losing access to these spaces means losing a part of who they are as a people, and as individuals. Being able to care for and protect the mangrove forests is what *concheros*⁹ believe allows them to be part of the ecosystem; if they stop performing this function, then they no longer would be part of it. Therefore, to many *Bolíveños*, it is important that the mangrove ecosystem can carry on with its natural cycles so that they can continue having these forests to care for, and so that future generations of *Bolíveños* can also have access to these spaces. For this reason, traditional mangrove resource extraction practices promote the “responsible” use of resources (E2, f). This model constitutes a “sustainable” approach to using mangrove resources, because it promotes the use of mangrove resources in a way that does not conflict with its natural cycles (gathering mature species, selective logging of mangroves, etc.). Furthermore, in more recent years, the local communities have widely engaged in the regeneration of mangrove resources by planting new mangrove trees (Field Data 2017).

The mangrove areas of Esmeraldas Province have been inhabited for multiple generations. While the land that constitutes this province has been part of the Ecuadorian territory since Ecuador became an independent state in 1830, these frontier lands have historically been outside of state control (Latorre, Farrell, and Martínez-Alier 2015). Until the introduction of industrial shrimp farming in the early 1980s, many mangrove

communities of southern Esmeraldas were on the periphery – not only geographically, but also politically and economically. Environmental governance was locally defined. Local families organized community councils that granted the inhabitants plots of land and determined how natural resources were to be used and allocated by the *pueblo* (E4, f). However, intertidal lands such as the mangrove forests were not given legal proprietorship, meaning that no group or actor had exclusive rights to these spaces (Field Data 2017). The mangrove forests “belonged to the entire *pueblo*” (C36, f), “because the mangroves were given to [them] by God, and [they] protect them” (C9, f). In recent decades with the introduction of outsiders – or “non-ancestral” peoples – the communal nature of these spaces changed when it was replaced by private property regimes established by the state, significantly changing the mangrove-people dynamics in these spaces.

3.3.3. Spatiality of shrimp aquaculture

3.3.3.1. Shrimp aquaculture in southern Esmeraldas

The industrial shrimp aquaculture spatiality was introduced to the mangrove regions of southern Esmeraldas in the early 1980s. Before this, there were family-owned banana plantations as well as cultivars of cacao and coffee grown in the region for decades, but the local production of these crops began to decline in the late 1970s. Therefore, the aquaculture industry was introduced to this region during a transition period, specifically marked by the decline of large-scale banana production in the area (H1, m). This process was accompanied by a large-scale out-migration. Many families left Bolívar to relocate to the cities; they were seeking better employment opportunities and schooling for their children. As people sold their lands, shrimp aquaculture investors from other places (mostly from Manabí Province) began to move in (Field Data 2017). An elder from Bolívar believes that the banana industry leaving this area was a political move, that the government wanted to concentrate all banana production in the southern parts of the country (in El Oro Province). This *Bolíveño* said that there were rumors of subversive groups in the forests of Esmeraldas, and that this deterred the investment of

external banana growers in the area (H4, m). Veuthey and Gerber (2012) argue that in the 1970s a Taura syndrome virus epidemic affected shrimp farms along the Guayaquil Gulf. Consequently, in the early 1980s, shrimp aquaculture operations were moved to the north, to southern Esmeraldas. The expansion of the Ecuadorian shrimp aquaculture sector along the coastal areas of this province in the 1980s and 1990s marks the industry's "second boom," the period when the industry experienced the most rapid growth in Ecuador (Latorre et al. 2015).

The construction of the first shrimp farm³⁸ in Bolívar began in 1982 and since then, the expansion of shrimp farming in this area has not ceased. The entrance of shrimp aquaculture was facilitated by the availability of "cheap" agricultural lands and expansive "unoccupied" mangrove areas. To secure property rights to these lands, shrimp aquaculture investors bought vacant agricultural lots along the mangrove forests. Once they established their ponds, they expanded them onto adjacent "unclaimed" lands – adjacent mangrove areas – leaving only a thin strip of mangroves between their ponds and the water (Field Data 2017). Initially, the industry was welcomed by local residents desperate for alternate forms of employment. The decline of banana production resulted in a loss of jobs for the *Bolíveños*, and employment in the shrimp farming sector was advertised as an auspicious livelihood alternative. Furthermore, the shrimp farmers also came promising to invest in community development projects (expanding the school, for example) (Field Data 2017). Employing locals not only allowed the shrimp farmers to establish a relationship with otherwise potential problematic communities, but it also gave them the ability to claim that the shrimp farming sector was promoting economic growth in these remote rural areas. Using this tactic granted shrimp farmers access to state loans, as their projects were presented as having a favorable economic impact on these communities (E4, f). The first jobs offered by the shrimp farmers were in the construction of the ponds. Both men and women from Bolívar were hired to remove, "log

³⁸ "La Tecol," a shrimp farm still in operation today.

and burn the mangroves,” and then men took jobs to excavate the ponds. These were laborious tasks, all done with the use of hand tools (C13, f).

At that time people with supposedly more vision, with money, they came to the buy mangroves. [Then] mangroves were not given much importance aside from our daily cockles...for the daily consumption. So, [shrimp farmers] came in and began to deforest [mangroves] with people from here, with our own people! Because people were never told what impacts this would have in the future, and look now what we are going through! That is what happened here in Bolívar. The people here were utilized to deforest the mangroves (H4, m).

People argue it took the community 5-10 years to realize “the damage [they] were doing to [them]selves” (C13, f). At the beginning, they only saw the economic benefits they were reaping; they were “blinded” by the cash that was put in their hands (H5, f). The shrimp farmers came bearing high-paying jobs to clear the mangroves to build shrimp ponds, in some cases twice as much as the average daily wages. The community initially gladly took these jobs, not realizing “they were destroying [their] life” in exchange (C9, f).

[We were] like a child, when someone comes and gives them a piece of bread and they eat it without even thinking about it. We were so blind, so asleep. We have been here in Bolívar – what is the right word? Naïve (C4, f).

3.3.3.2. Operations of industrial shrimp farming

While the deforestation of the mangroves and removal of all other types of vegetation was indiscriminate, the location of the excavation of ponds was carefully planned (Vázquez 2007). The site selection process of a shrimp farm entails finding a place that is close to the sea or accessible to brackish waterways, in the upper tidal zone, where it can easily be filled and drained through tidal exchange (Warne 2011). Finding spaces with good topography – a slight slope towards adjacent waterways – is also crucial, as this facilitates the draining of the excavated area. Water is drained by gravity through a ditch that is constructed adjacent to the pond (and later used for water exchange

during harvest seasons). In sites where the topography does not allow it, water can be drained using a pump (Kungvankij and Chua 1986). Another important consideration is to establish ponds in areas that are easily accessible by boat to facilitate the transportation of the shrimp to processing plants (Warne 2011). Due to their biophysical characteristics then, intertidal forests are prime locations for the construction of artificial shrimp ponds.

Walters et al. (2008) argue that there does not exist a “mangrove-friendly” aquaculture method, in other words, a method that does not entail the deforestation of mangrove forests. However, the impacts posed by the shrimp aquaculture industry extend beyond those associated with the replacement of these intertidal forests with artificial shrimp ponds. Once established, discharge effluents from the ponds containing varying levels of toxic materials and other nutrients contaminate adjacent waterways, further decreasing the health of remaining mangrove stands (Duke et al. 2007). This process begins with the sterilization of the ponds; once constructed, biocides and disinfectants (including chlorine products) are applied to ensure that all species that could compete with the shrimp later are terminated (Bravo 2003). Depending on the farming method type, this type of process may be repeated every time after a harvest, when the ponds are emptied and prepped for future seed stock (Figure 22).



Figure 22: Empty “traditional” style pond after a harvest. This is one of the oldest shrimp farms in Bolívar, located at the entrance to the town, near the end of the “*Via de Bolívar*.”

According to the United Nations Food and Agriculture Organization, the main production method for shrimp farming in Ecuador is semi-intensive (Schwarz 2005). Ponds are usually symmetrical, one to three hectares (ha) in size, and closely located to one another. Each pond has a ditch leading to an outlet gate used during the harvesting of the shrimp and an inlet gate with a pump used to fill the pond (Figure 23). To maximize yields, this farming method requires the input of supplementary feed and fertilizers, as well as of other natural and synthetic additives (Kungvankij and Chua 1986). Using this approach, the yield is of 1,000-5,000 pounds per hectare per year (Schwarz 2005). The ponds originally established in Bolívar employed more of a “traditional” (extensive) method. Ponds are of 3-20 ha in size, irregularly shaped, and about one meter deep. A ditch of 10-20 meters wide runs along a side of the pond to let water in and out of the pond, which is influenced by tidal exchange. Using this method produces lower average yields (average of 600 pounds per hectare per year) (Schwarz 2005), but it is less costly, since it does not require the use of formulated feeds or the use of a pump; it is also less environmentally destructive (Kungvankij and Chua 1986). However, as a response to a series of shrimp disease outbreaks, the shrimp farming methods employed in southern Esmeraldas shifted to the semi-intensive model (Field Data 2017).



Figure 23: Water pumps connect shrimp ponds to waterways on the other side of a pond's wall.

3.3.3.3. Intensification of shrimp aquaculture

Starting in the early 1990s, shrimp disease was rampant in the ponds; this was greatly affecting the productivity of many farms in the area (Field Data 2017). As a response, shrimp farmers began to run more intensified farming operations by shifting to

a heavier use of antibiotics and natural and synthetic agents to prevent disease and yield decline, including the use of materials such as chloramphenicol, which was prohibited in Ecuador in 2002 (Bravo 2003). While this approach extended shrimp production in the area for some years, this came with severe externalized costs. Many aquatic and avian species were affected by the heavily unregulated and indiscriminate use of toxic compounds (Vázquez 2007). Moreover, despite efforts, the outbreak of the white spot syndrome virus (WSSV) in Esmeraldas in 1999 could not be prevented. Many shrimp farmers in the area lost all their production for the year. Some abandoned their ponds temporarily, others permanently, selling their farms at nominal prices.

When shrimp aquaculture resumed in the area, abandoned ponds were restored in Bolívar, more were constructed, and according to the locals, the farming operations intensified (Field Data 2017). For example, to decrease the risk of exposure to disease, the shrimp seedstock began to be sourced from laboratories, rather than collected in the wild (as was done when extensive shrimp aquaculture methods were practiced before the WSSV outbreak) (Bravo 2003). According to members of the community, the use of some of the synthetic compounds used in the 1990s has been prohibited, but shrimp farmers continue to use a variety of chemical agents that are highly toxic to the environment (Table 4). Although the people from the community are not fully aware of the impacts these chemicals have on them or the environment, they attribute the decline of mangrove species and skin rashes on their skin to these products. A main problem in the shrimp aquaculture zones of the Muisne River estuary is that the use of chemical additives is largely unregulated. Allegedly, it is also not unusual that these products are not properly used, either due to negligence or ignorance on the part of the shrimp farm employees applying these chemicals (E1, m).

Table 4: Some products used in shrimp farming operations, as identified by *Bolíveños* working in a local shrimp farm.

Common name in Bolivar	Commercial name	Product type
<i>Barbasco</i>	Rotenona	natural insecticide and pesticide
<i>Karate</i>	Karate Zeon	synthetic pyrethroid insecticide
<i>meta</i> (or <i>metabisulfito</i>)	sodium metabisulfite	inorganic disinfectant and preservative
<i>glifosato</i>	glyphosate	broad-spectrum, non-selective herbicide

3.3.3.4. Who are the shrimp farmers?

The first shrimp farmers in Ecuador were wealthy “entrepreneurs” who owned banana plantations in southern Ecuador (Schwarz 2005). Today shrimp farmers are members of the upper class who can afford to invest in this industry. According to Martínez Alier (2007), a person seeking to establish a shrimp farm with viable returns on the investment will need at least \$1 million USD to get a shrimp farm running. Although the state partially finances some shrimp farming operations, about three fourths of shrimp farms in Ecuador are funded solely by private investments (Armijos-Suárez et al. 2015). Many of the costs of a shrimp farming operation begin to accumulate even before a pond is constructed, throughout the permit application process. Moreover, obtaining a mangrove concession for shrimp aquaculture operations is not only costly, it is time consuming. At the peak of the industry’s growth in the mid-1980s, due to faults with the jurisdictional agencies overseeing these processes, an applicant’s permit could take up to three years to be granted (Meltzoff and LiPuma 1986). Today the process may be more efficient (Armijos-Suárez et al. 2015), but a trend that continues is that the social standing of a person and their political connections can influence who is granted a concession.

The peak growth of the industry occurred during a time of high political instability in the country (E1, m). From 1982 (the onset of the second shrimp farming boom) to 2006 – deemed the country’s 24-year neoliberal period, – there were ten

presidents in Ecuador (Latorre et al. 2015). During this period, influential individuals with connections to government officials or state agency employees could get their concession approved in months. Many shrimp farming entrepreneurs were not only friends with influential state officials, but powerful people themselves were shrimp farmers (E1, m). During the period of the second shrimp farming boom, political offices from the local to the national levels were largely occupied by military officials, and by the end of the 1980s, government and military officials were the largest investors of shrimp aquaculture in Ecuador (Meltzoff and LiPuma 1986). This continued to be the case until the late 1990s (Veuthey and Gerber 2012). Consequently, the shrimp aquaculture industry grew aggressively in Ecuador not only because the development of this sector was unregulated in general, but because of the rampant corruption in the industry.

It was chaos, and most government officials came with that mentality. They would come in and try to make as much money however they could. They tried to take advantage as much as possible because they didn't know where they'd be the next day (E1, m).

3.3.3.5. Illicit shrimp farming

A common practice employed by shrimp farming entrepreneurs was to establish ponds before receiving any legal permits – without a concession in hand (Meltzoff and LiPuma 1986). Compared to the potential revenues investors could generate through shrimp farming, the fines for illicitly converting mangroves to shrimp ponds were seemingly insignificant. This illegal expansion of industrial shrimp farming was accomplished “in complicity” with the local governments and the MAE (E1, m). According to the Ecuadorian Forestry and Natural Areas Institute (INEFAN), by the year 2000, shrimp ponds covered an area of 207,000 ha, while the National Chamber of Aquaculture estimates that this value was closer to 170,000 ha. Nonetheless, only 50,454 ha of shrimp farms were operating legally at the time (Bravo 2003). As a result, the government launched an initiative to legalize all illicit shrimp ponds as a means to control the production of this profitable sector (Veuthey and Gerber 2012). However, results

from a survey conducted by the Ecuadorian Center for the Integrated Survey of Natural Resources by Remote Sensing (CLIRSEN) found that from 1999 to 2006, 44,642 ha of shrimp ponds were still operating without a concession (Armijos-Suárez et al. 2015). Historically, most illegal shrimp farming operations were established in Esmeraldas Province. Despite their legal status now, more than 90 percent of existing shrimp ponds in this region were illicitly established (Bravo 2003). Many of the research participants interviewed for this study argue that this occurred because the authorities received bribes to “look the other way.” Many *Bolíveños* claim that this is something that continues to be the case today (Field Data 2017). Because many politicians and members of the regulatory agencies of the industry are friends with, or are themselves the owners of shrimp farms, it “complicates any legal battle” against shrimp farmers who violate the law and carry out their operations without the proper permits (Bravo 2003, 6).

Corruption, that’s what it is. There had never been any formal orientation to give the community a means to protect itself from that (H4, m).

Due to the politically stable period of Rafael Correa’s presidency (2007-2017), the levels of corruption seen before may no longer appear to be a problem in the shrimp aquaculture industry. However, corruption appears to now be masked by the legalized protections the state has granted the industry (Armijos-Suárez et al. 2015). Many *Bolíveños* argue that the illicit expansion of shrimp ponds in southern Esmeraldas has never stopped, as shrimp farmers have found ways to hide this. For example, every few years they will “clean up” by removing the vegetation along the edges, every time gaining 2-3 meters along the entire length of their pond. More recently, some shrimp farmers took advantage of the earthquake of April 2016 when the state passed a measure³⁹ to assist the recovery of economic sectors in the affected areas. In Bolívar, shrimp farmers received government assistance to repair their damaged ponds, but some

³⁹ Decreto Ejecutivo 1004, April 26, 2016

Bolíveños argue that these funds were used to expand their shrimp farms (Field Data 2017).

3.3.3.6. A thriving industry

Following India, Ecuador was the second largest exporter of farmed shrimp in 2017 (GLOBEFISH 2017). With the exception of five years, from the start of the aquaculture industry in 1968 until 2014, the main importer of Ecuadorian farmed shrimp was the United States (2007-2011 it was the European Union) (OEC 2016). However, Ecuadorian farmed shrimp is consumed by people all over the world. In more recent years, with changing food consumption habits, shrimp exporters have shifted to supply the rising demand for shrimp in Asian markets. In 2017, the top five importers of Ecuadorian shrimp were Vietnam, the EU, USA, China, and the Republic of Korea (GLOBEFISH 2017). Currently occupying the third largest exporting sector, the shrimp aquaculture industry is one of the most lucrative economic activities in Ecuador. Exports constituted 338 million USD in 2000, 508 million USD in 2005, 922 million USD in 2010, and 2.59 billion USD in 2016 (OEC 2016). Because of the economic value of this industry, despite the environmental and social impacts caused by shrimp farming, or the questionable ethical aspects of the growth of this industry, the expansion of the shrimp aquaculture sector continues to be strongly promoted by the Ecuadorian state today (Armijos-Suárez et al. 2015).

3.3.4. Spatiality of conservation

3.3.4.1. Mangrove conservation in Ecuador

Although examining the history of the shrimp aquaculture expansion may not be indicative of this, laws protecting mangrove forests have been in place in Ecuador since the 1970s. In 1978 a Supreme Decree⁴⁰ was passed to specifically protect mangrove zones from the expansion of shrimp aquaculture, by prohibiting the transformation of

⁴⁰ Decreto Supremo 2939-B in *Registro Oficial* No. 696, October 23, 1978

mangrove forests into shrimp ponds (Warne 2011; Latorre 2014). However, this mandate was superseded by the Forestry Law of Conservation of Natural Areas and Wildlife of 1981⁴¹ which declared all mangrove forests, including those found on private areas, to be part of the natural heritage of the Ecuadorian state. This law allowed industrial shrimp aquaculture ponds to be established on mangrove zones as long as these were established through a mangrove concession system (Vázquez 2007). Then in a decree⁴² passed in 1985 the state declared the conservation of mangrove forests as a public interest and that same year the Ministry of Fisheries ceased issuing concessions for aquaculture practices within mangrove zones (Bravo 2003). The following year all tidal forests were declared protected areas under a ministerial agreement⁴³ (Veuthey and Gerber 2012). However, regardless of what policies and regulations were being proposed to protect mangrove forests at the national level, mangrove cover experienced the most substantial loss between 1984 and 1999, a period coinciding with the largest growth in the aquaculture sector (Bravo 2003). The statistics on the expansion and distribution of shrimp aquaculture ponds indicate that what was happening in practice during that period was a “blatant contradiction” of state laws (Veuthey and Gerber 2012, 615). The convoluted nature of the laws passed to protect mangrove zones reflect the political instability that plagued the country from the early 1980s until the start of the presidency of Rafael Correa in 2007.

The total loss of mangrove cover in Ecuador is officially unknown because existing data on this is inconsistent. The first official land survey conducted by CLIRSEN in 1984 concluded that mangrove cover was of 182,157 ha, and that shrimp ponds covered 89,668 ha that year. In 1991 another survey concluded that there had only been 201,201 ha of mangrove cover in 1969 (CLIRSEN 2007). However, the Ecuadorian state conducted an inventory of mangrove cover in 1987⁴⁴ and concluded that there were

⁴¹ Ley 74 Ley Forestal de Conservacion de Areas Naturales y Vida Silvestre in *Registro Oficial* No. 64, August 24, 1981

⁴² Decreto Ejecutivo 824-A in *Registro Oficial* No. 208, June 17, 1985

⁴³ Acuerdo Ministerial 498, in *Registro Oficial* No. 591, December 24, 1986

⁴⁴ Acuerdo Ministerial 238 in *Registro Oficial* No. 722, July 6, 1987

originally 362,802 ha of mangrove forests in Ecuador in the 1960s (Bravo Cedeño 2010). Some people argue that the state purposely manipulated the data to diminish the official deforestation attributed to the shrimp aquaculture industry (Field Data 2017). Using different information, the total mangrove cover could have declined by as much as 50 percent in Ecuador since the 1960s (Warne 2011), while more conservative sources estimate this value to be between 25-30 percent (CSF 2015). Veuthey and Gerber (2012, 616) argue that the disparity in the numbers reflects the “political sensitivity of this information.”

3.3.4.2. Muisne River Estuary Mangrove Wildlife Refuge

According to CLIRSEN surveys conducted in 1987, the mangroves of the Muisne River estuary covered an area of 20,098 ha. By 1999, there were only 3,173 ha, a decline of 84 percent of mangrove forest cover (Vázquez 2007). What remained of these forests became part of the Muisne River Estuary Mangrove Wildlife Refuge (RVS-MERM),⁴⁵ a state protected area established on June 13, 2003⁴⁶ (Figure 24). One of five mangrove protected areas under Ecuador’s National System of Protected Areas (SNAP),⁴⁷ the RVS-MERM is comprised of twenty-five mangrove sectors; there are also five communities within its boundaries. SNAP categorizes the RVS-MERM under the subsystem of the State Natural Heritage Areas as a protected area with high levels of biodiversity (Vincent Gavez et al. 2013). The 3,173 ha of mangrove forests are home to at least 253 terrestrial, avian, and aquatic species (CSF 2015), and comprised of six mangrove species: red mangrove (*Rhizophora harrisonii* and *R. mangle*), white mangrove (*Laguncularia racemosa*), black mangrove (*Avicennia germinans*), nato mangrove (*Mora oleifera*), tea mangrove (*Pelliciera rhizophorae*), and button mangrove (*Conocarpus erectus*) (Vázquez 2007). Mangrove species are in decline globally, but in this region, the decline of some of these species is of great concern as some of these (*Mora oleifera* and

⁴⁵ Refugio de Vida Silvestre Manglares Estuario Río Muisne (RVS-MERM)

⁴⁶ Acuerdo Ministerial in Registro Oficial 80, June 13, 2003

⁴⁷ Sistema Nacional de Áreas Protegidas (SNAP)

Pelliciera rhizophorae) are listed as “vulnerable” species under the IUCN Red List⁴⁸ (IUCN Red List 2017).



Figure 24: Original extent of the Muisne River Estuary Mangrove Wildlife Refuge. Legend: Orange square = Populated zone; Red line = Roads; Green = RVS-MERM areas (Source: SNAP Ecuador 2015).

3.3.4.3. The role of FUNDECOL

The creation of the RVS-MERM was the result of a series of events that facilitated the establishment of this protected area. In 1999, the Ecuadorian state passed Executive Decree 1022⁴⁹ to reinforce Law 74 of 1985⁵⁰ to protect mangrove forests, but

⁴⁸ The International Union for Conservation of Nature (IUCN) Red List of Threatened Species™ is a “comprehensive, objective global approach for evaluating the conservation status of plant and animal species” (<http://www.iucnredlist.org/about/overview#introduction>)

⁴⁹ Decreto Ejecutivo 1022 in *Registro Oficial* No. 243, July 28, 1999

⁵⁰ Ley 74 Ley Forestal de Conservación de Areas Naturales y Vida Silvestre in *Registro Oficial* No. 64, August 24, 1981

the decree also included a clause to grant mangrove communities the ability to collectively apply for mangrove concessions (Beitl and Cruz 2010). Under this mandate, “ancestral communities” and “ancestral users” could apply for an “Agreement of Sustainable Use and Custody of the Mangrove” – a mangrove concession – through the MAE (Government of Ecuador 1999). The employment of the term “ancestral” marked the first time the state recognized the “nativeness” of mangrove communities and their historical ties to the mangrove ecosystem (Latorre 2014, 254). Therefore, the establishment of this decree paved the path for the creation of the RVS-MERM.

A local organization founded in Muisne, the Foundation of Ecological Defense (*Fundación de Defensa Ecológica* – FUNDECOL) also played a crucial part in the establishment of the RVS-MERM. Founded in 1989 by a group of young activists, this organization was created to strengthen mangrove communities in the municipality of Muisne by providing them with legal and technical assistance in their struggle against the illicit expansion of shrimp farms (Field Data 2017). Although the deforestation of the mangroves was not fully halted, the influence of FUNDECOL in Muisne was crucial in slowing the expansion of illicit shrimp farming activities. In Bolívar, affiliates of FUNDECOL also assisted in the formation of an association of *concheras* called *Virgen de las Lajas* (H5, f). It was initially a group comprised of about 30 *concheras*, all women who deemed themselves the “defenders of the mangroves” (E2, f). FUNDECOL taught this group of *concheras* not only how to organize their community, but how to use the law to defend “their” ancestral territory – the mangrove forests – from “the hands of the shrimp farmers” (C4, f).

In 2003, affiliates of FUNDECOL had a “friend” working as a minister in Quito in 2003. Taking advantage of this opportunity, FUNDECOL organized a network of associations in the five mangrove communities of the RVS-MERM to apply for an “Agreement of Sustainable Use and Custody of the Mangrove” (Field Data 2017).

According to the Decree⁵¹, ancestral communities granted these “Agreements” would be responsible for protecting the mangrove ecosystem and required to report any cases of illicit uses of the mangrove forests (Government of Ecuador 1999). As strong advocates of ancestral access rights to mangrove territories, members of FUNDECOL saw this as an opportunity to secure local groups’ legal access to mangrove forests (E1, m). Unlike other protected areas dedicated to conservation, the management plan of the RVS-MERM created by FUNDECOL established the area as more of an “extractive reserve” that would grant local mangrove users access to mangrove resources, with the stipulation that these would be extracted sustainably (E1, m). Today the RVS-MERM falls under the jurisdiction of the state but is co-administered by the MAE and local organizations organized with the help of FUNDECOL (E5, m). The current members of the *Virgen de las Lajas* group in Bolívar recognize that without the help of FUNDECOL, the community’s involvement in this process would not have been possible (Field Data 2017).

3.3.4.4. Community reforestation of mangrove forests

Once the RVS-MERM was created, one of the main roles of FUNDECOL became to seek financial assistance to implement various types of community development projects. Among the most salient work of this organization was the conservation work it promoted among its affiliated communities. FUNDECOL provided the scientific and technical knowledge required to reforest mangrove areas (as well as financial resources) and the community did the work. This was especially impactful after the epidemic of the WSSV, when many shrimp farmers had abandoned their ponds (Field Data 2017). As (Martínez-Alier 2002) puts it, the reforestation of abandoned ponds was a symbolic way to reclaim their territory “with some real hope of reconstructing the vanished mangroves.” Bolívar was one of the communities with the highest levels of remaining mangrove forests within the RVS-MERM, and this largely due to the

⁵¹ Decreto Ejecutivo 1022 in *Registro Oficial* No. 243, July 28, 1999

reforestation work done by the community, principally the *concheras* of *Virgen de las Lajas* (E2, f).

We went to ask [the men] to come with us, because we were going to reforest the mangroves where they had been logged. And my uncle...told us we were crazy. He told us FUNDECOL had us as their *alcahuetas* (busybodies), and that we were never going to accomplish the reforestation of the mangroves, that it was a crazy thing to say that we were going to replant mangroves. He asked "Where have you seen people planting mangroves? That is *locura* (madness)." Then later he would congratulate us. He came and apologized to us...because he saw that the mangroves had begun to grow after just one year (H5, f).

The legacy of FUNDECOL expanded nationally, and in 1998 the founders of FUNDECOL created the Coordinating Committee for the Defense of the Mangrove Ecosystem (C-CONDEM),⁵² a non-profit organization based in Quito. The aim of C-CONDEM was to establish an “umbrella” organization of all the mangrove user associations along the four coastal provinces of the country (Field Data 2017). Although FUNDECOL is not as active as it has been in previous years, to this day it is globally recognized as a leading grassroots organization against the expansion of industrial activities, particularly shrimp aquaculture (Veuthey and Gerber 2012). Its work, including the reforestation of abandoned ponds, continues to be carried out by the mangrove user associations within RVS-MERM, as these continue to receive support from C-CONDEM (E5, m) (Figure 25).

⁵² *Corporación Coordinadora para la Defensa del Ecosistema Manglar* (C-CONDEM)



Figure 25: Women and youth planting mangrove seedlings in an abandoned shrimp pond northeast of Bolívar (Photograph taken on May 18, 2017).

[What] FUNDECOL does is educate people in trainings about how to reclaim our rights, how to liberate women, how to help women gain some political power to be able to reclaim [our mangroves]. In everything I tell you these are the teachings of FUNDECOL, because it was how I first learned...[to defend] our territory, and that is something I am very grateful for, because we didn't have the knowledge before and that is why the shrimp farmers came in (E4, f).

3.3.4.5. State-led conservation in southern Esmeraldas

At the end of the twentieth century, mangrove forests received minimal financial priority for conservation in Latin America (Castro et al. 2000). However, recent scientific discoveries have shown that mangroves have some of the highest carbon stocks among tropical ecosystems (Kauffman et al. 2014). With the international community mobilizing to address causes of anthropogenic climate change, the conservation of mangroves has gained significant importance at the global scale. Increasingly, mangrove forests are becoming targets for climate change mitigation strategies, such as various types of blue

carbon⁵³ sequestration initiatives (Herr, Alban, and Howard 2015). Following these trends, the Ecuadorian state launched a mangrove conservation initiative called *Socio Manglar*⁵⁴ (“Partner Mangrove”) in 2014. *Socio Manglar* is a chapter of *Socio Bosque*⁵⁵ (“Partner Forest”), a performance-based forest conservation approach modeled after the UN REDD+⁵⁶ framework. REDD+ was created to provide incentives to developing countries with high deforestation rates to preserve forested lands and promote sustainable forest management practices. In Ecuador, the logic behind the “partner” approach of *Socio Bosque* and *Socio Manglar* is to make partaking in nature conservation economically attractive to local people (Erazo 2013). These projects are based on giving “communities who voluntarily commit to conservation” access to economic incentives in exchange for their conservation efforts (CSF 2015). In the case of *Socio Manglar*, those engaging in projects would become “guardians of the mangroves,” monitoring the activities in their assigned areas to inhibit any type of unsustainable uses of the mangroves (MAE 2014).

Socio Manglar was introduced in southern Esmeraldas in 2016. Although some local organizations from communities within the RVS-MERM (Salima and Chamanga) have received “use and custody” agreements under *Socio Manglar*, no projects under the *Socio Manglar* scheme have been established in Bolívar (E9, m). The program has been received with widespread opposition from this community. Members of *Virgen de las Lajas* were initially approached about the project, but they did not want to get involved. Subsequently, a new group of mangrove users was formed – the *Asociación de Servicios Turísticos “Manglares de Bolívar,”* or ASOSERTUMABOL. This new group has not been granted the mangrove concession because the community has not agreed to the

⁵³ Blue carbon is the carbon stored and sequestered in coastal and marine ecosystems (bluecarboninitiative.org)

⁵⁴ Acuerdo Ministerial in *Registro Oficial* No. 198, July 9, 2014

⁵⁵ *Socio Bosque* was created in 2008 (<http://www.ambiente.gob.ec/programa-socio-bosque/>). The initiative allows “private or collective owners of forested land to voluntarily join the program.” Landowners are compensated with varying monetary returns by the Ecuadorian Ministry of the Environment (MAE) (Erazo 2013, 56).

⁵⁶ UN REDD+: United Nations Reducing Emissions from Deforestation and Forest Degradation

proposals made by representatives of *Socio Manglar* (Field Data 2017). Many *Bolíveños* oppose *Socio Manglar* because they do not perceive the project as posing significant benefits for the entire community (Field Data 2017). Due to financial constraints, the projects can only benefit a select group of people – the organization entering the partnership (E8, m). Since in Bolívar this would be less than 10 percent of the population (about 30 people), the community has not agreed to accept the proposals made by the representatives of *Socio Manglar*. While conflicts have not escalated to physical violence, people made vocal threats to supporters of the project, and there have been heated arguments with insults exchanged between the people from opposing sides, including among family members (Field Data 2017).

Regardless of the current status of *Socio Manglar* projects in the region, according to the director of the RVS-MERM, the protected area has been undergoing a “recategorization process” since 2014 (E1, m). Due to its original size (less than 5,000 ha), the RVS-MERM initially fell under the management category of a “wildlife refuge” under the SNAP. For a broader reference, using the IUCN classification of protected area management categories, the RVS-MERM would classify as a Category IV, a “Habitat/Species Management Area” (Gravez et al. 2013; IUCN 2016). Category IV protected areas are generally on the smaller side; they can be comprised of “fragments” and are managed “to protect particular species or habitats” (IUCN 2016). In the case of the RVS-MERM, it was primarily created to protect the 25 remaining mangrove patches; consequently, the protected area only encompassed mangrove zones. However, in 2014, the protected area expanded to also cover the estuaries found around the RVS-MERM, growing to a size of 12,000 ha (E1, m). Then, in 2016, the protected area was expanded again,⁵⁷ this time extending 13 miles into the sea, increasing its area to 92,000 ha; about 78,000 ha are marine areas, with the rest comprised of mangroves, estuaries, and the beaches of Muisne Island and Portete Beach, north of Bolívar. Consequently, the protected area is in the process of becoming a marine protected area (E1, m). The

⁵⁷ Acuerdo Ministerial in *Registro Oficial* No. 71, June 27, 2016

expansion of the RVS-MERM would also move the protected area to a Category V in the IUCN category system – a “protected land/seascape.” These protected areas are typically managed for the protection of the entire landscape, not only targeted species (IUCN 2016). The director of the RVS-MERM argues that they already did not have enough resources or personnel to effectively monitor the mangrove zones of the RVS-MERM before the expansion of the protected area. The notion of engaging private citizens – the local communities – in conservation work is presented by advocates of *Socio Manglar* as an ideal response to this problem (E1, m).

3.4. Synthesis

Mangrove forests have played an important role in the formation of the social and cultural identities of the surrounding human populations along the Ecuadorian coast. Through the mangrove ecosystem, mangrove dwellers define their own way of life and form a unique worldview that is influenced by the interactions and relationships they have with these natural landscapes. Communities like Bolívar truly survive off the mangroves; these forests provide nourishment, opportunities to generate income, and access to spaces for people to pass on traditional practices. Because they live off the mangrove forests, the inhabitants of Bolívar consider themselves to be a part of this ecosystem. For the *concheros*, who interact with this ecosystem every day, they see themselves as an extension of it (Field Data 2017). However, due to growing economic interest over intertidal zones in Ecuador in recent years, state and non-state actors have mobilized to gain control over these lands. As exogenous groups impose their own conceptualizations of these natural spaces – their imaginaries of what the mangrove forests should look like – this results in the production and reproduction of varying iterations of natural spaces, introduced in the form of different spatialities. The introduction of new spatialities to these mangrove forests has impacted – even displaced – the long-standing spatiality of the mangrove users. This resulted in direct and indirect impacts on how ancestral mangrove users perceive, utilize, and interact with the mangrove forests.

The introduction of the shrimp aquaculture spatiality required the appropriation of mangrove forests in order to transform them into shrimp ponds; thus, the imposition of this particular spatiality resulted in the production of entirely new “natural” spaces. Shrimp farms were able to be established in areas previously communally managed through the establishment of private property rights regimes created by the state and illegal practices. The influential shrimp farmers ensured that state intervention in these economic frontier zones would result in the benefit of the shrimp aquaculture sector (Martínez-Alier 2002). This is of course not unique to Ecuador. When “new property rights regimes are introduced,” these are often defined by “those with economic and social power” (Kosoy and Corbera 2010, 1234). In the case of Ecuador, the state has been implicitly working with shrimp farmers for decades to establish a legal structure to appropriate the unregulated intertidal forests of the country. This can be seen as a typical example of a land grab, where the “customary peasant lands” with “unclear titles” (Latorre, Farrell, and Martínez-Alier 2015, 62) are appropriated for the accumulation of private wealth and in this case, also for the expansion of national control over these peripheral lands (Veuthey and Gerber 2012).

Although in a different form, the approach of the mangrove conservation initiative *Socio Manglar* can be seen as employing a similar tactic. Initially, the spatiality of conservation was introduced by the communities and local organizations. The purpose of this spatiality was to conserve what remained of the mangrove forests as a means to protect ancestral users’ access to mangrove spaces. However, the motives and actors driving this spatiality changed over time, changing how this spatiality is implemented too. The newly proposed conservation approach of the Ecuadorian state, while it does not affect the physical form of the mangrove forests, could result in a loss of access to mangrove spaces for the local communities. This is because as in “typical” instances of land grabs, the appropriation of land for conservation – referred to as “green grabs” – can result in the dispossession of resources from local communities for the accumulation of state power over previously uncontrolled lands or resources (Benjaminsen and Bryceson 2012). This could especially unravel in this situation because nature conservation under

schemes like *Socio Manglar* is presented as an opportunity to generate a profit. Thus, this approach to conservation has the potential to carve a path for powerful actors to accumulate capital at the expense of the local communities that are losing access to ancestral territories. This would further contribute to the displacement of the spatiality of the mangrove users created by the loss of mangrove areas that resulted from the introduction of shrimp aquaculture.

3.4.1. A reorganization of space

Leitner et al. (2008) argue that within the hegemonic paradigm of socio-spatial theory there is a tendency to reduce the focus of inquiry to one spatiality, as if a space can only be given a single use at a time. However, as the findings of this research show, the spatialities found within the mangrove forests of southern Esmeraldas contemporaneously occupy the same space and are intricately connected. How these spatialities interact with one another is influenced by power dynamics among the different groups that occupy or utilize these spaces. This can be observed in the mangrove forests when examining the relationship between the *concheros*, shrimp aquaculture, and the state. Discourses about the spatial representations of the mangrove forests vary among these groups; each has its own social and mental spaces, and all are trying to materialize these within the same physical space. Any reconfigurations of the space are not simply the result of one spatiality being introduced to a space, but these require a reorganization of *control* over the space (Roth 2008). Therefore, power relations largely determine the types of spatialities that dominate a space. This can be observed as the physical representation of the space – how the space is materialized. Therefore, this is not about a spatiality being better or a more ideal fit for a space, but rather about which actors have more power to enact their own reality onto a physical space. Thus, the spatial reconfigurations that have occurred in the mangrove forests of southern Esmeraldas can be attributed to the social relations among the actors that have agency over these forests. As the dominant group, actors with more power have been able to impose their spatialities at the expense of the spatialities of less dominant groups.

The spatial transformations observed in the mangrove forests of southern Esmeraldas can be understood as what Roth (2008, 374) describes as a “process of spatial reorganization instigated by insertion of state space into a landscape long managed though nonstate institutions.” This results in a “spatial dichotomy” in this case manifested as the struggle between the local spatiality of the ancestral users of the mangrove forests and the spatialities imposed by the state. Although the expansion of shrimp aquaculture was seemingly driven by the private sector, the introduction of the spatiality of shrimp aquaculture was in reality imposed by the state, as it was promoted as a national development strategy. Moreover, in another sense, the line between the public officials and private investors of this industry was blurred, if not non-existent. The spatiality of a mangrove protected area (the RVS-MERM) was a local initiative set forth to protect their ancestral territories – the remaining mangrove forests, but this was affected through the involvement of the state. Subsequently, future plans for the conservation of mangrove forests in this area entail the state having an even more central role in the implementation of conservation, further distancing the local communities from the mangrove ecosystem.

3.5. Conclusion

The introduction of different spatialities into the mangrove forests are the result of evolving imaginaries about what mangrove spaces are, or what they should look like, and driven by groups with the power to transform the reality of these spaces. As the dominant group with political and economic power, the shrimp farmers have had the power of establishing narratives about the mangrove forests, as well as the people fighting to stop the expansion of the shrimp aquaculture sector. First, mangrove forests were presented as “marginal” lands that could not contribute to the economic well-being of the state. The introduction of shrimp farming was presented as a mechanism to overcome the barriers to development these “unoccupied” and “unused” lands were posing for the state. More recently, as mangroves have become globally recognized for their carbon-storage capacity (and a wealth of other ecosystem services), the Ecuadorian state has turned its attention to intertidal areas once again, this time with the intention of incorporating what

remains of the mangrove forests into the emergent international carbon markets. The expansion and restructuring of the existing protected areas results from a reimagining of nature to fulfill a new agenda – to produce more “pristine” protected natural areas with limited human interaction.

While the spatialities imposed by the shrimp aquaculture sector and state-led conservation initiatives are in theory conflicting, this research reveals that in reality these two spatialities often converge, if not complement one another. The state is promoting the conservation of nature through the creation of state-led conservation initiatives, but in practice what this is doing is creating state control over the natural spaces communities had worked so hard to maintain. This approach not only erases conservation and reforestation work carried out by local communities and organizations like FUNDECOL, but it is also used to appropriate ancestral territories for conservation purposes. Goldman, Nadasdy, and Turner (2011) argue that nature conservation is “not only about “science” but about the applicability [and] marketing” potential of a conservation model. The state is not able to enact the model of conservation that the communities want – the restoration of mangrove forests through community efforts and the devolution of control over their ancestral spaces – because local communities’ vision of the mangrove forests is not aligned with the state’s vision to integrate the services provided by these natural areas into the national economy. Therefore, similar to how the state was able to fulfill its agenda of incorporating these frontier lands into the national economy through the expansion of the shrimp aquaculture sector into the intertidal regions of the country, the same approach is being taken to incorporate the mangrove forests of southern Esmeraldas into the emergent international carbon markets.

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4. CHAPTER 4: Dominated spaces: Shrimp aquaculture and state-led conservation in the mangrove forests of southern Esmeraldas, Ecuador

4.1. Abstract

Mangrove communities in southern Esmeraldas, Province, Ecuador have historically depended on resources extracted from mangrove forests to subsist. Due to growing economic interest in intertidal zones in Ecuador in recent years, state and non-state actors have mobilized to gain control over these lands. As exogenous groups impose their own conceptualizations of these natural spaces – their imaginaries of what the mangrove forests should look like – this results in the production and reproduction of varying iterations of natural spaces, introduced in the form of different spatialities, more recently shrimp aquaculture and state-led conservation. This paper argues that the spatial reorganizations that result from the introduction of these spatialities can be understood as the transformation of a complex ecosystem into different forms of “dominated spaces.” Taking a political ecology approach, this paper expands on the processes surrounding the transformation of mangrove forests in Bolívar, a mangrove community in southern Esmeraldas, as a case study to provide insight into the ways that these processes affect the earlier established spatiality of the ancestral mangrove users. The findings of this work indicate that the deforestation of the mangroves and the creation of enclosures in the form of artificial shrimp ponds resulted in large-scale environmental changes. This drastically limited access to spaces ancestral mangrove users traditionally used to sustain their nutritional needs, to carry out livelihood practices, and to foster cultural and personal identity. Although the creation of enclaves for conservation under the proposed state-led program called *Socio Manglar* would not have the same types of ecological impacts, the social impacts of this project parallel those posed by the shrimp aquaculture sector. In investigating how seemingly different spatialities such as conservation and resource extraction affect a coastal community, this paper shows that these processes are more alike than they are divergent, both in theory and in practice.

Key words: dominated spaces, mangrove conservation, mangrove deforestation, shrimp aquaculture, spatiality

4.2. Introduction

Globally, in the name of “development,” nature is being “repurposed” to meet specific human needs and complex ecosystems are being transformed into modern representations of “nature” (Escobar 2006). It is through technological advancements that human societies are able to reproduce natural spaces as spaces of modern productive activities. Lefebvre (1992) refers to these types of spaces as “dominated spaces.” The use of technology allows for the large-scale transformations that are often necessary to introduce new spatialities to remote, “untamed” natural landscapes. This concept of dominated spaces can be fully understood “when it is contrasted with the opposite and inseparable concept of appropriation” (Lefebvre 1992, 164); meaning that to dominate – or exert control over – a space requires that a space is taken possession of. Once appropriated, the transformation of nature into a dominated space entails subjecting it through a homogenization process that results in a “closed, sterilized, emptied out” space (Lefebvre 1992, 165). Stripping away the complexities, intricacies, and convoluted essence of a natural space allows the group (or actor) appropriating the space to more easily manipulate and control the components of interest that are left in it.

Modernist development agendas for countries in the Global South have traditionally promoted the growth and “improvement” of productive sectors through the integration of peripheral lands and resources into national and international markets (Robbins 2011). This has transpired as the production of dominated spaces for the purpose of exploiting natural resources to generate economic development. Ecuador is a prime example of this, as its economy is defined by an export-driven “character” with a long, deep, and complex history with extractivist sectors (Gudynas 2015). Characterized by a constant expansion of economic frontiers into peripheral territories, this has resulted in the transformation of natural landscapes into various forms of dominated spaces. The expansion of state control in these lands has meant restricting local actors’ access to or control over natural spaces that have historically been occupied by these groups (Latorre, Farrell, and Martínez-Alier 2015). These developments result in diverse types of spatial transformations and are often accompanied by complex and unexpected ecological and

socio-cultural effects. The transformation of nature into various forms of dominated spaces can be observed in the mangrove forests of southern Esmeraldas, Ecuador.

Mangrove forests grow along all the river-mouths that reach the Pacific Ocean in Ecuador; these are dispersed throughout five major river basins (SNAP Ecuador 2015). Diverse communities comprised of multi-racial and multi-ethnic groups have occupied the extents of these forests for many generations (Latorre 2014). These ecosystems are a life-support system to the inhabitants of mangrove communities. In southern Esmeraldas, mangrove dwellers rely on gathering edible species from the mangroves, predominantly *conchas* – mangrove cockles (*Anadara tuberculosa* and *A. similis*) – to sustain their household’s nutritional and economic needs (Field Data 2017). People who gather mangrove cockles are referred to as *concheros*; a female cockle gather is a “*conchera*” and a male cockle gatherer is a “*conchero*.”⁵⁸ Although they are officially property of the state, mangrove zones were managed under local governance regimes in southern Esmeraldas until the early 1980s. The entrance of outside influence has greatly changed how mangrove communities interact with the mangrove ecosystem.

Despite being occupied by ancestral⁵⁹ mangrove communities for multiple generations, the Ecuadorean state launched a national agenda to integrate these “unused” lands into the national economy in the 1970s.⁶⁰ Mangrove areas in southern Esmeraldas were appropriated by the state in “complicity” with private actors to establish shrimp aquaculture ponds in the early 1980s (Field Data 2107). This process entailed the privatization of communally managed mangrove territories and the creation of strictly delineated enclosures. Most salient, through the use of science and technology, the construction of shrimp farms required the expulsion of “nature” from mangrove spaces – the removal of all vegetation and mangrove species that inhabited these forests – to

⁵⁸ Hereafter, to differentiate between these words, to refer to male *concheros*, I will use the term “male *concheros*” and to refer to a group of cockle gatherers comprised of both genders, I will use the term “*concheros*.”

⁵⁹ In Ecuador, the word “ancestral” does not mean the “original,” or native inhabitants of an area, but is it a term used to refer to a people that has historically occupied a territory (García and Walsh 2009).

⁶⁰ *Ley de Reforma Agraria, Registro Oficial* No. 410, October 15, 1973

reproduce a different type “nature,” one comprised of artificial ponds to raise shrimp. What remained of the mangrove forests continued to be used by local groups to carry out traditional livelihood practices, predominantly gathering edible mangrove species from these spaces. However, in 2014, the state began to employ another discourse to further appropriate what is left of the mangrove forests in this area.

Pressured by increasing international interests to conserve tropical ecosystems and by national policies of “green” development, the Ecuadorian government began to take measures at the national level to “protect and conserve” the nation’s natural heritage (Gudynas 2009). This resulted in the creation of state-led initiatives to expand the network of protected areas in the country. Mangrove forests in particular became areas of interest for the expansion of conservation territories in Ecuador. The creation of a protected area in a mangrove forest does not entail the same types of physical transformations or ecological impacts that result from the introduction of an extractive activity such as industrial shrimp farming. However, the nature conservation model applied in Ecuador requires the appropriation of natural areas to be transformed into areas that can provide marketable ecosystems services such as biodiversity, carbon sequestration, and spaces for tourism, among many others.

Taking a political ecology approach, this paper examines the processes surrounding the transformation of mangrove forests in southern Esmeraldas Province, Ecuador as a case study to investigate the introduction of new spatialities into these spaces. The main focus of this research is to identify the ways that these processes affect the local communities that have historically subsisted off the mangrove forests. The question this paper seeks to answer is: *How has the introduction of different spatialities within the mangrove forests impacted how ancestral mangrove communities perceive, utilize, and interact with the mangrove ecosystem?* Ethnographic data were collected in April-June 2017 in Bolívar. The fieldwork methods included participant observation, household surveys, and interviews with people representing different groups, including *concheros*, community leaders, elders, and representatives of local community

organizations,⁶¹ and of regional state⁶² and non-state organizations.⁶³ Based on findings from the field data, this research provides insight on how the introduction of new spatialities in the mangrove forests of southern Esmeraldas – in the form of shrimp aquaculture and of state-led conservation – affect the spatiality of the ancestral mangrove users that preceded in time the shrimp aquaculture and conservation spatialities. Furthermore, this paper argues that the spatial reorganizations that result from the introduction of these spatialities can be understood as the transformation of complex ecosystems into different forms of “dominated spaces.”

4.3. Extractivism in the mangrove forests

According to Gudynas (2015) there are two main types of extractions of environmental resources – direct and indirect extractions. A direct extraction is one in which a resource is directly taken from a natural environment to be directly used by the actor(s) extracting it. Usually this is done with little to no alteration to the environment. The intensity of the activity depends on the volume of the extraction, but these are inherently less environmentally destructive than indirect extractions. Indirect extractions require a natural space to be substantially transformed – or modified – in order for the extraction of a resource to occur. Furthermore, the extraction is done at a large-scale and is not to be directly used by the actor(s) extracting the resource (Gudynas 2015). These types of extractions are possible through the transformation of a space into a dominated space.

Industrial shrimp aquaculture is an example of an indirect extraction, but furthermore, due to the scale of intensity of the extraction methods employed to produce farmed shrimp in Ecuador, this economic activity classifies as what Gudynas (2015) refers to as an “extractivism.” An extractivism entails the large-scale appropriation of

⁶¹ Members of local mangrove fisherfolk associations.

⁶² Regional representative of the Ministry of the Environment of Ecuador.

⁶³ Local, national and international non-governmental NGOs.

natural resources with the means to export them. For a resource to classify as a form of “extractivism” it must “simultaneously meet three conditions”: a) a high volume of the resource is extracted, resulting in severe environmental transformations; b) at least 50 percent of the extracted resource is exported; and c) the resource is minimally processed locally (Gudynas 2015, 17). Producing high local costs and minimal local benefits, the shrimp aquaculture sector in southern Esmeraldas meets these requirements. This section presents findings from the field data (and supplemented by the literature) to provide insight on the environmental and social impacts of the shrimp aquaculture sector as extractivism. Moreover, in the context of this research, this section highlights the diverse ways that the introduction of this extractivist spatiality affects the spatiality of the ancestral mangrove users.

4.3.1. Environmental impacts of the biophysical transformations

Industrial shrimp aquaculture emerged in the mangrove zones of southern Esmeraldas in the early 1980s. Shrimp farming activities have had long-lasting biophysical effects, changing the structures and processes of the surrounding ecosystems. Shrimp ponds were predominantly established on “unused lands” within the mangrove forests (and to a lesser degree on agricultural lands), resulting in high levels of deforestation. In the late 1980s, the mangrove along the Muisne River estuary in southern Esmeraldas extended over an area of 20,098 ha; by the early 2000s, there were only 3,173 ha left (Vázquez 2007). However, deforestation rates were not uniform across the estuary, and there were some communities that were more affected than others. For example, in places like Daule, Salima, and Chamanga, communities that lived off the mangrove forests before the introduction of shrimp farming, “it was worse; they had a lot less mangrove left” than in the areas surrounding Bolívar (H2, m).

4.3.1.1. Impacts on biodiversity

“To make their shrimp farms bigger, [the shrimp farmers] made the mangroves smaller” (C26, f), and this had detrimental impacts on the local flora and fauna. The mangrove forests of the Muisne River estuary are comprised of six different mangrove

species, including some (nato mangrove (*Mora oleifera*) and tea mangrove (*Pelliciera rhizophorae*)) that are recognized as “vulnerable” species under the IUCN Red List⁶⁴ (IUCN Red List 2017). The ongoing replacement of these forests with shrimp ponds not only affects the diversity of the mangroves themselves, but also the fauna that relies on this ecosystem as a habitat. The *Bolíveños*⁶⁵ talk about the loss of many local species, but specifically, most people talk about the decline of edible mangrove (and marine) species that their ancestors relied on to subsist. Some people argue that the same species that previous generations used to gather from the mangroves and catch out at sea still exist today, but that populations of some of the traditionally consumed species in this region are in decline. For example, the *churo*⁶⁶ – mangrove periwinkle (*Littoraria fasciata*) – that lives on the mangrove branches is no longer found in abundance, like when people would gather so many they would give them to friends and family (C9, f). There were also spaces where natural ponds would form in the mangroves and people could catch a variety of shrimp species and fish, such as the *chame* – Pacific fat sleeper (*Dormitator latifrons*). Those ponds “no longer exist anymore; there is no [wild] *chame* and no [wild] shrimp” (C16, f).⁶⁷ Also, according to some of the elders, other species such as the *tasquero* – racer mangrove crab (*Goniopsis pulchra*) – and the *pangora* – stone crab (*Menippe frontalis*) – have almost completely disappeared from the local diets, as they are scarcely found in the mangrove forests today (H2, f).

The species most people talk about as being affected by the deforestation of the mangrove forests are the mangrove cockles. The decline of these species is not surprising because mangrove cockles live in mud sediments of the mangrove swamps (MacKenzie 2001) and “grow symbiotically” with the mangrove roots (Mera Orcés 1999, 78). Due to the deforestation of the forests, there are fewer areas where these species can live and

⁶⁴ The International Union for Conservation of Nature (IUCN) Red List of Threatened Species™ is a “comprehensive, objective global approach for evaluating the conservation status of plant and animal species” (<http://www.iucnredlist.org/about/overview#introduction>)

⁶⁵ Term used to refer to the inhabitants of Bolívar.

⁶⁶ A species traditionally consumed in the household; this has never been a commercialized product.

⁶⁷ Some of these species can be found in the shrimp ponds. In some cases, people working in a harvest are able to take these home, if the shrimp farmer allows it.

spawn. Moreover, mangrove cockles were mostly consumed in the household before, but with the increasing number of tourists being exposed to these products, the demand for mangrove cockles has increased in recent years (C8, f). The mangrove cockle population crisis is not only noticed by the locals but has also been nationally recognized as being in decline (El Universo 2010). Before, a person could daily gather “800, 600, 500 cockles,” but today most struggle to find “100, 60, 50, or 40” (C11, f). To find cockles, people “must go from mangrove to mangrove today” (C17, f).

4.3.1.2. Structural changes of the mangrove forests

The habitat loss that followed the deforestation of the mangrove forests is not the only factor contributing to the decline of mangrove cockle populations in southern Esmeraldas. The consistency of the mud sediments in the mangrove swamps is changing, and this is having an impact on the distribution of the mangrove species that make up the mangrove stands of these forests. There are different types of areas *concheros* gather mangrove cockles from, each with unique “ecological” features (Beitl 2011). There are *aguatales*, areas where the sediments are drier and more compact; people sink to their heels when they enter those areas. The *durantales* are areas where the mud sediments are softer; people sink to the calves in these zones. And there are *blanditales*, areas where the mud sediments are of the softest consistency; people sink to their mid to upper thighs when they enter these areas (Field Data 2017). Many *concheros* have noticed that the mangrove mud sediments becoming more compact, or that the “mangroves are drying up” (C27, f), meaning that the mangroves are becoming *aguatales* (C6, f). Although they do not know the underlying causes for this, many believe this is happening due to the shrimp aquaculture industry, because it was not until the shrimp farms began operating in the area that they began to see these changes. People say that when the shrimp farmers drain the ponds, the force of the water “washes the mud away” (E2, f). In some cases, when the roots are left unexposed, the mangroves become weak and the force of waves will make the trees fall over (C33, f).

People have noticed that there are areas that were good *conchales*⁶⁸ before, but no longer have cockles in them (C29, f). *Concheros* believe that changes in the mud sediment consistency are affecting the cockle populations, because “in the *aguatales* the mud is really tight, and the cockles there cannot fully develop.” Allegedly, even if there are cockles there, people “cannot even fit a finger in the mud to get them out,” whereas in the softer areas, people can insert their entire hand to extract the cockles (C6, f).

Because in the harder areas there are areas where there are no cockles, so if I go to a place where there are no cockles I have to move to a place [where] there are...In the softer parts one goes to gather cockles and quickly finds them.... One only has to stick their hand and you go grabbing them...but in the harder parts, you have to dig around for them” (C15, f).

Concheros argue that the mangrove cockles “accumulate the most” in the soft areas (C28, m), and there is a reason for this. There are two types of mangrove cockles that have traditionally been extracted for commercial purposes, the “*concha negra*”⁶⁹ – *Anadara tuberculosa* – and the “*concha macho*”⁷⁰ – *Anadara similis* (Mora and Moreno 2009). *A. tuberculosa* has historically been more abundant, and thus more commonly commercialized (and culturally more important) than *A. similis* (Beitl 2011).

The decline of cockle populations that people have noticed around Bolívar is the result of the loss of suitable habitat for the mangrove cockles, particularly for *A. tuberculosa*. This species can be found in higher concentrations on the roots of the red mangroves (*Rhizophora mangle*) and are least abundant in areas where black mangroves (*Avicennia germinans*) grow (MacKenzie 2001). However, red mangroves need softer, more productive soils to grow, while black mangroves establish themselves in areas where the mud is more compact and acidic (Kungvankij and Chua 1986). Consequently, as the mangrove sediments continue to “harden” (become coarser) there is less habitat

⁶⁸ Areas in the mangroves where people gather mangrove cockles.

⁶⁹ “*Concha negra*” or also called “*concha prieta*” means “black cockle”; another common name is “*concha hembra*” or “female cockle.”

⁷⁰ “*Concha macho*” means “male cockle”; this species is also locally known as “*mica*.”

available for the growth of red mangroves, and thus, *A. tuberculosa*. These changes can be witnessed on the surface, because the *Bolíveños* talk about how before “mangroves were tall and thick, but today they are small and short” (C12, m). The red mangroves attain a height of up to 25 meters, while the black mangroves rarely grow above three meters (Vázquez 2007). So, as the mud consistency of the mangrove swamps changes, so does the composition of the mangrove stands in these areas, and this is something visibly noticeable by the locals in the area.

4.3.1.3. Toxic mangroves

The intensification of the shrimp aquaculture production methods has also had detrimental effects on the health of what remains of the mangrove ecosystem, and the species that are found within it, including the *concheros*. Many of the practices adopted by the shrimp farmers (particularly after the outbreak of the WSSV) entail applying various synthetic and natural additives to the shrimp ponds, including supplemental feeds, antibiotics, and biocides to kill off species that compete with the shrimp. Some of these compounds are misused, either due to ignorance or negligence, and when effluents containing these additives are released into the estuary, it “causes species in areas nearby to die” (E1, m). There were some communities where the compounds in the shrimp pond effluents were so strong that all the cockles – and other mangrove species people gathered to eat – were dying. Some *concheros* remember going into the mangroves and “find[ing] the cockles at the surface of the mud, open, dead, and reeking as they rotted” (H5, f). In Bolívar, the *concheras* of “*Virgen de las Lajas*,” were able to get the authorities to monitor the shrimp farmers’ use of chemicals more closely. Consequently, the situation ameliorated in the mangrove forests surrounding this community, and the cockles are not dying as they were some years ago (C14, f). Nonetheless, the use of chemicals is still highly unregulated, and though it may be rare to find an area where the cockles are all dead, the use of toxic additives in the shrimp production process still continues to affect the species found in the mangrove ecosystem.

[Before] it was a clean cockle, sea to table. Now we are talking about a product that goes from the sea to chemicals to table. (E2, f)

People argue that the quality of the mangrove cockles as well as that of the practice of gathering mangrove species has changed because of the heavy use of “chemicals” by shrimp farmers. For example, before people were able to gather cockles and leave them out (unrefrigerated) for up to two weeks. Today, the cockles might last a week outside of the mangroves (C23, f). This creates problems for the *concheros*, as cockle merchants may go several days without entering Bolívar to buy cockles. Moreover, the chemicals released in the shrimp pond effluents are absorbed by the mangrove mud, which not only impacts the species that inhabit those areas, but also directly impacts people who come in contact with those products – men working at the shrimp farms and the *concheros* that enter the surrounding mangrove areas. People report getting rashes and bumps on their bodies when their skin is exposed to contaminated areas. Before people “would go to *conchar* and it wasn't even like [they] had even gone” (C29, f), but today, to protect their skin, *concheros* “must wear boots, pants, and sweaters” to enter the mangroves (C17, f).

4.3.2. Farmed shrimp is an export “crop”

Industrial shrimp aquaculture was promoted as a means to address problems of global food insecurity, but it has failed to do this (Warne 2011). Conversely, in places where the shrimp is farmed, the product does not contribute to local food security (Schwarz 2005). In fact, the expansion of the shrimp farming sector not only exacerbated food insecurity in Bolívar, but also led to a loss of food sovereignty (Field Data 2017). Despite it being produced all around them, the amount of shrimp consumed by the *Bolíveños* is minimal. During harvests a shrimp farmer may give an employee a couple of pounds of shrimp, but other than that, most of the community does not have access to this resource. Moreover, the destruction of the mangrove forests meant a loss of resources that had been historically used by the local communities to sustain their dietary needs. This not only refers to the decline of mangrove species, but also of other types of foods

people had access to before the introduction of shrimp farming. For example, there were crops commercially grown locally in previous decades (cacao, coconuts, banana, plantains, coffee), as well as grown to for household consumption in people's yards or small *fincas* (fruits and vegetables such as tomatoes, green peas, yucca, corn, mango, jackfruit, guava, several varieties of citrus trees, *zapote*,⁷¹ ice cream beans (*Inga edulis*), among others). People also supplemented their household diets with animals they raised (cattle, pigs, chickens) and wild animals that roamed the island (deer and *guanta* (*Cuniculus paca*) as well as a variety of marine species from the sea (E2, m). According to the accounts of the *Bolíveños* then, there was an abundance of food and people sustained diverse diets. However, the shrimp aquaculture industry entered this area to replace all other major forms of agricultural production, and as people left and sold their lands, the productivity of local agricultural goods rapidly dropped (H1, m). Moreover, it is allegedly very difficult to grow food anymore, because the crops people plant often die when exposed to the contaminants released by the shrimp farms.

With more than 90 percent of the total shrimp production in Ecuador being sold in international markets, farmed shrimp is an export “crop” (Veuthey and Gerber 2012). Moreover, it is inherently a “monoculture” farmed to supply a rising global demand of this luxury product. In the early 2000s, there were fourteen different species of shrimp in the Ecuadorean mangroves, but these species have been compromised to harbor the growth of prawns from the *Litopenaeus* genus – whiteleg shrimp (or Pacific white shrimp, *Litopenaeus vannamei*) (Figure 26) and to a lesser extent, blue shrimp (*Litopenaeus stylirostris*) (Schwarz 2005). Since the whiteleg shrimp has proven to be the most resistant species to viruses, it is the most commercialized of the two species, accounting for 90-95 percent of total production (Veuthey and Gerber 2012).

⁷¹ *Zapote* (*Quararibea cordata*) is an orange-yellow fruit. There were so many *sapote* trees on the island, that it was named after this fruit; Zapotal Island, or *Isla Zapotal*.



Figure 26: Whiteleg shrimp from a farm near Bolívar.

4.3.3. Outsourcing the labor

At the onset of the expansion of the shrimp aquaculture sector in Bolívar, the community became seduced by the discourses the shrimp farmers were employing to promote the expansion of the aquaculture sector. People welcomed this industry to their territory because they saw it as an opportunity to improve their way of life. Bolívar is, like many coastal communities along Esmeraldas, a “forgotten *pueblo*” that has historically been politically and economically marginalized. The first shrimp farming investors to arrive in this region found communities desperately seeking a new way of life (Field Data 2017).

The shrimp farmers promised several things...they were going to provide work for the communities; and they were supposed to hire people from here, to give them a source of income to support their children. But now they bring people from other places and the people from here are left without work (E2, f).

Initially, shrimp farmers provided jobs to the community; even the women benefited from this. First, the jobs entailed the indiscriminate removal of vegetation from the inter-tidal zones; men would cut the mangrove trees and the women burned the piles. The men were later hired to construct the shrimp ponds, which was done with shovels; it was a labor-intensive process. The women of the community were seasonally hired to

gather wild shrimp seedstock, and some worked full-time in a nearby shrimp processing plant.⁷² The wages the shrimp farmers offered were good, much better than what people could make off gathering cockles or fishing. After the outbreak of the devastating white spot syndrome virus (WSSV)⁷³ in 1999, the shrimp production methods changed. Shrimp farmers began to source the shrimp seedstock from laboratories as a means to reduce the probability of infection (Schwarz 2005). Additionally, the processing plant that hired a significant number of the local population closed (Field Data 2017). In recent years, for reasons unknown to the community, the shrimp farmers stopped hiring local men and began to bring workers from other places (H5, f). Moreover, as the work has become more industrialized, even fewer people were hired by the sector. Today, only 15 men (5.8 percent of the adult population) in Bolívar are employed by the local shrimp farming sector. Evidently, the labor inputs required for the operations of this sector are outsourced from the community (Field Data 2017).

4.3.4. Other socio-cultural impacts of shrimp aquaculture

4.3.4.1. Loss of livelihoods

Shrimp farming was promoted as a path to economic prosperity, but instead it brought the community financial instability, environmental destruction, and social and cultural changes (E2, f). Before the introduction of shrimp farming, people had access to jobs that not only provided them with food, but also a means to economically sustain their households. For example, fishermen were able to sell the surplus of their catch. In the case of the agricultural sector, although mostly men worked in agriculture, women and children also had access to seasonal jobs harvesting crops, such as the banana, cacao, and coffee (Field Data 2017). Although they did not have access to many commodities

⁷² This was in Cojimíes, Manabí Province, an island town about 10 km south of Bolívar, approximately a 40-minute boat ride.

⁷³ The white spot syndrome virus (WSSV) was first reported in Ecuador in Esmeraldas Province on May 28, 1999. The virus rapidly spread to other shrimp-producing provinces, decimating the production of thousands of shrimp ponds. It is estimated that shrimp production dropped by two-thirds in a matter of months (Schwarz 2005).

(no electricity, no concrete homes, no gas stoves, etc.), the *Bolíveños* lived well and had access to a wealth of natural resources (H4, m). The introduction of industrial shrimp aquaculture to southern Esmeraldas changed everything. The expansion of this industry was part of a national agenda to transform the coastal areas of this region for the growth of the shrimp farming sector (H4, m). However, the transformation of mangrove forests to shrimp ponds resulted in a loss of access to spaces historically used to carry out traditional livelihood practices. For the male populations, the reduction of local fisheries meant a loss of fishing stocks. There were also men whose livelihood activities were founded on the use of mangrove wood resources, such as the *madereros* (timber harvesters) and the *carboneros* (charcoal makers). For the women, the deforestation of mangrove forests meant a loss of traditional gathering grounds, directly and indirectly. First, they lost the mangroves when they became replaced with shrimp ponds, then again when an increasing number of men who could not find employment elsewhere began to enter the mangroves that were left to gather cockles.

Young people didn't have the opportunities to work like people who had land before did...So people began to survive solely off what was left: the sea and gathering cockles (H4, m).

4.3.4.2. Transformation of traditional practices and gender shifts 1100

The scarcity of employment opportunities pushed some families to migrate; young men were especially inclined to leave for work. However, for those unable to leave, “when the shrimp farmers stopped hiring them, they had to turn to the mangroves to look for cockles.” Consequently, many of the young men in Bolívar turn to *la concha* today “when they don’t have a job” (C16, f). This is significant because it meant the community had to culturally change to respond to the impacts of shrimp aquaculture. In the mangrove communities of Esmeraldas Province, gathering mangrove cockles was traditionally an activity practiced by women (and children). *La concha* was culturally perceived as a lowly activity. In contrast to fishing for example, which is perceived as “an elegant art,” people do not generally think that going to *la concha* is a prestigious activity. In the past, men who gathered cockles as a source of livelihood were often

judged negatively; it was an embarrassment for some men to have to go to the mangroves to gather cockles (Mera Orcés 1999). Those who turned to *la concha* did it because they had no other option.

In recent years, cultural norms around the gendered nature of gathering mangrove cockles has changed because it has become a livelihood practice practiced by all. Moreover, it is increasingly becoming a male dominated activity in Bolívar among the younger generations. Before there may have been a few male *concheros*, but today 51 (48 percent) of the 106 active adult *conchero* population in Bolívar are men (Figure 27). However, this number could be higher. Despite the growing number of young men working as *concheros*, the activity is still stigmatized as being an occupation for “the lower class” and for women. Although the culture is changing, many men are not as open about self-identifying as being “*concheros*,” while the women call themselves “*concheras*” with pride. Many men will acknowledge it with a tone of sorrow or shame, and others simply do not own it. Rather than saying they work as “*concheros*,” some men in Bolívar will instead call themselves “*jornaleros*” – day laborers – who work in different jobs, *la concha* being one of them (C33, f).

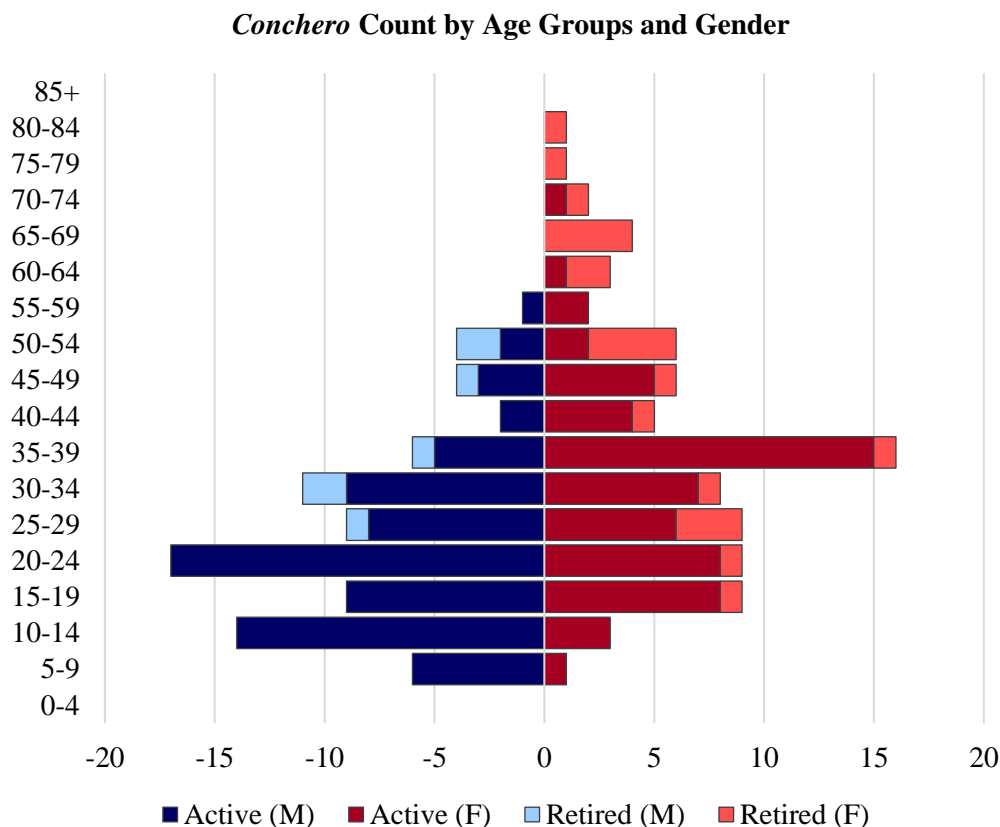


Figure 27: Population pyramid of the *conchero* population in Bolívar. Total population: 106. Active (M) = 51; Active (F) = 55; Retired (M) = 7; Retired (F) = 22. Note: “Retired” *concheros* are people who gathered cockles at least part-time but were currently not going to *la concha*. Reasons for being on hiatus from the activity included: recovering from an illness, an injury, or childbirth; physically not able to go due to old age; being currently employed in another sector.

Good *concheros* – those who gather high quantities of cockles – are regarded with respect by the *Bolíveños*, especially among the *conchero* community. There are several factors that contribute to a person’s success in gathering large numbers of cockles. First, having experience is key; *concheros* who go every day have more practice and are better able to identify prime gathering zones. Not going regularly not only inhibits people from gaining experience, but also from knowing what areas were already gathered in previous days (C5, m). Being physically able to do the work of *la concha* is also a crucial component, because the work is difficult, laborious, and even for the young *concheros*, it is demanding on the body (C18, f). Those who are able to physically move quickly in the

mangroves can cover more ground and logically have a higher probability of finding more cockles (C25, m). Additionally, having enough time to travel further distances and to spend more time searching for cockles largely determines how many cockles a person can gather in one day.

Male *concheros* are further displacing women from mangrove spaces not only because they entered the mangroves to work, but because they also tend to “*valer más*” (be better) at gathering cockles (C20, f). On average, a young male *conchero* is more physically fit than the average *conchera*, but this is not the only advantage that they have. Male *concheros* are faced with fewer limitations because they can work in the mangroves more regularly and for longer hours. Consequently, men have opportunities to gather more cockles than the women. This is especially true for those women who have to rush home to care for small children after working in the mangroves. There are women who are not inhibited by this and after working several hours in the mangroves can gather 300-400 cockles in one day. However, the best *conchero* is a young man who regularly gathers 400-600 cockles daily. Some people speculate that *concheros* like him have the luck of *la madre de la concha* – a mother of the cockles, – a belief that those who find a mother cockle with a “pearl” inside receive a sort of blessing and can find more mangrove cockles. It could also be that this man has years of experience, is physically fit, and works 6-8 hours a day (in contrast, most women with children go for 3-4 hours).

Gathering cockles is not something all people necessarily enjoy doing, but it is “an obligation” (C36, f). The work can be disappointing, because people often go “with a lot of need and not get any cockles,” but even then, they must go the next day because it is how they can support their family (C6, f). The work of *la concha* was not as difficult before, when there were cockles in abundance, because people would not have to put in as much effort to find them. Today, *concheros* must work longer hours to get the same amount they would get before in less time (C3, f). The mangrove cockles are also on average smaller in size than they used to be. Small cockles are difficult to sell because

buyers look for cockles that meet the minimum required size for commercial purposes.⁷⁴ Before people did not gather any small cockles because there was no need to do so; there was an abundance of large ones (C7, f). This is another reason the work is becoming less beneficial to women, because they have household responsibilities and cannot spend too many hours working in the mangroves (C15, f). In the past, when it was easier to find cockles, women did not have to go far from their homes or work too long to get the cockles they needed (H3, f). Before, a woman could gather 500-1000 cockles in an afternoon, but today, most women struggle to get 100 in one day. The work is not only “harder now, it's more tiring too” (C7, f).

4.3.4.3. The disappearance of *la Tunda*

Another type of cultural impact that resulted from the loss of mangrove forests is the disappearance of *la Tunda*, the spirit that lived in the mangrove forests to protect them from people. Before, the mangroves were believed to be dangerous places because they were so expansive people could “get lost in the mangroves *conchando*”⁷⁵ (H3, f). A shapeshifter, *la Tunda* appeared to people usually in the form of a woman they trust, like their mother, a sister, or an aunt. It would put a “trail of cockles” in front of a person to get them to go deep into the mangroves (C12, m). Those who were greedy would go on taking the cockles. By the time they realized they had been separated them from their group, they felt disoriented; they had been “*entundados*” – bewitched (H3, f). They would be lost in the mangroves until their friends and relatives would come to get them out. The myth goes that every time a person was found, they were confused, unaware of how long they had been lost, and always sitting next to a heaping bucket of cockles. It is mostly the elder *concheros* who talk about *la Tunda* because it has been many years since someone has been “*entundado*.” Many believe that *la Tunda* is no longer around because the dense, “ferocious forests” (H2, m) that *la Tunda* occupied when “the mangroves were

⁷⁴ They must be at least 45 millimeters.

⁷⁵ Looking for cockles.

so immense” no longer exist (C15, f). All that is there now are the *filos*⁷⁶ of those mangrove forests (C5, m); “one goes in today and can clearly see to the other side” (C28, m).

4.3.4.4. *Filos de manglar* 224

With an estimated 314 ha, Bolívar is one of the parishes with the largest extent of mangrove forests along the Muisne River estuary (E1, m). This is largely due to the work of FUNDECOL⁷⁷ in partnership with the local association of *concheras* “*Virgen de las Lajas*.” The groups fought to protect what was left of the mangrove forests, as well as to regain as much territory as possible. After the epidemic of the WSSV diminished most of the shrimp production in 1999, many shrimp farmers went bankrupt and left their farms. The group of *concheras* began to engage in extensive reforestation projects,⁷⁸ and mangrove stands were reestablished anywhere possible, including abandoned shrimp farms. But some years after the WSSV outbreak, many shrimp farmers returned to reestablish aquaculture operations, re-deforesting areas that had been replanted by the community. In some areas, “mangroves were fully coming back, but were logged again” by the shrimp farmers (H2, m). That is when the struggle with the aquaculture industry began again (H5, f).

The efforts of the local association of *concheras* (and a few male *concheros*) were not in vain, because “if it were not for those small areas of mangroves that “*Virgen de las Lajas*” protected,” some people of the community argue that there would not be mangrove forests left around the community, and “no more *conchas*” (C21, f). However, not everyone sees it like that. Many *Bolíveños* claim that around Bolívar, “everything you see now as a shrimp farm used to be mangroves before” (C 31, m). Hence, they argue that

⁷⁶ Edges of mangroves.

⁷⁷ Local organization founded in Muisne, the Foundation of Ecological Defense (*Fundación de Defensa Ecológica*) played a crucial part in the establishment of the Muisne River Estuary Mangrove Wildlife Refuge in 2003.

⁷⁸ Mangrove reforestation projects were (and continue to be) technically and financially assisted by FUNDECOL and its national and international partners.

there “are no mangroves anymore, but *filos*” (edges) of mangroves (C4, f) (Figure 29 and Figure 28). The reduced extent of mangrove forests in recent decades led to a loss of gathering spaces for the *concheros*. With the continuous decline of employment opportunities, more people have turned to *la concha* as a source of livelihood. These factors combined put an increased pressure on the already stressed mangrove resources (Figure 30). The loss of habitat and the extraction of mangrove species beyond their regenerative capacity is leading to the rapid decline of mangrove species populations.

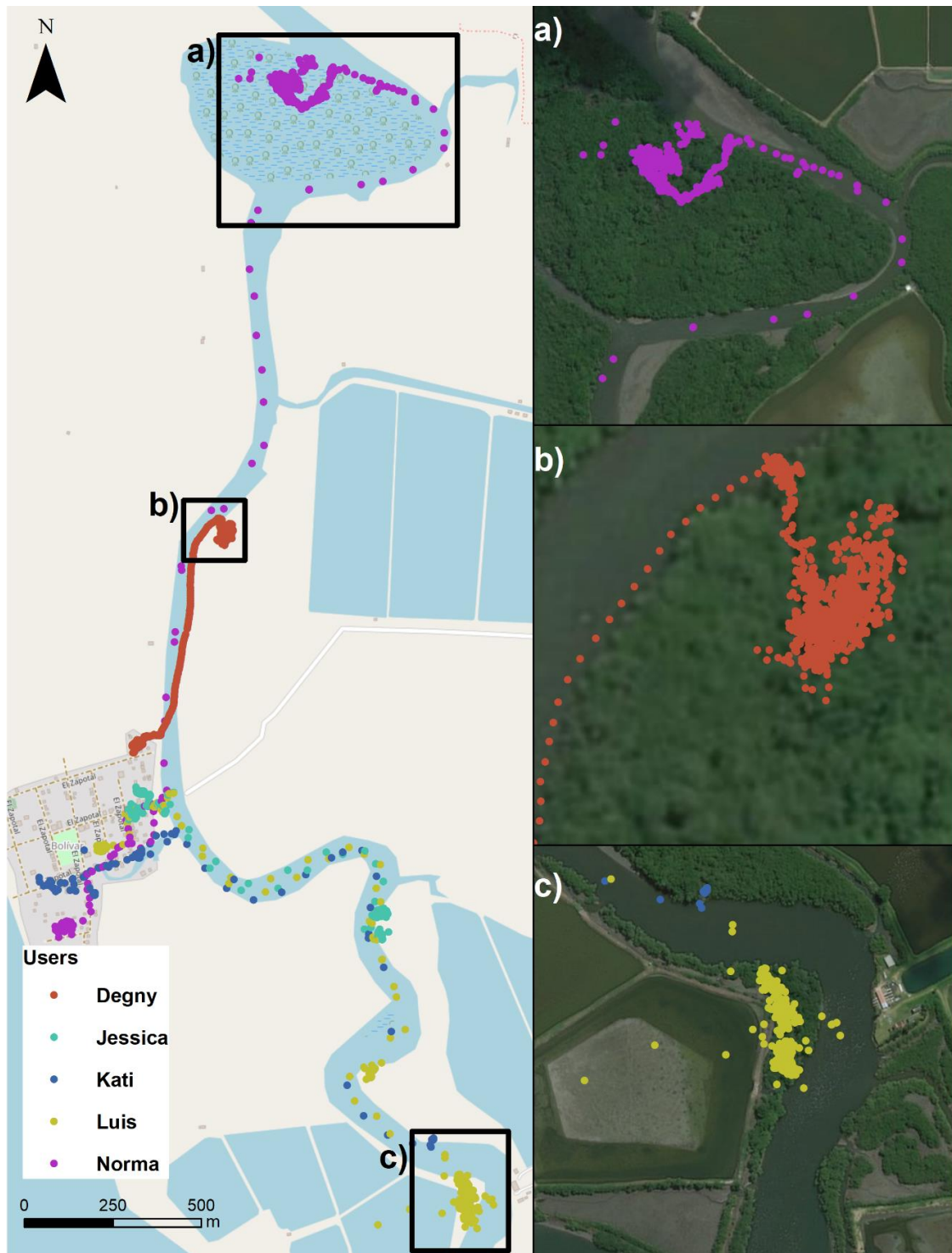


Figure 28: *Filos de manglar*. a) Although not shown in this image, this area is one of the most frequented *conchaes* – gathering spots – for the *concheros* in Bolívar. c) This is what the *concheros* mean by *filos de manglar* – edges of mangroves. These are the thin strips of mangrove areas that were left between the shrimp farms and the estuary.

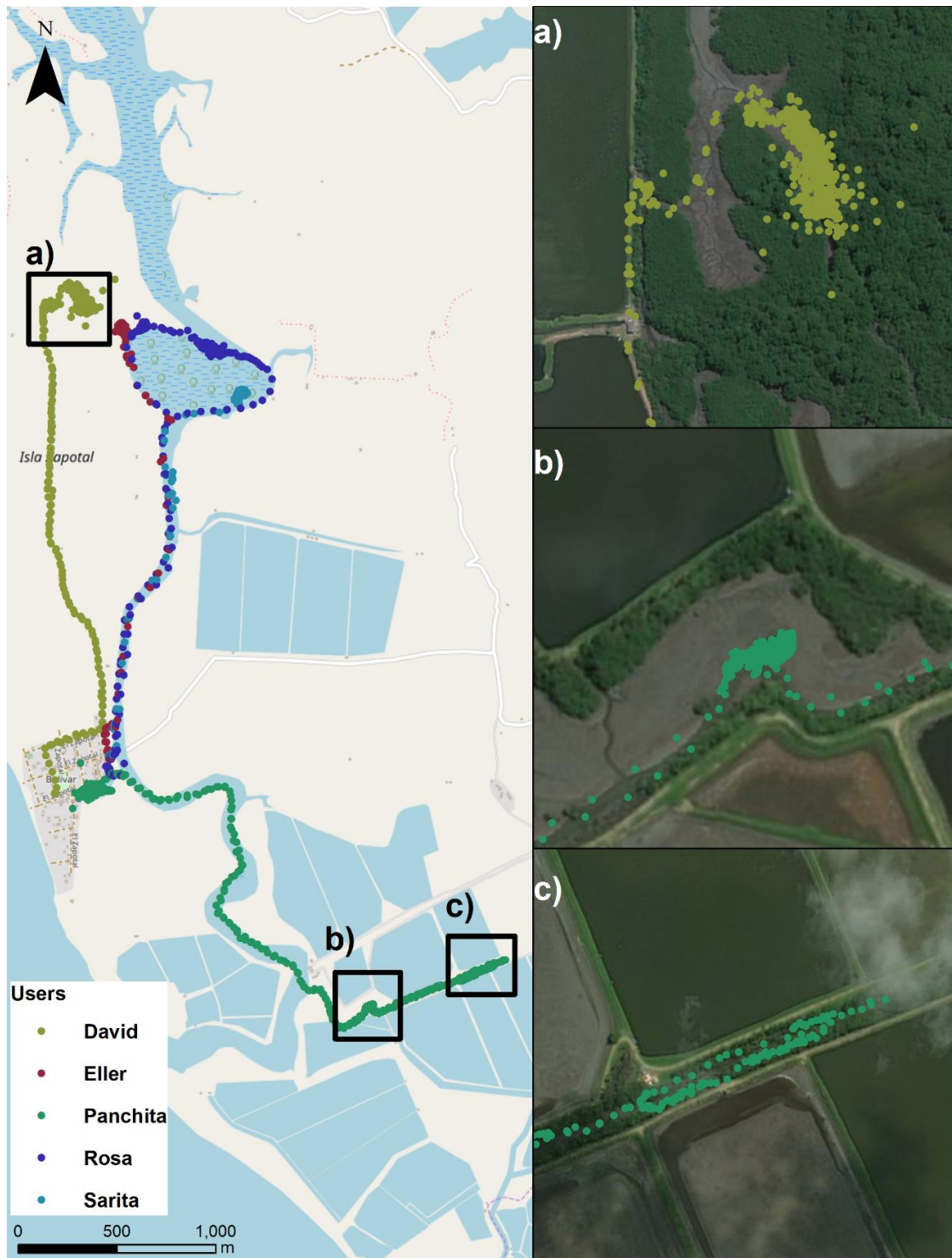


Figure 29: *Conchando* in a shrimp pond canal. b) and c) Although these are not “mangroves,” *concheros* look for cockles in these types of areas. Mangrove cockles inhabit areas near the roots of red mangroves. If there are any red mangroves present, even if along a shrimp pond canal, *concheros* know that there could be cockles there.

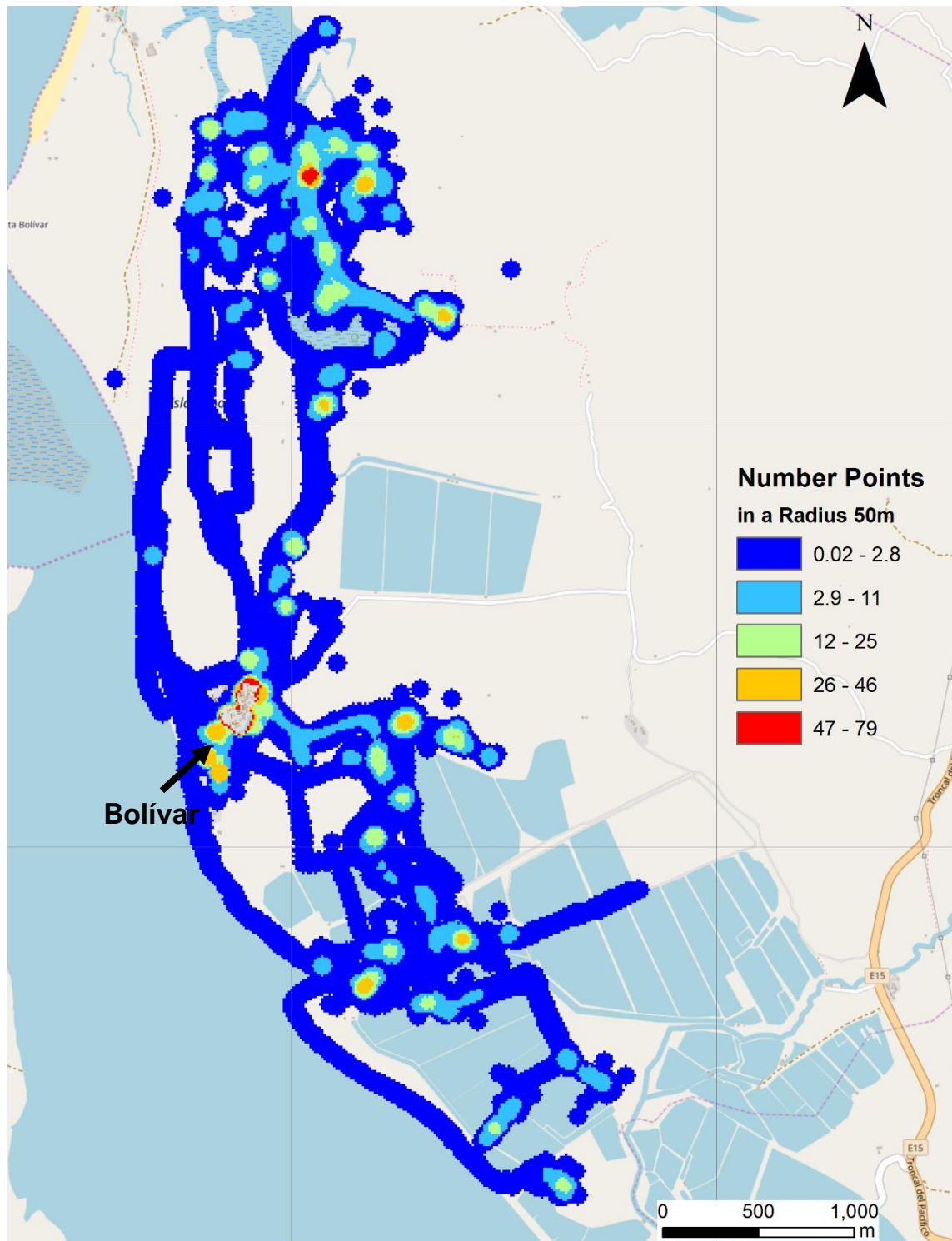


Figure 30: Work trajectories and most frequented *conchales*. Most *concheros* prefer to go to the mangroves north of Bolívar. This could be because they seek “*durantaes*” – areas where the mud sediments are softer – and “down river (north) the mangroves are soft, but going up (south), they are hard. [South] the mud is washing away” (C16, f).

4.4. Extractive conservation?

Western conceptualizations of nature are theoretically founded on a dualistic view of nature that separates the social from the natural (Mol and Spaargaren 2000). While this notion of nature continues to be applied in conservation discourses today, gradually, this dichotomy is starting to only exist in concept. This is because conservation approaches have evolved to respond to emergent ideologies about nature, economic growth, and social theory at large, resulting in policy shifts and new models of nature conservation. Nature is seemingly at the center of contemporary conservation policies; however, in reality, this is not nature, but rather a reconceptualization of nature comprised of natural constituents presented in the form of ecosystem services. Emergent paradigms of nature conservation are progressively becoming about generating profit through conservation and less about the conservation of nature itself. Therefore, what is being protected is not nature, but ecosystem services (Buonomo et al. 2013). Consequently, as nature becomes engulfed by the economic realm, the distinction between the social and the natural in the realm of nature conservation is increasingly fading in practice.

State and non-state actors engage in conservation in different ways, but ultimately there is a growing application of the “selling nature to save it” model of neoliberal conservation. This is not inadvertent. The introduction of a neoliberal approach to conservation has enabled the transformation and reconceptualization of nature to become “natural capital,” and conservation has become a rentable business (Duffy 2010). There is a misconception that conservation is against capitalism, but as Bakker (2005) puts it, capitalism made nature its friend. Consequently, conservation has become increasingly accommodating to the demands of capitalism; they have formed an alliance, and together they are reshaping nature-society relations (Brockington, Duffy, and Igoe 2008).

4.4.1. Neoliberal conservation in post-neoliberal Ecuador

Following the trend of other Latin American countries influenced by the “pink tide,”⁷⁹ Ecuador made a political “turn to the left” in 2007 with the election of Rafael Correa (president from 2007 until 2017). The Ecuadorian state adapted a “hybrid” political economic approach that embraced some aspects from neoliberalism but transformed them to meet its own political ideologies. For example, it is open to the notion of a market-based economy and the privatization of resources, but the state has a central role in the regulation of the market (Arditi 2008). In this sense, Escobar (2010, 8) argues that this is a “new left,” one that is not anti-capitalism; rather, it is “pro-regulation,” and an “explicit rejection of the neoliberal dogma” that had dominated the political economy of the region since the 1980s. Some scholars have identified these political shifts as “post-(neo)liberal” – the “post” indicating an end to neoliberalism; a response to a disenchantment with neoliberal models imposed in the region that failed to bring prosperity to the region (Arditi 2008, 71).

To reflect the emergent post-neoliberal stance of the Ecuadorian state, there was a constitutional referendum in 2008 (Becker 2013). Among many changes, this led to a large-scale nationalization of resources, especially of strategic sectors, like mineral mining, petroleum and hydrocarbon extractions, and more recently, nature conservation. The Ecuadorean Constitution of 2008 grants “nature” specific rights, the main ones being the right to be respected, and the right to the restoration and regeneration of its vital cycles, structures, processes, and functions (Asamblea Constituyente 2008, Articles 71 and 72). The constitution also grants the state a central role in the conservation and restoration of threatened ecosystems, including mangrove forests (Asamblea Constituyente 2008, Article 407).

⁷⁹ The color pink in the term “pink tide” is used to refer to a shift to socialist politics in Latin America, as opposed to “red” politics characterized by the communist movements of the early twentieth century.

With the highest number of species by unit area in the world, Ecuador is one of seventeen countries in the world classified as “megadiverse.”⁸⁰ In recent decades, national and international efforts have been made to protect the biodiversity found within the country. Funding from programs like REDD+ have largely contributed to the implementation of conservation initiatives in Ecuador (Erazo 2013). However, the implementation of state-led conservation projects has also gained strength in recent years. Under the Ecuadorean constitution, the state has the right to “establish and execute” conservation programs that ensure the “sustainable use of biodiversity” (Asamblea Constituyente 2008, 57). Adhering to the REDD+ approach, the Ecuadorean government launched a forest conservation project called *Socio Bosque* (“Partner Forest”) in 2009. In 2014, a new chapter of *Socio Bosque* was introduced – *Socio Manglar*, or “Partner Mangrove.”

4.4.1.1. Socio Manglar

Until recent years, tidal ecosystems were not given financial priority for conservation (Kauffman et al. 2014). Mangrove forests in particular were “traditionally underfunded,” especially in Latin American countries (Castro et al. 2000, 41). However, the tides turned for mangrove ecosystems when scientists discovered that mangroves have some of the highest carbon stocks among tropical ecosystems. Since global efforts to reduce greenhouse gas emissions over the last decades have emphasized protecting ecosystems with large carbon stock capacities, addressing the preservation of mangrove forests has been prioritized in national and international development agendas (Kauffman et al. 2014). Because mangroves are facing extreme deforestation and degradation, these ecosystems have become attractive targets for climate change mitigation strategies, such as REDD+, and more recently (since 2012) blue carbon⁸¹ sequestration initiatives (Herr, Alban, and Howard 2015). Moreover, since mangroves are considered to provide an array

⁸⁰ A country must have at least 5,000 endemic species to classify as “megadiverse.”

⁸¹ Blue carbon is “the carbon stored, sequestered or released from coastal ecosystems of tidal marshes, mangroves and seagrass meadows” (Herr, Alban, and Howard 2015, IV).

of many other valuable ecosystem services, the conservation of these forests is promoted as a “sound investment from a cost-benefit analysis” perspective (UNEP 2011, 431).

Socio Manglar is an incentives-based program that promotes the conservation of carbon-rich forests and sustainable use of forest resources through performance-based payments. In narrative, the initiative was launched to protect mangrove forests by restricting the expansion of industrial activities in mangrove zones and to promote the sustainable use of mangrove fisheries. This mostly means monitoring small-scale extractive activities, such as those practiced by the *concheros*. The model of *Socio Manglar* is based on creating partnerships between the Ministry of the Environment (MAE) with selected local groups contracted to protect mangrove forests (Field Data 2017). Because mangrove lands are not owned by private citizens, the “partners” can be local organizations with a current “Agreement of Sustainable Use and Custody of the Mangrove”⁸² – mangrove concessions (Government of Ecuador 2014). Local organizations voluntarily seeking to participate in the program can apply to enter in a partnership with the MAE and its partner organizations. One of these is the German Society for International Cooperation (GIZ), which provides the MAE technological and financial support to implement state-led nature conservation initiatives, as well as other social development projects (E8, m).

Typical of a payment for ecosystem services project, through *Socio Manglar*, the local organizations who engage in the partnership contracts can receive payments to protect and conserve mangrove resources. The program is centered on the premise that local actors can economically benefit directly from conservation by becoming stewards of conservation, or indirectly, through fall-out benefits such as ecotourism (E8, m). Aligned with the incentive-based conservation projects that are widely applied in the Global South, the approach of *Socio Manglar* is that through economic incentives, local communities are going to be more inclined to support the conservation goals of the

⁸² Decreto Ejecutivo 1102 in *Registro Oficial* No. 243, July 28, 1999

project. Furthermore, by providing alternate livelihood opportunities, the project can fulfill the economic losses that come from losing access to protected resources – the mangrove forests – and the communities can employ more sustainable livelihood strategies that do not rely on the direct use of natural resources (E7, m).

4.4.2. Perceived local impacts of Socio Manglar

In July 2015, representatives of *Socio Manglar* began negotiations with mangrove communities in southern Esmeraldas. However, lacking significant local support, the project has not been fully implemented in all intended communities in this region (E8, m). Some local groups are attracted to engaging in partnerships with *Socio Manglar* because of the economic benefits the project offers through diverse community development programs (Field Data 2017). However, in Bolívar a large portion of the population is opposed to the mangrove conservation approaches proposed by the *Socio Manglar* scheme. It is not that these community members are not aware of the importance of nature conservation, but they oppose the project because they do not perceive it to bring meaningful local benefits. As a result, this previously unified community is presently divided over divergent views of the conservation project (Field Data 2017).

4.4.2.1. Regulation of mangrove fisheries

Socio Manglar – at least on paper – promotes the protection and sustainable use of mangrove forests. One of premises of this program is that mangrove degradation can be reversed by addressing the overexploitation of mangrove fisheries (E8, m). This is because at the national level, the overfishing of mangrove resources by mangrove users is perceived as being one the main causes for the declining populations of mangrove species, particularly the mangrove cockle (El Universo 2016). Although the root cause of the problem is not the overharvesting of cockles by the *concheros*, juvenile cockles are increasingly extracted, and combined with the other factors that impact these species (such as the loss of habitat through mangrove deforestation), cockle populations are

gradually declining. To deter people from overexploiting mangrove resources, the project promotes alternative livelihood strategies for mangrove communities (Field Data 2017).

One of the components of *Socio Manglar* then is to provide educational trainings to mangrove users on how to sustainably use mangrove resources (C29, f). This will also include creating mechanisms to regulate the extraction of mangrove fisheries, meaning the practices of mangrove users. In southern Esmeraldas, another approach will entail the creation of “zones” within the mangrove forests and monitor how those areas are being used by *concheros*. “The idea is that people need to be informed about what areas they can and cannot enter” (E1, m). This essentially means going back to a rotation model employed by *concheros* in previous decades, when the mangrove forests were expansive (C4, f). Many *Bolíveños* agree that establishing stricter user regulations centered around the extraction of the juvenile mangrove cockles would address the issue of the declining mangrove shellfish populations. However, they are worried that such regulations could lead to the establishment of restrictions on the number of cockles a person can gather or how much time they are allowed to spend working in the mangroves. They feel that these limitations would have a severe impact on their ability to generate an income through the activity of gathering cockles (Field Data 2017).

4.4.2.2. Alternative livelihood strategies

The field data indicate that many people in the community see the creation of a protected area under *Socio Manglar* as the creation of an enclosure meant to keep *concheros* out of the mangroves (C15, f). Others perceive it as a project that pays people to “not intervene in the mangrove forests” (C8, f). The argument that *Socio Manglar* presents is that the activities carried out by *concheros* in the mangroves degrade these forests (E7, m). Hence, the program is to offer economic incentives to reduce local pressures on these resources. Each *socio* – or partner – of the project is going to receive “a certain amount” in exchange for not gathering cockles from the mangroves (E5, m). Thus, it is not that people are going to be prohibited from entering the mangrove forests, but that in exchange for not gathering mangrove resources, people will receive “access to

credits” – money (C8, f). In return, the *socios* must become stewards of conservation, or as some people see it, to become “guardians of the mangroves” (C20, f). The mangroves “need to be protected” and through *Socio Manglar*, “like park rangers,” the *socios* will work monitoring these spaces (C4, f). “What Socio Manglar intends to do is recognize [through monetary] payments” the work people do “to take care of the mangroves” (E1, m).

While this may sound like a “win-win” approach, this notion has not been well-received by all members of the community. There are some supporters of the idea, but there are also many *concheros* who do not agree that they should be paid to protect the mangrove forests. The mangroves already provide a range of benefits for the community. As such, people feel that they should reciprocate by “caring for” or protecting the ecosystem. The *Bolíveños* do this “from the heart” (C35, m). They do not need to be paid to protect the mangrove forests (C6, f). Moreover, some people believe that partaking in this action is what allows the *Bolíveños* to be a part of the mangrove ecosystem. Thus, losing the ability to do this would mean losing the mangrove ecosystem (Field Data 2017).

...They called us for a meeting, and a German man came from some German organization. They told us they want to pay us to take care of the mangroves. And I asked, “Why? In exchange for what are they going to pay us to take care of the mangroves, if we already take care of them for free?” But they got upset, told us we didn't understand that they were coming here to help us take care of the mangroves. But what I was asking is, in exchange for what? (C8, f).

4.4.2.3. Limited economic benefits

Socio Manglar offers alternative livelihood strategies to the community and opportunities to engage in local development projects such as ecotourism. It is not that the *Bolíveños* are not interested in these opportunities, but many people from the community are hesitant to accept the implementation of a conservation project through *Socio Manglar*. This is mainly because they believe that the benefits of the project are only going to be for one group, not everyone who lives in Bolívar. Representatives of

Socio Manglar argue that due to financial constraints, not all members of a community can enter in the project's partnership programs; only selected groups can participate. Consequently, the proposed benefits of the project are not directly accessible to everyone in the community (E8, m). This situation has created deep tensions among *Bolíveños*, pitting sisters, mothers, daughters, friends, and neighbors, against one another. These divisions go beyond simple disagreements among community and family members. Some individuals have gone as far as making violent threats to those in support of the conservation program. Those in opposition argue that the mangroves belong to the entire community, and that one group does not have the right to make decisions for the entire *pueblo*.

Losing access to the mangroves would result in the loss of income for many households in Bolívar. The field data show that 72 households (56 percent) in Bolívar depended – at least to some extent – on the income generated by a *conchero* or *conchera* living in the household. Many people assert that under no circumstances will they respect any resource management rules implemented under the *Socio Manglar* scheme, claiming that even if they must “become criminals, thieves in the mangroves,” they will continue entering these spaces to gather resources which “by birth” belong to them (C13, f). The *Bolíveños* are not accustomed to being told how to use the mangrove forests. Creating a system in which people from their own community prohibit *concheros* from entering these spaces is going to pose even more “problems” for everyone involved (C12, m). Even if it must be at “the cost of blood” (C8, f), people are “not going to let anyone take the mangroves away from [them]” (C15, f).

...We wouldn't be a part of the mangroves anymore but rather those who come here to protect them, and that is not a good thing.... Here, we are free, free to do what we want in the mangroves. For example, we go any time we want, to whatever edge of the mangrove to gather our cockles, and no one tells us anything. On the other hand, if someone else came to protect the mangroves they would tell us where we can *conchar*,⁸³ and what areas we cannot go into. And that is not

⁸³ Gather cockles.

good for us....The mangroves belong to us, so no one can tell us that we can't enter [them] (C36, f).

4.4.2.4. Summary

As part of the National Incentives Strategy for the Conservation and Sustainable Use of the Natural Patrimony, the Ecuadorian state proposed to incorporate at least 100,000 ha of mangrove forests under the *Socio Manglar* program by 2018 (within four years of its establishment) (Government of Ecuador 2014). However, the project is “momentarily suspended due to a lack of resources” (E1, m); the implementation of new projects under *Socio Manglar* has been postponed in the last year due to a financial crisis at the national level. This has been attributed to falling oil prices and the recovery costs of the earthquake in 2016 (El Universo 2017b). Furthermore, people also believe that the entrance of a new president, Lenin Moreno, destabilized the government, putting on hold some state initiatives initiated during the presidency of Rafael Correa. With limited resources, the state will have to continue seeking investors who are interested in financing such types of ambitious, large-scale and long-term projects as *Socio Manglar* in the near future.

Although a project under the *Socio Manglar* scheme is yet to be implemented in the mangrove forests of Bolívar, many *Bolíveños* draw parallels with what they underwent as a result of the introduction of shrimp aquaculture in the area and what they foresee happening if they allow *Socio Manglar* to enter the community. This is why so many people of the community oppose the project. The first shrimp farmers to come to southern Esmeraldas promoted the expansion of the aquaculture sector as a path to economic prosperity for these poor coastal areas through the creation of jobs. They hired locals initially, then after the ponds had been made, they began to bring people from other places and denying the locals access to the mangroves (H4, f). Thus, the benefits of this industry have only been extended to a select group of people – the shrimp farmers and the “few people from the community who work [for them]” today (C9, f). With *Socio Manglar*, although it would not result in the deforestation of the mangrove forests, many *Bolíveños* see the project’s goals of regulating the mangrove forests as a form of

enclosure that would inhibit them from using the mangrove forests as they traditionally have in the past. As it was “in the case of the shrimp farmers, people will allow it at first, then when [they] want to wake up and protest, it will be too late” to do something about it (C8, f).

4.5. Dominated spaces in the mangrove forests

As this paper has pointed out, the introduction of the shrimp aquaculture spatiality and that of state-led conservation can be understood as the transformation of complex ecosystems into different forms of “dominated spaces.” To recapitulate, a dominated space is a conceptualization – or representation – of a space that becomes materialized through the use of science and technology. Dominated spaces are usually imposed by actors in position of power, who have the means and access to technical knowledge to transform a natural space into a modern representation of a natural space. The introduction of shrimp aquaculture to these mangrove forests is a prime example of the transformation of nature into a dominated space. This spatiality required the removal of nature from the spaces where the shrimp ponds were to be established. The mangroves and all the species that were found within these spaces – all of the components that made this a complex ecosystem – were replaced by a different representation of “nature,” one comprised of artificial shrimp ponds where human input is required to produce a desired type of “natural” product – farmed shrimp. The spatiality of state-led conservation can also be understood through this lens.

Neoliberalist thought promotes the insertion of dominated spaces in nature – the appropriation of a space via privatization – to generate economic growth. In the realm of nature conservation, neoliberal conservation has gradually become the hegemonic approach to nature conservation. The implementation of nature conservation based on neoliberal ideologies entails the production of dominant spaces as protected areas. Seeking to commercialize nature, state and non-state institutions appropriate nature in the name of conservation, removing the social and cultural connotations from the space. To

marketize nature, complex ecosystems are fragmented into discrete “bite-size chunks” to make nature more manageable (Arsel and Büscher 2012). By deconstructing nature, stripping it of its complexity by reducing it to its minimum, each individual part – in the unit of an ecosystem service – can be sold separately. This way, the profit of a given space (or an ecosystem) can also be maximized; individual pieces are more marketable than the whole. For example, if there is interest in “buying” the carbon storage capacity of a forest but not its other attributes (such as its biodiversity, nutrient cycling, location, and aesthetics), then only that one component can be sold. Under this paradigm, nature conservation – based on the preservation of valuable natural capital – is becoming extractive.

This particular (re)imagination of nature can only be done through the use of modern scientific knowledge about ecosystems. Solutions and technologies emerging from Western science are praised above any other approaches. Coming from the dominant society, modern scientific knowledge has pervasively spread to the rest of the world, transforming the mentality of people to regard it as the ubiquitous source of solutions to all problems. This premise has been especially applied to address matters within the natural world, where “scientific” insight has perpetuated the notion that there are “ecologically good” and “ecologically bad” practices for the management of natural resources. This has been translated to refer to those belonging to scientific systems versus those practices employed by local peoples (Bryant 1998). Escobar (1998, 59) refers to the imposition of this dominant perspective of nature as “bioimperialism,” a position put forth by dominant actors and institutions to create a narrative that focuses on the “threats to biodiversity” (habitat loss, invasive species, etc.) “rather than [addressing] the underlying causes.” These developments can be further explored looking at the case of mangrove conservation in Ecuador.

4.5.1. Seeking “green” growth

Economic growth is largely dependent on the use of natural resources. In the case of “less industrialized” countries rich in “natural capital,” economic development is

promoted through the exploitation of nature (Buonomo et al. 2013). Seeking to shift away from this approach to growth, countries in the Global South are increasingly adopting the paradigm of the “green economy.” The underlying ideology of the “green economy” draws from market environmentalism, but this framework is largely based on what McAfee (1999) refers to as “green developmentism.” Green developmentism is a novel approach to development that “blames” environmental problems on “abstractions” such as market and policy “failures” (McAfee 1999, 151). Market solutions are presented as the path to an “ecological future” (Igoe, Neves, and Brockington 2011, 17). In a green economy, there does not have to be a trade-off between the environment and economic growth. The “vision” is that of an “ecological modernization” where economic growth and conservation “work in tandem” (Fairhead, Leach, and Scoones 2012, 240). Promoted as an alternative to development models that degrade nature, the green economy is a response to the “disillusionment” of a “brown economy” – an economy based on fossil fuels that has relied on depleting the world of its natural resources (UNEP 2011, 14 and 7).

4.5.2. Expanding the economic frontier through virtual extractions

The economic model of post-neoliberal Ecuador is aligned with the vision of the “green economy” where the conservation of natural resources does not have to “put a drag” on economic growth (UNEP 2011, 14). This framework presents the notion that it is “possible to eat one’s conservation cake and have the development dessert too” (Grandia in Igoe and Brockington 2007, 434). Therefore, rather than addressing the environmental degradation caused by industrial activities and inhibiting their expansion (in fact the opposite has happened), the Ecuadorian state is seeking opportunities to overcome environmental crises through scientific and technological innovation. In the case of mangrove forests, this has led to employing a conservation approach that uses scientific knowledge to redefine nature as a “service provider” of valuable resources (Sullivan 2013, 205). This presents an opportunity to exploit an untapped “economic sector”: the commercialization of nature’s valued ecosystem services.

Under the model of *Socio Manglar*, where the Ecuadorean state becomes a seller of nature's ecosystem services, nature conservation itself becomes a type of extraction. The difference is that rather than being a source of material extractions, nature's services become what McAfee (2012) refers to as "miracle export crops." Ecuador, like many other countries in the Global South, is defined by an export-driven economy, and its current approach to nature conservation aligns with this paradigm. An initiative like *Socio Manglar* can serve to conserve mangrove forests, but concurrently, it can allow the country to become a major "exporter of 'virtual' goods" (Latorre, Farrell, and Martínez-Alier 2015, 65), these being ecosystem services, primarily carbon sequestration and biodiversity conservation. As a commodity, nature has become attractive to a "new breed of investor" who has the conviction that market solutions can solve environmental problems and who believes that investing in nature can produce an economic return (Arsel and Büscher 2012, 57).

In the case of *Socio Manglar*, one of these investors is the government of Germany. In this exchange, Ecuador is the provider of a service short in demand – ecosystem services such as carbon sequestration – and Germany is a customer interested in "buying" that product to help it reach its proposed targets of carbon emissions reductions (KfW Bankengruppe 2013). In theory, these types of partnerships produce a "win-win" situation for all sides; investors like Germany win by offsetting its carbon emissions, and "sellers" of nature like Ecuador win by conserving their natural heritage, and by continuing to expand their economic frontier. In practice, not only are the benefits of these transactions unevenly spread, but actors whose voices are not as prominent in these interactions end up not winning at all. Rather, those who have little say in these processes often end up losing, being detrimentally affected from the loss of access to spaces that provide a means of livelihood, and spaces with deep social and cultural meaning. This is the case of the mangrove community of Bolívar, Esmeraldas.

4.6. Conclusion

In southern Esmeraldas, mangroves are being appropriated and acutely altered in order to supply resources demanded by exogenous interests. These processes entail the acquisition of land and resources by non-local actors at the expense of local peoples' well-being. With the introduction of shrimp farming, this resulted in the transformation of the mangroves, and the inhabitants of these lands had minimal (if any) power over the decision-making processes, as this privilege was transferred to the actors who appropriated these spaces, the shrimp farmers. Presently, the exporting of "virtual goods" is not tangible or environmentally destructive. However, the social impacts caused by conservation in this context parallel the social impacts that result from extractivisms. In the case of mangrove communities like Bolívar, the creation of conservation areas under the *Socio Manglar* scheme would require the restriction of traditional subsistence practices based on mangrove resource extractions. This can ensure the interested buyers of the mangroves' global "benefits" – such as carbon sequestration – that the ecosystem is producing the services of interest, and that these are of "good quality."

In Ecuador, although nature conservation is in theory a response to the destruction of natural spaces, in practice the conservation discourse does not focus on addressing the root causes of environmental degradation. More aligned with the transformation of nature into a dominated space, the expansion of protected areas under the state-led *Socio Manglar* scheme is possible by the state appropriating the control of natural resources and landscapes from local groups. Consequently, through the discourse of nature conservation, local peoples are being removed from nature either physically, economically, or politically, as exogenous actors assume governance of their environments. As discourses about conservation continue to adapt ideologies of market environmentalism and to fuse with agendas for economic growth, the social impacts of conservation may increasingly become more detrimental to the vulnerable populations that become entangled in these processes.

4.7. References

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5. CHAPTER 5: Conclusion

5.1. Conclusion

This dissertation sought to gain an understanding of the social and cultural impacts that result from spatial reorganizations of natural spaces. Using the case of Bolívar, a mangrove community in southern Esmeraldas, Ecuador, this dissertation examined the social, political, economic and ecological factors that contributed to the introduction of new spatialities in the mangrove forests surrounding the community. A spatiality can be simply understood as the “use of space,” but more than that, it is a concept used to describe the processes that contribute to the reorganization of spaces – whether in the physical, mental, or social realms – and the drivers influencing such spatial rearrangements. This perspective requires that we look not only at what exists within a space, but to examine how a space has changed over space and time. This approach then also entails an examination of the social relations and power dynamics among the actors whose spatialities are observed within a shared space to identify how these factors influence how a space is materialized. Using these concepts of space and spatiality, this dissertation sought to identify the factors that contribute to spatial transformations observed in the mangrove forests of southern Esmeraldas, and how the introduction of new uses of a space affect the preceding spatiality of the ancestral mangrove users.

The central research question of this dissertation is: *How do existing spatialities within the mangrove forests of southern Esmeraldas, Ecuador conflict, converge, and complement one another?* This question is addressed through the following sub-research questions:

1. *How do how ancestral mangrove communities in southern Esmeraldas, Ecuador perceive, utilize, and interact with the mangrove ecosystem?*
2. *What factors contribute to the introduction of different spatialities within the mangrove forests of southern Esmeraldas?*
3. *How has the introduction of different spatialities within the mangrove forests impacted how these ancestral mangrove communities perceive, utilize, and interact with the mangrove ecosystem?*

Each of the sub-research questions was answered in a stand-alone paper (Chapters 2, 3, and 4). In the following sections, I provide a summary of the findings of each paper, followed by the response to the overarching question of the dissertation.

CHAPTER 2: Los concheros de Bolívar: *The ancestral users of the mangrove ecosystem in southern Esmeraldas, Ecuador*

Question: How do ancestral mangrove communities in southern Esmeraldas, Ecuador perceive, utilize, and interact with the mangrove ecosystem?

The mangrove forests are a complex socio-ecological system and the communities that have co-inhabited these landscapes for multiple generations have a deep and rich cultural relationship with these spaces. Through mangrove resources, members of this community have traditionally supported their nutritional needs. Moreover, in more recent years, through the selling of mangrove products – predominantly mangrove cockles – some members of the community are able to meet their economic needs as well. Therefore, mangrove forests have served to provide spaces where subaltern groups – such as the women of the community and increasingly the young men with limited access to employment opportunities – can find resources to sustain their livelihoods. However, despite the economic benefits that the community receives from the mangrove ecosystem, the *Bolíveños*⁸⁴ above all perceive the mangrove ecosystem to be “the source of life in Bolívar.”

Mangrove spaces also supply spaces for the development of local cultural and social values. Traditions and customary practices that revolve around the practices carried out in the mangrove forests – such as that of the *concheros*, the mangrove cockle gatherers – have been passed down from generation to generation in Bolívar. The *Bolíveños* are proud to be part of a *pueblo del manglar*; they see themselves as being a part of the ecosystem. Vice-versa, the community perceives the mangrove forests as being a part of who they are as a people. In this sense, the community has a monist view

⁸⁴ Inhabitants of Bolívar.

of nature; there is no division between the people and the mangrove ecosystem. Thus, to survive – physically and culturally – the *Bolíveños* believe they must have access to these spaces. According to the *concheros*, losing the mangroves would mean losing a part of who they are as a people, and losing the *concheros* would result in the mangroves providing “less life” (C6, f).

CHAPTER 3. A reorganization of space: Spatialities in the mangrove forests of southern Esmeraldas Province, Ecuador

Question: What factors contribute to the introduction of different spatialities within the mangrove forests of southern Esmeraldas?

While there are a range of economic, political, and social factors that contributed (and continue to influence) the introduction of different spatialities within the mangrove forests of southern Esmeraldas, a main driver of spatial reorganizations in these natural landscapes has been an evolving imaginary of what mangrove spaces are. In other words, the ideologies that inform what these spaces mean, how they are perceived, or what they represent, have changed over time, resulting in the (re)production of different types of mangrove spaces. Informed by scientific and technological advancements, as well as by environmental change, this has led to the introduction of different specialties within the mangrove forests of southern Esmeraldas, resulting in various types of ecological and social effects.

At a time when the state perceived these spaces as “wastelands,” the shrimp aquaculture spatiality was introduced to transform mangrove zones into productive lands that could contribute to the national economy. More recently, because of scientific discoveries, mangrove forests have been reconceptualized as “valuable ecosystems” with high carbon-storage capacities (and a wealth of other ecosystem services). As a result, the Ecuadorian state is mobilizing to integrate the country’s mangrove forests into the emergent international carbon markets. A spatiality that remains in the shadows, or that one could argue that is being displaced by the other spatialities, is the preceding spatiality of the ancestral mangrove users. As this paper expanded on, this is because ultimately, power dynamics among the actors imposing their spatiality in these spaces largely defines

the ways in which mangrove spaces are materialized. As the dominant group, actors with more power have been able to impose their spatialities at the expense of the spatialities of less dominant groups. In this situation, the state and the shrimp farmers have been able to use their political and economic power to impose their spatialities over the spatiality of the mangrove users. Even when this does not entail a physical transformation of the space (or example as is the case with the introduction of the conservation spatiality), it still creates an outcome where the mangrove users are dispossessed from ancestral mangrove spaces.

CHAPTER 4: Dominated spaces: Shrimp aquaculture and state-led conservation in the mangrove forests of southern Esmeraldas, Ecuador

Question: How has the introduction of different spatialities within the mangrove forests impacted how these ancestral mangrove communities perceive, utilize, and interact with the mangrove ecosystem?

Seeking to identify the ways in which the introduction of new spatialities to the mangrove forests surrounding Bolívar affect how ancestral users perceive, utilize, and interact with the mangrove ecosystem, this paper expanded on the local impacts of the shrimp aquaculture sector and the perceived impacts of the proposed state-led mangrove conservation initiative *Socio Manglar*. Talking to the *Bolíveños* provides insight into the environmental destruction that resulted from the introduction of shrimp aquaculture, the local economic impacts of this industry, and the deep sociocultural effects these developments have on the community. Although they may not use technical terms, the *concheros* can describe in depth how the environment has changed around them as a result of aquaculture practices, what this has meant for the mangrove ecosystem, and how this has affected the well-being of the groups that have co-inhabited these spaces for multiple generations. To them, is it undeniable that shrimp farming operations have “devastated” their community (E2, f) because the mangroves no longer “give life that they used to before” (H2, m). Although it has not happened yet, many *concheros* perceive the impacts of the state-led conservation project *Socio Manglar* as posing similar social impacts on the community.

Based on findings from the field data, this paper illustrates how all spatialities present in the mangrove forests exemplify a type of resource extraction, both in theory and in practice. Furthermore, this paper proposes the notion that the introduction of the shrimp aquaculture spatiality and that of state-led conservation can be understood as the transformation of complex ecosystems into different forms of “dominated spaces.” The introduction of shrimp aquaculture in previous decades, and the proposed establishment of protected areas now (since 2015), are processes that entail the appropriation of spaces that have been traditionally communally managed by ancestral mangrove users who have historically depended on having access to mangrove spaces to sustain their livelihoods.

However, as the findings of the field data show, the impacts of mangrove deforestation and degradation have not affected all members of mangrove communities equally. Asymmetrical power dynamics among a group of actors influences when, how, and who can have access to a natural resource. In the case of mangrove communities in Esmeraldas (as is the case for many other rural communities functioning under a patriarchal system), access to natural resources is largely based on social norms generally divided along gender lines. Women have historically been entering mangrove spaces to gather edible species to sustain their families, both nutritionally, and more recently, economically. As a result, the loss of access to mangrove forests have had different impacts on some groups of the community and have especially impacted the women whose only source of livelihood is the mangrove ecosystem.

Overarching research question: *How do existing spatialities within the mangrove forests of southern Esmeraldas, Ecuador conflict, converge, and complement one another?*

As this dissertation expanded on, there can be more than one spatiality occupying a single space. In the case of the mangrove forests of southern Esmeraldas, there are three contemporaneous spatialities within the same spaces. The first spatiality is that of the ancestral mangrove users of the mangrove ecosystem – the spatiality precedes all others. Then in the early 1980s the spatiality of shrimp aquaculture was introduced as part of a

national agenda to generate economic growth through the uses of these spaces. Lastly in 2003, the spatiality of conservation came to be in these spaces.

An analysis of the processes that contributed to the introduction of these divergent uses of the same space illustrates that even if spatialities are superimposed over one another, this does not necessarily mean that they are incompatible. However, there are times when the introduction of a spatiality results in a competition for the space with another spatiality. In such cases, this results in the removal of the introduced spatiality or the displacement of the one preceding it. This is not necessarily about which spatiality is better or a more ideal fit for a space, but rather, it reflects the power dynamics of the actors whose spatialities are co-present in the same space. This is because, as the findings of this dissertation illustrate, the power structures that define the relations among the different groups represented in the contemporaneous spatialities within a space largely inform how each different use of a space is materialized.

As this dissertation highlights, the interaction among the different spatialities in these spaces have not remained static; that they conflict, converge, and complement one another in variegated and often insidious ways, both spatially and temporally. For example, when shrimp aquaculture was introduced in this region, the establishment of this new spatiality did not immediately conflict with that of the mangrove users. It was not until it became clear to the community that through the deforestation of the mangrove forests this spatiality was going to completely displace the ancestral uses of the mangrove spaces that the two spatialities began to conflict with one another. This conflict emerged from a competition for the mangrove forests. Shrimp farmers wanted to expand their operations, and the mangrove users wanted to preserve them. It was this factor that then led to the introduction of the conservation spatiality.

Local organizations like FUNDECOL in alliance with the communities were able to become a unified front against the shrimp farmers to protect what remained of the mangrove forests by establishing a protected area in 2003 – the Muisne River Estuary Mangrove Wildlife Refuge – as a means to secure the communities' access to mangrove

spaces. The conservation work done by the mangrove communities is a reflection of what Peet and Watts (1996) describe as “environmentalism of the poor”; the *concheras* (because it was mostly women who were involved in this struggle at the time) defended their environment to protect their livelihood, as opposed to being motivated by “environmentalist” reasons. This should not serve to minoritize their motives however, as through these processes, mangrove communities have been able to protect the mangrove forests.

The introduction of the conservation spatiality was a result of community struggles to protect the mangrove resources from the expansion of shrimp aquaculture, meaning that at the time, the spatiality of conservation and that of the mangrove users complemented one another, as both were driven by the same motive: to stop the deforestation of the mangrove forests. However, these dynamics have begun to shift. The motives and actors driving the conservation spatiality have changed over time, changing how this spatiality is implemented. As a result, the previous complementarity of the conservation spatiality and that of the mangrove users is increasingly starting to fade. Conversely, conservation under the neoliberal state-led project of *Socio Manglar* is gradually starting to converge with the spatiality of shrimp aquaculture, even complementing it in some ways.

While the creation of a protected area under a scheme like *Socio Manglar* does not affect the physical form of the mangrove forests, it would result in a loss of (or restricted) access to mangrove spaces for the local communities. This is because this conservation approach is essentially a mechanism to transform the mangrove forests dominated spaces. The creation of protected areas under the *Socio Manglar* scheme entail that the state appropriates the control of natural resources and landscapes from local groups. As discourses about conservation continue to adapt ideologies of market environmentalism and to fuse with agendas for economic growth, nature conservation becomes more about contributing to the national economy than about the protection of nature. In this way, the state-led conservation approach of *Socio Manglar* is converging, if not complementing,

the spatiality of shrimp aquaculture, as both spatialities work to meet the state's agenda to use productive lands to generate economic growth.

5.2. Dissertation significance

Ideas about nature conservation are not static, they are based on evolving ideological frameworks, scientific knowledge, environmentalist discourses, policies, and agendas of economic development. Influenced by these changing factors, there have been notable shifts in the approaches implemented in nature conservation. Shifting from the “people-free” fortress conservation models that promote removing people from nature, contemporary conservation approaches increasingly promote the notion that conservation projects should be more socially and economically inclusive (Adams and Hutton 2007). The rationale for these “nature-society” models is that cooperation and support from local groups is needed to successfully manage protected areas. As a result, emergent conservation models focus on engaging local communities to cooperate with the objectives of conservation projects (Zimmerer, Galt, and Buck 2004).

Also referred to as “payment for ecosystem/environmental services” projects, these types of projects entail integrating social and economic development goals in conservation programs through “incentive-based conservation” (Adams and Hutton 2007). As exemplified by the state-led mangrove conservation initiative *Socio Manglar* in Ecuador, an approach that has been widely applied to incentivize local groups in engaging in conservation efforts has been to promote alternate livelihood strategies to traditional uses of resources among local groups. This is largely because conservation models that promote removing human impact from nature have been highly scrutinized for disregarding the local costs of conservation, especially in regard to issues of human displacement and other social impacts, such as exacerbating poverty (Adams and Hutton 2007). Consequently, the focus of emergent conservation initiatives has been to address cases of local economic displacement from conservation. However, less attention is given to the social and cultural impacts that result from the implementation of a conservation

project. Aiming to investigate these specific developments, one of the main findings of this dissertation is that it is crucial to understand the non-economic impacts conservation policies have on local communities. As this research indicates, failing to do so can have deep and long-term effects on the socio-cultural well-being of a community.

The inhabitants of mangrove communities in southern Esmeraldas consider themselves to be part of the mangrove ecosystem. To them, mangroves are not only spaces of biodiversity, but they are lived spaces, places they frequent every day from an early age. Furthermore, these forests “do” more for them than supply resources like food or a source of income; they are spaces that allow for the development of cultural and personal identity, and social values. Since the *Bolíveños* inherently believe that they are part of the mangrove ecosystem, losing access to these spaces would then mean losing a part of who they are as a people, and as individuals. Conservation projects such as the *Socio Manglar* scheme that propose to provide alternatives to traditional livelihood strategies would fill economic voids – to an extent. However, the social and cultural ties the community has to the mangrove ecosystem that such projects threaten are irreplaceable. Moreover, the findings of this dissertation highlight the need to consider the gendered impacts of a conservation project.

Current conservation models adopted by the Ecuadorean state promote the notion that local communities can receive economic incentives to become stewards of conservation. However, this approach does not consider how local social and cultural norms might affect *who* can have access to those opportunities. In the case of mangrove communities in Esmeraldas, due to the gendered divide of access to resources, the livelihood strategies provided by *Socio Manglar* are inherently going to benefit the male populations. It is important that this is addressed because, as was the case with the introduction of industrial shrimp farming, the state-led conservation approach proposed for these mangrove communities would continue to displace women – or the *concheras* – from mangrove spaces, further marginalizing this sub-group of the population. Therefore, to implement a socially just conservation project under the current paradigm of “nature-society” conservation, the alternative livelihood strategies proposed for a community

must consider how factors such as gender, class, physical abilities, and other social identity factors might affect who and how people can have access to the opportunities proposed by the project. In a community like Bolívar, this would mean focusing on generating culturally appropriate livelihood strategies that economically and socially empower the women of the community, specifically the *concheras* who have historically been affected by gender-blind development strategies. In the case of other communities entangled at the interface of conservation and development, the specifics of this might be different, but nonetheless, understanding the non-economic impacts of state-led, or top-down policies is imperative if we are to truly implement conservation projects that are not only effective in terms of nature conservation, but also socially and economically just.

5.3. Scopes and limitations

There were several components that were outside my control that both helped and limited me in different ways. First, establishing a connection with members of C-CONDEM⁸⁵ greatly facilitated my introduction to the key informants in the community. Moreover, having visited the community two times before I conducted the main component of my fieldwork was also helpful, as I already knew how to get to the study site, what to expect when I got there, and more importantly, I had already established connections with several members of the community who were very pleased to see me back there again. Being a Spanish native speaker significantly impacted my ability to do this work. Because I could directly communicate with the people of the community, I was able to create meaningful relationships with many people who to this day hold a special place in my heart. Furthermore, staying with a family in the town and becoming an “inhabitant” of Bolívar not only allowed me to gather data more efficiently, but also allowed me to be immersed in their world.

⁸⁵ Coordinating Body for the Defense of the Mangrove Ecosystem, a Quito-based non-governmental organization (NGO) that works with artisanal fishing and shellfish gathering associations along the Ecuadorian coast.

Something that partially limited my research was my gender, and to an extent, my age. I found it more difficult to create connections with some of the men in the community, particularly the young *concheros*. My gender inhibited me from being able to connect with male *concheros*, while conversely, this allowed me to bond with the *concheras*. To interview a male *conchero*, for their comfort as well as mine, I had to ensure that someone else was present during the interview (their partner, or another relative). With the *concheras*, this was not an issue. I had closed-door interviews with them, I would sit at their table and have lunch with them, or just chat with them for hours. These limitations can be seen in the proportion of male versus female *concheras* I was able to interview.

There were other factors that limited other types of data I could collect. For example, because I had to personally design the methods approach for gathering the geolocational data and had not thoroughly tested this before, it took me some time to determine a strategic approach to gathering the type of data that I was seeking to collect. Another component that influenced the lens through which I made observations on the field was that as a cultural geographer, I narrowed the scope of this research to analyze the social, cultural and political aspects of the introduction of new spatialities to the mangrove forests. Conversely, due to my limited knowledge of mangrove ecology, my observations on the ecological and biophysical components of these processes were less defined.

5.4. Future directions

The purpose of collecting geolocational data to record where the *concheros* work within the mangroves was meant to be used to create visualizations of the spaces in which the *concheros* of Bolívar work. While this was accomplished, this data will be further analyzed using more advanced statistical tools to see what type of information is not shown in the current visualizations.

Going forward, this work inspires me to carry out future research in two directions. The first one is that I want to further expand my knowledge of extraction-conservation dynamics in the Global South. I wish to continue studying how these processes affect the local communities who find themselves entangled in the middle of situations they often have no say in. The social and cultural impacts of these developments are variegated in form and highly-context dependent. However, as we continue to expand our understanding of these processes we may be able to reach a point where we can learn to identify the factors that detrimentally affect subaltern groups, and concurrently, determine what steps need to be taken to address these issues before they even arise.

Secondly, having gained the knowledge that I acquired from doing this research, I wish to continue working with mangrove communities in Ecuador. A way to expand this work could be to investigate mangrove-people relations in urban areas. There are communities in the city of Esmeraldas who subsist off the mangrove resources too. Cross-examining the ways that rural mangrove dwellers versus urban mangrove communities perceive, utilize, and interact with the mangrove ecosystem could provide a deeper understanding of the value of mangrove resources among diverse coastal populations. I would also like to expand this work to mangrove communities in other parts of the world. The love and respect the *Bolíveños* have for their mangroves is contagious and learning to see this ecosystem through the eyes of the *concheros* inspires me to continue working with mangrove communities in the future.

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APPENDICES

APPENDIX 1: List of Research Participants

Participant ID	Age	Gender	Category	Date Interviewed
C2	41	M	Concheros	2017-05-08
C3	33	F	Concheros	2017-04-23
C4	40	F	Concheros	2017-04-23
C5	30	M	Concheros	2017-04-23
C6	38	F	Concheros	2017-04-23
C7	65	F	Concheros	2017-04-26
C8	39	F	Concheros	2017-04-26
C9	35	F	Concheros	2017-05-03
C10	50	F	Concheros	2017-05-03
C11	20	F	Concheros	2017-05-03
C12	45	F	Concheros	2017-05-04
C13	43	F	Concheros	2017-05-04
C14	45	F	Concheros	2017-05-06
C15	19	F	Concheros	2017-05-06
C16	74	F	Concheros	2017-05-06
C17	29	F	Concheros	2017-05-07
C18	18	F	Concheros	2017-05-07
C19	29	M	Concheros	2017-05-07
C20	33	F	Concheros	2017-05-25
C21	39	F	Concheros	2017-05-10
C22	30	F	Concheros	2017-05-11
C23	44	F	Concheros	2017-05-22
C24	25	F	Concheros	2017-05-22
C25	30	M	Concheros	2017-05-23
C26	29	F	Concheros	2017-05-23
C27	30	F	Concheros	2017-05-23
C28	24	M	Concheros	2017-05-24
C29	34	F	Concheros	2017-05-25
C30	20	M	Concheros	2017-05-26
C31	37	M	Concheros	2017-05-27
C32	22	M	Concheros	2017-05-30
C33	30	F	Concheros	2017-05-30
C34	33	F	Concheros	2017-05-30
C35	30	M	Concheros	2017-06-08
C36	62	F	Concheros	2017-06-13

Total: 35 (26F, 9M)

Participant ID	Age	Gender	Category	Date Interviewed
H1	81	M	History/Elder	2017-04-17
H2	51	M	History/Elder	2017-04-22
H3	76	F	History/Elder	2017-04-23
H4	68	M	History/Elder	2017-04-25
H5	54	F	History/Elder	2017-05-07
Total: 5 (2F, 3M)				

Participant ID	Age	Gender	Category	Institution	Date Interviewed
E1	N/A	M	Expert	MAE	2017-04-20
E2	46	F	Expert	<i>Virgen de las Lajas</i>	2017-05-01
E4	54	M	Expert	ASOSERTUMABOL	2017-05-11
E5	N/A	M	Expert	FUNDECOL	2017-05-28
E6	51	M	Expert	Local Government	2017-06-02
E7	41	M	Expert	ASOSERTUMABOL	2017-06-06
E8 (E9, E10, E11)	N/A	M & F	Expert	GIZ, CEFODI & MAE	2017-06-05
Total: 10 (2F, 8M)					

APPENDIX 2: Interview Guide for *Concheros*

GUIA DE ENTREVISTA CON CONCHEROS INTERVIEW GUIDE FOR CONCHEROS

HISTORIA DE BOLÍVAR

History of Bolivar

- 1) Primero dígame su edad, y cuantos años ha vivido en Bolívar.

First, tell me your age and how many years you have lived in Bolivar.

- 2) ¿Qué cambios ha visto usted en la población de Bolívar a lo largo de su vida?

What changes have you seen in the community of Bolívar in your lifetime?

- 3) ¿A qué se dedicaban sus padres?

What did your parents do for a living?

- 4) ¿Cree usted que económicamente Bolívar esta igual, mejor, o peor que en los tiempos de sus padres?

Do you believe Bolívar is economically better, the same or worse than during your parents' lifetime?

- 5) ¿Que ha causado estos cambios en la economía de Bolívar?

What have created these changes in the economy of Bolivar?

- 6) ¿Qué significa para usted el sumak kawsay? En otras palabras “el buen vivir” o, vivir bien.

What does the sumak kawsay mean to you? In other words, “el buen vivir” or living well.

SOBRE SU EMPLEO

Employment questions

- 7) ¿Tiene acceso a otras formas de empleo, aparte de la concha? ¿Por qué o por qué no?

Do you have access to any other source of employment besides la concha? Why or why not?

- 8) Si sí: ¿Qué temporadas del año hace(n) ese(os) tipo(s) de trabajo(s)?

If yes, which seasons of the year do you do the other types of employment?

Si no: ¿Se siente limitada/o para obtener otros tipos de trabajos? Si sí, ¿cuáles son estas limitaciones?

If not, do you feel limited in obtaining other types of jobs? If yes, which are those limitations?

- 9) ¿Le gustaría tener la oportunidad de tener acceso a otros tipos de trabajo?

Would you like to have the opportunity of having access to other jobs?

- 10) Si sí, ¿a cuáles?

If yes, which types of jobs would you like to have access to?

EL TRABAJO EN EL MANGLAR

Work in the mangroves

- 11) ¿Cuánto tiempo lleva trabajando en el manglar?

How long have you been working in the mangroves?

- 12) ¿Quién le enseñó cómo hacer este(os) tipo(s) de trabajo(s)?

Who taught you to do this work?

- 13) ¿Con quién(es) se va usted a trabajar en el manglar?

With whom do you got to work to the mangroves?

- 14) ¿Qué es lo que más te gusta de trabajar en los manglares? – Aspectos positivos del trabajo.

What about the work in the mangroves do you like the most? – Positive aspects of the job.

- 15) ¿Hay algo que no le gusta? – Aspectos negativos del trabajo.

Is there something you do not like? – Negative aspects of the job.

- 16) ¿Qué tipos de personas se dedican a conchar en esta comunidad?

Which type of people from your community gather cockles in the mangroves?

- 17) ¿Siempre ha sido esto así o ha cambiado quien conchaba antes a quien concha ahora?

Has it always been like this, or has it changed who went to la concha before and who does it now?

- 18) ¿Quién depende más de la concha, los hombres o las mujeres?

Who depends more on the work of la concha, men or women?

- 19) ¿Había más gente concheros antes que ahora?

Where the more concheros before than now?

ACERCA DE LAS ASOCIACIONES

About the associations

- 20) ¿Usted forma parte de una asociación de pescadores o de concheros?

Are you part of a fishermen or conchero association?

- a. Si sí: ¿cuáles son los beneficios de ser parte de una asociación?

If yes, what are the benefits of being part of an association?

- 21) Si persona no es parte de una: ¿Por qué usted no forma parte de una asociación?

If the person is not part of one: Why are you not part of an association?

PRODUCTOS DEL MANGLAR

Mangroves products

- 22) ¿Son los mismos productos que sus padres o abuelos recolectaban del manglar, los que ahora recolecta usted?

Are the products that your parents and grandparents gathered from the mangroves the same than the products you gather now?

- 23) ¿Ha notado cambios en la abundancia o distribución de estos productos en a lo largo de vida?

Have you noticed changes in the quantities or distribution of these products during your lifetime?

- 24) Si sí, ¿qué factores cree que han causado estos cambios?

If yes, what factors do you think caused these changes?

- 25) ¿Cómo se monitorea el tamaño de la concha que se saca? Ósea, que la concha sea de 4.5 cm.

How do you monitor the size of cockles that you gather? In other words, that the cockles are of at least 4.5 cm.

- 26) ¿Siempre ha sido esto así, o antes se monitoreaba de otra manera?

Has it always been like this? Or was it monitored differently before?

- 27) ¿Por qué habrá gente que saca la concha pequeña?

Why are there people who gather small cockles?

PERSPECTIVAS SOBRE LOS MANGLARES

Points of views of the mangroves

- 28) ¿A quién le pertenece el manglar?

Who owns the mangroves?

- 29) ¿Siempre ha sido así?

Has it always been like this?

- 30) ¿Usted cree que esto cambie en un futuro?

Do you think this will change in the future?

- 31) Cuénteme sobre su relación con los manglares. ¿Que representa el manglar para usted?

Tell me about your relationship with the mangroves, what do the mangroves represent for you?

- 32) ¿Qué tipo de beneficios proporcionan los manglares para usted, su familia, o a la comunidad? ¿Y al medio ambiente?

What type of benefits do the mangroves bring to you, your family and your community? And what about for the environment?

- 33) ¿Es usted parte del ecosistema manglar? ¿Cuál es su función en el ecosistema?

Are you part of the mangrove ecosystem? If yes, what is your function in the ecosystem?

- 34) ¿De qué manera las personas de su comunidad – los concheros – benefician al manglar?

In which ways do people from you community – los concheros- benefit the mangroves?

- 35) ¿Usted cree que los concheros dañan el manglar?

Do you think concheros damage the mangroves?

- 36) ¿Cree usted que todas las personas de la comunidad valoran los manglares por igual? ¿Por qué o por qué no?

Do you think everybody in the community values the mangroves equally? Why or why not?

- 37) ¿Cree que la gente aprecia más el manglar ahora o antes?

Do you think people value more mangroves more now than people did before?

- 38) ¿Cuáles han sido las razones de estos cambios?

What do you think are the reasons for this change of thinking?

- 39) ¿Le preocupa que los productos que usted y su familia obtienen del manglar se vayan a agotar algún día? ¿Por qué o por qué no?

Do you worry that the products you and your family obtain from the mangroves will disappear some day? Why or why not?

- 40) ¿Cómo le afectaría a usted o a su hogar perder el acceso a los manglares?

How would you or your household be affected if you lost access to the mangroves?

- 41) ¿Cree que esto le afectaría por igual a todos los miembros de la comunidad? ¿O a unos más que a otros?

Do you think this would affect all the members of the community equally? Or some more than others?

- 42) ¿Cuándo entraron las camaroneras a esta área, por qué la gente de Bolívar talo en manglar?

When the shrimp farms entered this area, why did the people in Bolívar log the mangroves?

- 43) ¿Hubo efectos ambientales causados por las camaroneras? Si sí, ¿cuáles fueron estos?

Were there environmental impacts caused by the shrimp farms? If yes, what were they?

- 44) ¿Hubo efectos económicos causados por las camaroneras? Si sí, ¿cuáles fueron estos?

Were there economic effects caused by the shrimp farms? If yes, what were they?

- 45) ¿Hubo efectos sociales causados por las camaroneras? Si sí, ¿cuáles fueron estos?

Were there social changes caused by the shrimp farms? If yes, what were they?

LA CONSERVACIÓN DE LOS MANGLARES

Mangrove conservation

- 46) ¿Cree usted que los manglares están en buen o mal estado?

Do you believe the mangroves are in good or bad state?

- 47) ¿Cuáles son las razones por las cuales los manglares están en buen o mal estado?

What is the reason that the mangroves are in good or bad shape?

- 48) ¿Necesitan los manglares ser protegidos?

Do mangroves need to be protected?

- a. Si sí, ¿de qué maneras se pueden (o se deben) proteger los manglares?

If yes, what ways could (or should) the mangroves protected?

- 49) ¿Qué se ha hecho, o que se está haciendo actualmente, para restaurar, proteger, o conservar los manglares?

What has been done to protect, restore or conserve the mangroves?

- 50) ¿Deberían ser las personas pagadas por proteger los manglares?

Do you think people should be paid to protect mangroves?

- 51) ¿Usted sabe que significa que los manglares estén clasificados como refugio de vida silvestre?

Do you know what it means that the mangroves are classified as wildlife refuge?

- 52) ¿Usted sabe por qué se les clasifico así?

Do you know why are they classified it this way?

- 53) ¿Usted sabe que significaría que el manglar sea clasificado parte de un área protegida?

Do you know what it means that the mangroves are classifies as part of a protected area?

- 54) ¿Esto sería algo positivo o negativo para la comunidad?

Would this be something positive or negative for the community?

- 55) ¿Qué sabe del Socio Manglar?

What do you know about the Socio Manglar?

LA TUNDA

The Tunda

- 57) Que me podría decir sobre la tunda?

What can you tell me about la tunda?

APPENDIX 3: Household Survey Guide

GUÍA DE PREGUNTAS PARA LAS ENCUESTAS DE HOGARES

HOUSEHOLD SURVEY GUIDE

No. de encuesta:

Survey number

Fecha:

Date:

INFORMACIÓN DEL PARTICIPANTE

PARTICIPANT INFORMATION

1) Edad y sexo del participante:

Age and gender of the participant.

2) ¿Está usted casada/o, viviendo en unión libre, o soltera/o?

Are you married, in a domestic partnership, or single?

3) ¿Tiene instrucción primaria, secundaria, o bachillerato?

What is your highest level of education?

HISTORIA FAMILIAR

FAMILY HISTORY

4) ¿Cuándo y dónde nació?

When and where were you born?

5) Sí nació aquí: ¿Ha vivido fuera de Bolívar, aunque sea por un tiempo?

If you were born here, have you lived outside Bolívar?

a. *Sí no nació aquí: ¿Cuánto tiempo lleva viviendo en Bolívar?*

If you were not born here, how long have you been living in Bolivar?

6) *(Cuantas generaciones ha estado aquí la familia) ¿Sus padres nacieron en Bolívar?*

(How many generations family has been here) Were your parents born in Bolívar?

a. *¿Y sus abuelos?*

And your grandparents?

b. *¿Y sus visa-abuelos?*

And you great grandparents?

7) *¿Tiene familia en otras partes del país?*

Do you have family in other parts of the country?

8) *¿Y fuera del país?*

What about outside the country?

COMPOSICIÓN DEL HOGAR

HOUSEHOLD COMPOSITION

Cuando hablo del hogar, me refiero a las personas que viven aquí, o personas a las que usted apoya financieramente que viven fuera de la casa.

When I talk about the household, I am referring to the people who live here, or people who you financially support but live outside the house.

9) *¿Esta casa, es propia o la arrienda?*

This house, do you own it or rent it?

10) *¿Tiene orto solar u otra casa aparte de esta?*

Do you have another plot of land or another house besides this one?

11) *¿Cuántas personas viven en esta casa?*

How many people live in this house?

12) ¿Cuáles son sus edades y sexo?

What are their ages and gender?

13) ¿Cuál es su parentesco con estas personas?

What is your relationship with this people?

14) ¿Ustedes apoyan económicamente a alguien que viva fuera de su casa, aunque sólo sea durante parte del año?

Do you financially support some else who lives outside this house? Even if is just for part of the year?

15) ¿A qué se dedica(n) esta(s) persona(s)?

What does this person/people do?

16) ¿En su casa, reciben apoyo económico de alguna persona que no viva en su casa?

In your house, do you receive economic support from someone else that does not live in the house

17) Sí responde que sí: ¿Del uno al cinco, que tan importante le es esta ayuda a usted y a su hogar?

If the answer is yes: ¿From one to five, how important is this support for you and your family?

ECONOMÍA DEL HOGAR Y DIVISIONES DE TRABAJO
HOUSEHOLD ECONOMY AND DIVISIONS OF LABOR

18) ¿A qué se dedica cada miembro de su hogar?

What does every member of you household do for a living?

19) Sí hay estudiantes, ¿A dónde van sus niños a estudiar?

If there are students, here do you they go to school?

- a. **(Si responden que alguien trabaja en el manglar) ¿Qué tan seguido trabajan estas personas en el manglar?**

(If they answer that someone works in the mangroves) How often do they work in the mangroves?

- b. **¿Cuánto tiempo llevan trabajando en el manglar?**

How long have they worked in the mangroves?

- c. **¿Es por temporada, o todo el año que trabajan estas personas en el manglar?**

Is it a seasonal job, or do they work year-round in the mangroves?

- 20) ¿Alguien de ustedes forman parte de una asociación (de recolección de conchas o de pescadores)?**

Does anyone in the household belong to an association of fishermen or of concheros?

- 21) ¿Hay alguna otra persona que viva en su hogar y que trabaje en el manglar, aunque sea solo de vez en cuando?**

Is there anyone else in your home that also works in the mangroves, even if is just occasionally?

- 22) ¿Cómo se van a trabajar al manglar? ¿Por tierra o por bote?**

How do you get to work to the mangroves? By land or by boat?

- 23) Tienen canoa/lancha propia? ¿Moto propia?**

Do you own a boat/canoe? Do you have a motorcycle?

CONSUMO ALIMENTOS Y PRODUCTOS DEL MANGLAR

CONSUMPTION OF MANGROVE PRODUCTS

- 24) ¿Qué productos sacan del mangar?**

What products do you obtain from the mangrove?

- a. **¿Venden estos productos?**

Do you sell these products?

b. ¿A quién le venden?

Who do you sell them to?

25) ¿Cuántas de las comidas que hace(n) a la semana son hechas con productos del manglar?

How many of the meals you consume a week contain mangrove products?

26) ¿Estos productos los recolectan personas que viven en su hogar o los compran?

These products, are they gathered by the people who live in your house, or do you buy them?

a.(Sí los compran:) ¿A quién le compran estos productos?

(If they buy them:) Who do you buy them from?

27) ¿Hacen trueque o intercambio de productos alimenticios con otros hogares? ¿Quiénes son estas personas?

Do you trade this food products with other homes? If yes, who are these people?

28) ¿Obtienen productos alimenticios de alguna finca o huerto familiar?

Do you obtain food products from a family farm or house garden?

29) ¿Tienen acceso a animales para comer?

Do you have access to farm animals to eat?