Entangled Mangrove Roots: The Shrimp Industry, Ancestral Afro-Descendant People, and Community Resistance in Esmeraldas, Ecuador

O'philia Le

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Entangled Mangrove Roots:

The Shrimp Industry, Ancestral Afro-Descendant People, and Community Resistance in Esmeraldas, Ecuador

A Senior Thesis by O’philia Le

In Partial Fulfillment of the Requirements for a Bachelor of Arts Degree in Environmental Analysis and Anthropology

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Anthropology Dept. Readers: Professor Claudia Strauss and Professor Juan Moreno
Environmental Analysis Dept. Reader: Professor Melinda Herrold-Menzies
Abstract

Mangroves are one of the most important ecosystems because of the many services they provide on a local and global scale, but in contrast, are one of the most threatened by anthropogenic activities at a global level. Being sources of food for various kinds of fish, crustaceans, and mollusks, they are essential for the economy, culture, and livelihood of locals in Esmeraldas, Ecuador. This thesis takes an environmental justice approach in the discussion of the loss of mangroves in Esmeraldas, Ecuador. While toxic industries may not be apparent at first, environmental injustice prevails in adverse human health effects, environmental degradation, and lack of research that disproportionately impacts Afro-descendant ancestral communities. I investigate the following research question: *How does the shrimp industry disproportionately impact Afro-descendant ancestral people who inhabit mangrove land in Esmeraldas, Ecuador?*

This thesis aims to understand the dense entanglement of the shrimp industry, ancestral Afro-descendant people, and community resistance to dig deeper into the root issues of settler-colonialism, globalization, and environmental injustice. Three formal interviews, academic scholarships, my observations, and my experience in Ecuador serves as background qualitative research in a comparative case study analysis between two case studies in Esmeraldas, Ecuador. My research reveals how settler colonialism in Ecuador has resulted in environmental injustices rooted in globalization, capitalism, and forms of exclusion amongst land-based peoples. Grassroots resistance movements play a vital role in healing both the land and the people. Mindful consumerism, mangrove restoration, community engagement, and ethno-education can be effective and scalable interventions to address environmental and social issues in Esmeraldas.

**Keywords:** Mangroves, Afro-Descendant, Community, Ancestral, Environmental Justice, Restoration
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Finally, thank you to my family and friends for their love and support. Thank you to Pitzer Center for Asian Pacific Students and First-Gen peers for providing a safe space for me to grow during my four years at Pitzer and beyond. I would like to thank my mother, Lewan Yang, for sacrificing her time and energy to ensure that I can go to college. Lastly, thank you to my sisters, Jade and Dorothy, for checking in on me and supporting me all the way from home.

Land Acknowledgement

I want to give land acknowledgment to ancestral Afro-descendant communities who have historically inhabited Ecological Reserve Cayapas Mataje and Muisne in Esmeraldas, Ecuador.
Introduction

I picked up a “sea pencil,” also known as a baby red mangrove seed, while swimming in the ocean in San Clemente, Ecuador. This baby mangrove tree seed was on its journey to hopefully plant itself into the ground to grow into an incredible mangrove tree that provides climate regulation, ocean filtration, and a home for marine and land animals. Looking around, I was confused because there were no mangrove trees in sight for miles, only beach houses and a small town. This seed indicated that mangroves are supposed to be growing on this beach in San Clemente, but are now replaced with urban developments. In contrast, I had the privilege to see an intact mangrove ecosystem on Fernandina Island during my Pitzer study trip to the Galapagos Islands. I moved to tears of joy as I saw colorful corals, tiny fish, and blossoming new plants. This is what a healthy mangrove forest looked like – full of life!

Fig 1 and 2. Comparison of intact mangroves and beach that was once filled with mangroves.
Left: Red Mangrove tree seed I found in the ocean in San Clemente, Ecuador
Photographer: O’philia Le
Right: Me in a boat landing into a small mangrove forest on Fernandina Island in Galapagos
The Thesis Statement

This thesis takes an environmental justice approach in the discussion of the loss of mangroves in Esmeraldas, Ecuador. While toxic industries may not be apparent at first, environmental injustice prevails in adverse human health effects, environmental degradation, and lack of research that disproportionately impacts Afro-descendant ancestral communities. I investigate the following research question: How does the shrimp industry disproportionately impact Afro-descendant ancestral people who inhabit mangrove land in Esmeraldas, Ecuador? This thesis aims to understand the dense entanglement of the shrimp industry, ancestral Afro-descendant people, and community resistance to dig deeper into the root issues of settler-colonialism, globalization, and environmental injustice. This thesis contributes beyond existing research by providing a comparative case study and in-depth interviews along with its interdisciplinary approach to history, environmental justice concerns, and current events. In doing so, I point out how shrimp industry operations have violated the Ecuadorian Constitution.

Story of How I Got Here (Mangroves in Esmeraldas)

“Who has heard of mangroves?” ecology professor Rebecca Zug asked the class. My hand was down. Prior to my study abroad in Ecuador, I had only heard of the word mangroves. Looking around, I was perplexed when a majority of my Ecuadorian classmates had not raised their hands even though mangroves reside on the coast of Ecuador. I was later informed that many Ecuadorians living in Quito are often disconnected from the land despite how integrated environmental issues are in political discussions. Leaning into my curiosity about the mangroves
of Ecuador, I was excited to visit different parts of Ecuador just to catch a glimpse of what they’re all about in person.

Upon learning about mangroves and their role in the ecosystem in Ecuador in my ecology course, I had the opportunity to be in ecosystems with mangroves in the Galapagos especially and without mangroves on the coast of Ecuador. I was squealing with excitement when I found the sea pencil while swimming in the ocean. As I took a photo of it, I excitedly described to my friends, “This baby mangrove tree seed was on its journey to hopefully plant itself into the ground to grow into an incredible mangrove tree that provides climate regulation, ocean filtration, and a home for marine and land animals.” Because mangroves are viviparity, this mangrove seed is actually living when it grows on the mother tree and even when it begins its journey to becoming its own tree. This may be even analogical to humans when we grow to become our own person and plant ourselves somewhere we feel fits us. I thought that this was such a beautiful process like the one we are all on. My friends and I were both leaping with joy on the beach – celebrating the mangroves! The following weekend, I went on the Pitzer Study trip to the Galapagos Islands and witnessed mangroves and their role in the ecosystem.
Figure 3. Red Mangroves on Fernandina Island in Galapagos Islands

Photographer: O’philia Le

Seeing the mangroves in their element, I finally understood how mangroves truly brought life – from endemic species to the Galapagos to marine life nurseries to life on volcanic land formations on the Galapagos Island (Figure 3). San Fernandina Island is “the westernmost island in the Galapagos Islands, the third largest and youngest of the islands, less than one million years old sits at the center of the hot spot that created the Galapagos Islands.”¹ This photo was taken on San Fernandina Island where there are no human inhabitants and is considered the most pristine island, showing the transparent water, nonpolluted air, and marine and wildlife enjoying the home provided by the mangroves. I was in awe at what a world could look like without land

¹ “Fernandina Island” Galápagos Conservancy, (Galapagos Islands, 2022), https://www.galapagos.org/about_galapagos/the-islands/fernandina-island/
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exploitation and urbanization. At this time of the trip, we were already in the process of brainstorming ideas for our Direct Independent Study Project (DISP). While hiking beside Professor Sebastian Granada, we got into a conversation about mangroves, and at the end of the conversation, he asked, “Why don’t you do your DISP on the mangroves?” And I was completely down for it. It was a new topic in a new country, and I was excited to learn more about mangroves beginning from interviews.

Professor Zug introduced the ecosystems of Ecuador in her course which includes mangrove ecosystems. Here, she discussed mangrove ecosystem services and emphasized the importance of coastline protection and coastal communities that fully depend on these services. I later went to Professor Zug’s office hours to ask a few questions about our final project, and we were able to chat more about mangroves in Ecuador. Professor Zug is a conservation scientist and ecologist who is passionate about engaging students in environmental discussion in Ecuador. I then asked her more about mangroves and asked if she can an interviewee for my Pitzer DISP, to which she agreed. From there, I scheduled an appointment with her to chat about mangroves.

The timing was impeccable when our next guest speaker was Dra. Belen Congo presented her discussion on Afro-descendant populations in Ecuador titled, “The Afrodescendant population in Ecuador: Organization, Struggles, and Challenges (La población afrodescendiente en el Ecuador: organización, luchas y desafíos).” Ethno educator Belen Congo is a passionate woman, the daughter of Afro-descendant migrants, and an ethnic studies professor. In her presentation, she spoke about Ecuador’s demography, emphasizing racial and ethnic disparity through the link between poverty levels and Afro-Ecuadorians. She further explains that poverty levels are rooted in settler colonialism that dates back to the times of slavery which now manifests itself in racism, discrimination, and hypersexualization. As poverty
levels are so high, she also talks about the high levels of migration within Ecuador primarily from the coast to large urban cities, including from Esmeraldas. She then proposes her solution: Afroecuadorian ethnic education. She focuses on increasing the representation of Afro-descendant people to teach Afroecuadorian kids to embrace their ethnic background and to be resilient. Her work aims to fill in more parts of the country’s history about Afroecuadorians, who make up 7.5% of the nation’s demographic in her research supports the implementation of Afroecuadorian ethnic education in the Ecuadorian education system.\(^2\) She also taught a song she had learned from her mother who is from San Lorenzo, a city in Esmeraldas. This song had cultural significance to the land and mangroves, she explains. They would sing together at any point when family members are nearby, whether it be during *la concha* (the practice of collecting cockles), cooking, or socializing. She explains that this is also an important part of oral history in her mother’s community. It was an honor to have sung her family’s songs along with Belén. This was when I shared that I was working on mangroves and how it affect local communities nearby with Belén. From there, I was able to get in contact to set up an interview.

It wasn’t long before I began to be more observant of the demographic of people around me. When I went to the salon, a girl who was the same age as me did my nails. We had small conversations here and there. She asked me, “Where are you from?” “how old are you?” and “What do you do?” I quickly found that these were common conversation starters in the country as a foreigner. I learned that she and her brother left her family on the coast near Manabí to pursue a job in Quito. Although she very much enjoys what she does in the nail industry, she mentioned that the work on the coast was very tough, and it was very difficult to find work anywhere. She liked living in Quito. I wasn’t sure what else factored into her move to Quito, nor

\(^2\) Interview with Belén Congo, November 26, 2022
did I want to pry. This made me more interested in what is happening to the mangrove forest and how mangrove loss impact communities that depend on mangroves.

I came home one night from studying and I met Tia Maria, Tio Marcelito, and their daughter Marcela when they came over for a dinner that my host mom, Caty, hosted in celebration of Tia Maria’s birthday. My host mom had known I was to be working on my DISP and encouraged me to share what I was doing with everyone. When I shared my topic, Marcela was so excited because she had done her Masters of Urban Studies thesis on the impact of the shrimp industry on mangroves and local communities. It was a crazy coincidence! Marcela was pleasantly surprised a foreign person was aware of the issues with the shrimp industry. She further explained that not too many people in Quito know about what is going on on the coast. She hypothesized that it could be the disconnection between urban and rural regions of Ecuador. It could be for a lot of reasons, but it could also be people are too worried about their own situation to worry about other people. After the dinner, we had arranged to schedule another dinner, so I can interview Marcela and have a conversation about what is going on with the mangroves in Esmeraldas.

While my inspiration is driven by my observations, experiences in Ecuador, and curiosity about mangroves and motivated by my background as a daughter of refugees and displaced ancestral history. I hope to understand the social and environmental reasons why people on the coast have been moving to cities. Perhaps it was due to their interest in living in an urban environment? Or for economic reasons. Maybe things got tough back home? My experience with displacement, loss of sense of place and identity, and empowerment through community-building resonate with the concheras (women who collect cockles). The intersectionality of my identities and socioeconomic experience in the United States has directly impacted the environmental
injustices I have faced growing up in Oakland, California. My family’s marginalization resulted in my witnessing a multitude of health crises stemming from industrialization and diesel pollution. Upon witnessing environmental health inequities in my hometown, it became apparent that such inequities experienced by my family and community were due to environmental injustice. In response to this health public crisis, I direct my energy to improve the quality of life in my community as a public health advocate and scholar. As a public health scholar, I strive to conduct community-focused research in public health that centers on the needs of vulnerable populations. I believe that community-focused research will not only allow us to overcome knowledge barriers but also promote sustainable alternatives, community engagement, and awareness that give decision-making powers back to the community. For this reason, I go beyond environmental justice in the United States to Ecuador in hopes of connecting and illuminating the narratives of marginalized communities’ experiences on an international scale. Activism, diversity, and community initiatives are essential assets that work to combat environmental injustices.

In my comparative case study analysis, I support my thesis through Environmental Justice and Ethnic Studies theories and academic scholarships on mangroves. “Mangroves, People, and Cockles: Impacts of the Shrimp-Farming Industry on Mangrove Communities in Esmeraldas Province, Ecuador,” conducted by Human Geographer Patricia Ocampo-Thomason’s study, is a primary source I examine. This study focused on the Ecological Mangrove Reserve Cayapas-Mataje which has the most pristine mangrove ecosystem of Ecuador and is one of the last sites with traditional mangrove utilizations. As changes in markets and shrimp farming are impacting the mangrove ecosystem, this research examined how changes affect the mangrove
ecosystem and its inhabitants. Another primary source I use is “Disputed Spaces: Concheras, Shrimp Aquaculture, and Conservation in the Mangrove Forests of Southern Esmeraldas, Ecuador,” a study conducted by Human Geographer Melva B. Treviño Peña. Treviño Peña conducted semi-structured interviews, household surveys, participant observation, and geolocational data in Bolívar, a mangrove community in Muisne, Esmeraldas to learn how 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.” This P.h.D. 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 poses comparable social and cultural impacts on the mangrove users who have historically depended on mangrove resources.” The last primary source I focus on is “Urban Community and Shrimp Industry: Territorial Resistance in Muisne, Esmeraldas,” by Urban Studies Scholar Marcela Salomé Caicedo Ramos. In her Master’s thesis, she focused on the spatiality of the shrimp industry in the urban community along with the community resistance of concheras in Muisne. She interviewed the concheras who started C-CONDEM, emphasizing that the struggle of this organization is oriented to "care for the life of the coastal marine ecosystems and the peoples of the sea, the mangrove swamps and the riverbanks." This master’s thesis was complemented by an interview I conducted with Caicedo.

As a student researcher, I am aware of my positionality as a non-Ecuadorean, non-LatinX, non-Afrodescendant background, and foreigner. I acknowledge my privilege to be studying abroad in Ecuador for a semester with the Pitzer in Ecuador Study Abroad Program. I am honored to have had the opportunity to be able to travel around Ecuador, exposing me to the coastal ecoregion and the Galapagos Islands.
Methods

My observations and experience in Ecuador, three formal interviews, and academic scholarships serve as background qualitative research in a comparative case study analysis between two studies conducted in Esmeraldas, Ecuador. My thesis was sparked by my curiosity as an environmental health advocate and my study abroad experience in Ecuador. These are both primary sources and I will be providing secondary sources through my writing. REMACAM’s case study was conducted by Ocampo; Muisne’s case study was conducted by Marcela (one of my interviewees). For my thesis, I interviewed Marcela to ask follow-up questions regarding her thesis and fieldwork experience. As I conceptualize my thesis, I realize that there is no local term that encapsulates what is going on with the mangroves in Ecuador. I hope to better understand the relationship between mangrove land, ancestral Afro-descendant communities, and the shrimp industry.

In Ecuador, the word “ancestral” does not imply native inhabitants or indigenous people; rather, it refers to people who have historically occupied a territory. In this thesis, the mangrove forest is ancestral land to Afro-descendant populations who have lived in the mangroves for generations, developing traditional practices, culture, and identity with mangroves. A traditional practice includes the following term derived from *concha* which translates to cockles. So, to *conchear* is a verb that translates to collect cockles; *la concha* is the practice of collecting cockles; *los concheros* are men and women who collect cockles; and *las concheras* are women who collect cockles.

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When the Study Abroad Program continued to emphasize this more, I grew more curious about what made it so dangerous and why people are migrating to larger cities, especially since San Lorenzo is one of the largest Afro-descendant populated cities. I would have liked to conduct onsite research, but this was not possible given the structural barriers in 2022 with increased rates of violence and the COVID-19 pandemic. Despite these limitations, I was able to find passionate voices to discuss mangroves and their ancestral people.

My interviews were vital to understanding mangrove perception in Ecuador. My first informational interview was with Dr. Rebecca Zug, a professor of Ecology at the Universidad San Francisco de Quito (USFQ) who teaches an Ecology and Biodiversity course. I learned the ecological importance and biodiversity of mangrove ecosystems in his course. I was also able to learn more about her biodiversity background and conservation science expertise. The second interview was with Dr. Belén Congo, a member of the Afro-descendant community in San Lorenzo. Her mother is from San Lorenzo, Ecuador. Dr. Congo shared her narrative of an Afro-descendant woman, her culture, her economy with mangroves in Afro-descendant communities, and her work in Ethno-Education. She is researching and trying to implement it in Ecuadorian education. My last interview was with Marcela Salomé Caicedo Ramos, my host cousin during my Pitzer in Ecuador study abroad program. With a description of my study, I received verbal or written consent from my interviewees via email or in person to record and use the interview for my study. Although I had initially planned each interview for an hour, my interviews were very fruitful and we ended up going overtime up to one hour and 45 minutes. These interviews are invaluable to my research as they have also made incredible contributions to alleviating the mangrove crisis in their respective fields. They each have provided their

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8 See Introduction section “How I got Here” for more information on Marcela’s work.
Insights about mangroves and impacted populations as scholars, advocates, and residents in Ecuador.

My thesis is split up into three parts: context, case studies and analysis, and community resistance. In my first chapter, I introduce mangroves and their ecosystem services, the ecological history, and the history between mangroves and humans dating back to the 1500s. In Chapter 2, I provide the social context of ethnic inequalities, environmental impacts from the shrimp industry, and Buen Vivir in the Constitution of Ecuador. In Chapter 3, I compare and contrast the two case studies, REMACAM and Muisne, and analyze the results from these studies focused on environmental justice and social change. In Chapter 4, I highlight community grassroots resistance movements organized by Afro-descendant women groups bounded by an ancestral practice (*la concha*) who hope to heal both the land and people through socio-ecological restoration. I then share possible ways to address the environmental and social dilemmas through socio-ecological restoration, specifically mangrove conservation, and ethno-education, which can be effective and scalable infrastructure interventions to address environmental and social issues in Esmeraldas. I conclude my thesis with a reflection, further research projects, and what we can do moving forward.
Chapter 1. Mangroves and Humans

What are Mangroves?

Mangroves can be identified by their entangled roots in coastal regions where rivers meet the ocean – home to marine life nurseries, wildlife, crustaceans, endemic species, and people. Located only in tropical and subtropical latitudes, mangroves are considered a rare forest type because of the specific conditions they can grow in, resulting in less than 1% of tropical and subtropical forests worldwide. Ecologist Rebecca Zug notes three main species of mangroves in Ecuador—red mangroves (*Rhizophora mangle*), black mangroves (*Avicennia germinans*), and white mangroves (*Laguncularia racemosa*). This is illustrated in Figure 4, where the mangrove forest has layers in which red mangrove trees are situated on the water, black mangroves are between land and water, and white mangroves are more inland.

![Conceptual Model of Mangrove Forest Processes](image-url)

**Figure 4.** Model of Mangrove Species Distribution and Interaction on the Coastline during High Tide

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Mangrove trees are adapted to live in fluctuating environmental conditions, saline, shifting sediments, soil inundations, and water with low oxygen levels.¹⁰ These adaptations are presented in “ (1) the exclusion of salt by roots, (2) rapid canopy growth, (3) viviparous embryos, (4) tidally dispersed propagules, (5) exposed roots that breathe above ground, (6) highly vascularized wood, (7) efficient nutrient retention, and (8) salt-excreting leaves”.¹¹ Dense entanglement of roots allows the trees to withstand the fluctuation of tides and protect the coast by slowing the movement of tidal waters, resulting in sediments settling and building up the muddy bottom.¹² Figure 4 is a photo I took from a boat on the Galapagos during an expedition tour. The water is the clearest water I have seen all my life, and it was breathtaking seeing corals, baby fish, and crustaceans in the water. The clear water demonstrates water purification – one of the many ecosystem services the mangroves provide. While I was on the island, the tour guide described and showed examples of these services, each with a role to sustain the ecosystem. It was impactful seeing mangrove ecosystem services up close in person.

**Ecosystem Services**

Mangrove forests provide services for localities and all people in the world, but in contrast, increasing anthropogenic activities have damaged mangrove ecosystems. Benefits include and are not limited to protecting our coastlines, filtering our ocean, and regulating climate. The Common International Classification of Ecosystem Services classifies ecosystem services (ES) according to four different categories:

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1. Provisioning ES (e.g., food, building materials, drinking water);
2. Supporting (maintaining) ES (e.g., prevention of coastal erosion);
3. Regulating ES (e.g., carbon sequestration, microclimate);
4. Cultural ES (e.g., recreation, spiritual values, biodiversity).

Figure 5. Infographic of Ecosystem Services Provided by Mangroves

They support unique biodiversity and species endemic to warmer regions while providing direct uses like coastal protection, fuel, food (fruits, vegetables, vertebrates, and invertebrates), and construction materials. They also contribute to climate mitigation, water purification, and marine life nurseries with their symbiotic relationship with coral reefs. Mangroves provide direct and indirect services that support human well-being and when these forests are removed, these services are lost, exacerbating the effects of climate change. Despite being a rare forest limited by temperatures, mangroves provide a plethora of ecosystem services and direct uses for humans, the environment, and animals locally and globally.

Ecological History of Mangroves in Latin America

Although historical ecology demonstrates the strong relationship between mangroves and ancestral peoples, the Western literature focus on mangroves has changed drastically over time.\(^{14}\) Mangroves only recently have been recognized as highly carbon-rich tropical ecosystems that serve as essential carbon sinks that provide crucial economic and ecological benefits to coastal communities. Studying mangroves dating back to pre-Columbian societies in the Americas will help improve our understanding of the current mangrove state.\(^{15}\) By reflecting on the history of mangroves, we can understand what shaped neoliberal practices in mangrove lands to mitigate the consequences of environmental injustices. Past literature can contribute to helping us understand what factors contributed to the development of shrimp farms, ongoing mangrove deforestation, and current public health crises. In accessing what happened in the past from a scholarly perspective, restorative environmental justice, community initiatives, and conservation efforts can be further supported.

Between the 18th and 20th centuries, literature about mangroves focused on describing mangroves through botany, including “morphology, habitat, distribution, species diversity, taxonomy, and systematics.”\(^ {16}\) This shows that only the surface of mangrove botany was touched, demonstrating the lack of interest in the mangrove ecosystem. Scholars mainly saw this land as a wasteland with no value, which could explain the justifications behind what motivated investors to deforest the land for the creation of shrimp farms and build beach houses over time.


\(^{15}\) López-Angarita et al., “Mangroves and People,” 153.

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This was then exacerbated by the need to strengthen the economy by exporting natural resources like shrimp.

Studies in the early 20th century focused on the ecological role of mangroves and their function in pushing down sediment and shoreline protection. More recent literature discusses mangrove conservation, economic value, and significance in the food web.\(^\text{17}\) The history of literature unveils society’s perception of mangrove systems as wastelands and shifts to a complex ecosystem which is crucial for all life forms on Earth. Earlier perceptions and lack of knowledge of the mangrove system could explain heavy deforestation, urban development, and the reasoning behind aquaculture. In the 20th century, western environmental movements pushed for legislation to conserve the Earth, wildlife, and land along with more discussions on climate change.\(^\text{18}\) This shift in perspective resulted in further education and research about mangroves on a global and local level, for climate change mitigation and direct benefits for locals. This shift can promote more sustainable practices and resources to support the conservation efforts of mangroves.

**Afro-descendant Communities’ Ancestral Connection to the Land**

The mangrove ecosystem has become characterized by human ecology – interactions between human and non-human nature – for centuries.\(^\text{19}\) This ecosystem has been influenced by Ecuadorian Afro-descendants who escaped Spanish slave ships and have learned to utilize the forests’ resources and developed their way of life, cultural values, and sociocultural ties to the Esmeraldas–Pacific Colombia mangroves. Historical archives and legends tell the tale of a slave

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ship wrecked along the Northern Pacific coast of Ecuador in 1533.\textsuperscript{20} Establishments of an African diaspora settlement with a mixture of indigenous groups from the Esmeralda area. Runaway slaves from Brazil from surrounding regions later joined communities known as \textit{palenques}, and together these groups resisted Spanish colonization for many years. In this case, the mangrove forest is ancestral land to Afro-descendant populations who lived and utilized mangroves for generations\textsuperscript{21} Archaelogical evidence shows that local communities utilized wood for construction, furniture, firewood, and aquatic fauna like mollusks, fish, and crustaceans. These goods and services are about \textasciitilde\$33,000 – 57,000 annually per hectare for the national economies of the developing countries that possess mangroves -- vital for the livelihood of local communities.\textsuperscript{22} Not only have ancestral communities learned to use the mangroves for shelter and protection, but they have also learned to find a sustainable practice through \textit{la concha} and fishing.\textsuperscript{23}

Human geographer Patricia Ocampo-Thomason based in the Ecological Reserve Cayapas Mataje (REMACAM) unveils more recent fishing and conchear practices in 2008. In this study, Ocampo found that traditionally, the husband fishes while the wife and children are \textit{concheros}. Findings point out that mangroves are still the most important source of income and subsistence with more than 85\% of households practicing fishing and shelling. Community members sell fish and conchas every day to people from other bigger cities. Thus, artisanal fishing remains the most important source of income for the reserve along with practices of \textit{la concha}.

\begin{thebibliography}{99}
\bibitem{23} Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
\end{thebibliography}
Figure 6. A small community in REMACAM 24

Photographer: Patricia Ocampo-Thomason

Table 11.1. Occupational structure in REMACAM. ‘Commerce’ refers to small corner shops and ‘external help’ refers to households that receive money from relatives in other cities or countries.

<table>
<thead>
<tr>
<th>Main economic activity/income source</th>
<th>Percentage of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing and cockle gathering</td>
<td>67.7</td>
</tr>
<tr>
<td>Cockle gathering (only)</td>
<td>10.0</td>
</tr>
<tr>
<td>Fishing (only)</td>
<td>8.3</td>
</tr>
<tr>
<td>Agriculture (only)</td>
<td>6.5</td>
</tr>
<tr>
<td>Commerce</td>
<td>2.4</td>
</tr>
<tr>
<td>External help</td>
<td>1.2</td>
</tr>
<tr>
<td>Shrimp farming (only)</td>
<td>0.6</td>
</tr>
<tr>
<td>Other occupations (not related to mangroves)</td>
<td>2.9</td>
</tr>
<tr>
<td>Other occupations (related to mangroves)</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Figure 7. Table of Occupations in REMACAM 25


Men are traditionally the fishermen of the community as 2,500 fishermen represent 77% of the income generated by the extraction of natural resources. Because fish are a source of protein for REMACAM communities, fishermen work an average of 6.3 hours every day. They would often sell large fish and keep smaller fish for home consumption. Although fishing is an exclusively male activity, a few women have reported that they help their husbands make new fishing nets. Ocampo notes that fishing is an expensive practice; thus, small communities tend to have simple boats while large communities use large canoes or even motor boats. Even if motor boats are more expensive, fishermen are no longer limited to estuaries and streams, but they can now fish twice as much as they did in 1995 by going several kilometers out to sea.

Although both genders can conchear, women have traditionally practiced la concha and taught their children how to la concha from a young age. This practice dates back generations, becoming an ancestral practice amongst the community of women in the town as each small group of concheras has their territories that they share in rotations which have been respected by the other concheras communities. Hence, they conchear close to home, making it easy to watch their children and complete domestic tasks at the same time. On these shared territories, they rotate the plots, leaving some areas for a few weeks so that the cockles could recover. They would leave the 'mother' (breeding shells) alone so that she could reproduce and also leave small cockles (less than 5 cm) to grow. Ocampo notes that la concha is an occupation that is accessible as it does not require capital investment. Because of the nature of sharing territories for la concha, it became a form of women empowerment and unity for the concheras. Moreover, it was fascinating hearing about the ancestral history and cultural significance of la concha, and


Ocampo-Thomason, “Mangroves, People, and Cockles,” 144.

Interview with Marcela Salomé Caicedo Ramos, November 27, 2022
how it became a form of women empowerment and unity. Her research finds that 99 households in REMACAM reported la concha as the main economic activity with 82.4% of the collectors being women (Figure 7). In addition, 2.4% of women buy cockles to sell to external intermediaries. More important information is that 20% of the households headed by women depend almost exclusively on the collection of cockles and 10% of the mixed households where the husbands collect cockles as the main and only economic activity (Figure 7).

Household income in REMACAM usually comes from everyone in the family, including the women of the community, las concheras, who have provided more food and income for the family in REMACAM by collecting three species of cockles (Anadara tuberculosa, Anadara similis, and Anadara grandis). Anadara tuberculosa is the most abundant species in areas with a lot of mangrove root mud. Due to its great abundance and ability to live up to 8 days after harvest, it is the most commercialized species in the community and the country. A common way to eat the conchas is in the form of ceviche where the meat of the cockle is “cooked” using the acids from lemons. This is a typical dish you can find on the coast of Ecuador and even in urban areas like Quito.

**Figure 8:** Black Conch Ceviche (Ceviche de conchas negras) is a typical way of serving conch in Ecuador

Photographer: O’philia Le
In this study, there are more than 15,000 concheras off the coast of Mexico to Peru, and Ecuador supports about 31% of this number, and 10% of the population only lives by collecting shells in REMACAM (figure 7).\textsuperscript{29} In this case study, Ocampo found that 79% of the concheras were located in REMACAM, even though it protects only 11% of the country’s mangroves. This signifies the high ratio of the population in REMACAM who heavily depend on mangroves in their livelihood for generations. A better understanding of social, environmental, and political contexts is needed to conceptualize how the shrimp industry disproportionately impacts ancestral Afro-descendant peoples.

Chapter 2. Social, Environmental, and Political Context

The Dilemma

Despite the plethora of ecosystem services provided by mangroves, 70% of coastal mangroves in Ecuador have already been converted into shrimp farms. While mangrove conservation should be prioritized for long-term benefits, the issue gets far more complex when considering poverty levels, infrastructure improvements, and repaying national debt. For this reason, the pressure to develop has resulted in large-scale conversion for aquaculture, agriculture, and urbanization to service first-world countries’ consumer demands. The six-year administration of President Rafael Correa (2007-2013), named the “Citizen Revolution,” proposed neo-liberalization of natural sources in Ecuador as a solution to boost economic growth to “develop out of poverty.” Aware of the environmental consequences, they still proceeded to export natural goods like broccoli, shrimp, petroleum, and palm oil and even provided monetary incentives in their promotions. The Citizen Revolution demonstrated some positive outcomes and transformations for urban areas that aided poverty, education, unemployment levels, and improved infrastructure systems, but the government itself admits that discrimination and poverty continue.

According to the Nations Encyclopedia, unequal distribution of wealth has been present since the 1990s. “In 1996, the wealthiest 20 percent of Ecuadorians earned half of the nation's total income, while the poorest 20 percent collected only 5 percent. The gap between rich and

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poor grew noticeably during the 1999 economic crisis when much of the middle class fell below the poverty line because of rampant currency devaluation and inflation. Figures released by international organizations in 2000 show that half of all Ecuadorians were living in poverty, a dramatic increase from just a few years earlier, when the poverty rate was estimated at 35 percent. Poverty is more pervasive in rural areas of Ecuador, affecting almost 70 percent of non-urban dwellers [in 2000].”32 This reveals the widening wealth disparity in Ecuador, especially after the economic crisis that disproportionately impacted communities living in rural areas. In other words, many sources indicate alarming poverty levels amongst land-based people such as indigenous and Afro-descendant groups. This data unveils that economic improvements and development prioritized urban areas and do not support Afro-descendant communities in the ancestral land, and instead invaded and extracted from protected land. It became evident that ethnic inequality in Ecuador makes land extraction possible.

Neoliberal extractions of natural resources heightened disparities between rural and urban areas; the rich and the poor; and ethnic groups and white groups. Social indicators from the 2013-2017 Buen Vivir National Plan demonstrate “persistent inequality caused by the ethnic divide – a clear gap between the levels of wellbeing achieved by the indigenous peoples, Montubians and African Ecuadorians and those of the white and mestizo populations.” 33 Here, the Correa Administration acknowledged that poverty levels decreased for white and mestizo populations, and disparities between the rich and poor and ethnic populations persist despite development. Moreover, natural resource exportation is only a short-term solution with limitations in addressing poverty levels in Ecuador. They were able to develop urban areas but

lacked funding and support to assist people living in rural areas, evident during economic recessions, the COVID-19 pandemic, and natural disasters.

Social Context: Ethnic Inequality and Environmental Justice

Ethnic inequality in a country of predominantly whites and mestizos, African Ecuadorians, and indigenous peoples face forms of exclusion that limit their well-being. Social scientist Jhon Antón Sanchez discusses racial inequalities in Ecuador through the theoretical framework focused on exclusion. Sanchez uses the term exclusion as “the condition of a group of individuals who are denied societal participation and opportunities where they live. Exclusion is the limitation of citizens’ rights, and consequently, involves restrictions to development.”34 The article talks about multiple forms of exclusion in Ecuador: social, economic, political, and cultural. He describes the following forms of exclusion:

**Social** exclusion is reflected in the lack of basic, academic, health, and entertainment services, and the lack of access to technology, adequate employment, and consumption opportunities.

**Economic** exclusion is related to marginalization and subordination in the country’s capitalist economic system. An illustrative example is the limited access to ownership, markets, productive lands, irrigation water, productive credits, and decent employment.

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**Political** exclusion has to do with the capacity of institutions to facilitate the political participation of its minority groups in various national issues: for example, having few possibilities to be elected as mayors or congressmen.

**Cultural** exclusion involves discrimination factors, racial prejudice, and implied and expressed racism that the majority society exerts against individuals of African descent. An example of this is the perceived stigma that they are dangerous and criminal; psycholinguistic racism; miscegenation ideology; and whitening.\(^{35}\)

This demonstrates the forms of exclusion nonwhite people are subjected to, leaving Afro-descendant ancestral people out of decision-making conversations, ownership, and politics. Thus, legalizing subordination through the nuances of politics. Such long-lasting impacts of settler-colonialism have resulted in the continuation of a European-descent population with having more power and status today. Forms of exclusion persist as institutionalized violence rooted in settler colonialism during the Spanish colonization of Ecuador.

Forms of exclusion at an institution have led to socio-economic inequality, perpetuating the system of oppression dating back to the Spanish colonial era. Spanish conquistadors, led by Francisco Pizarro, arrived in Ecuador in 1531 and became one of Spain’s colonies in the New World under the Viceroyalty of Peru from 1544 to 1563.\(^{36}\) The conquistadors colonized the land and founded haciendas, forcing indigenous and Afro-descendent people into domestic and agricultural labor while missionaries built churches to convert them into Catholics. They also built Ecuador’s largest cities, Guayaquil and Quito, which still exist today. In 1822, Ecuadorian


uprisings started in Quito. After a while, armies of Simón Bolívar and Antonio José de Sucre came to the aid of Ecuadorian rebels in the invasion from Colombia in 1822. This invasion won the decisive Battle of Pichincha on a mountain slope near Quito, thus assuring Ecuadorian independence on May 24, 1822.

Ecuador’s declaration of independence demonstrates the exploitative culture of colonization came with the devaluation of nonwhite land-based populations. Because of settler-colonialism, Ecuador proclaims itself as a country of Mestizos – a mixture of white and indigenous people. It is important to note that this term excluded Afro-descendent history, furthering the invisibility of Afro-descendent people. Accordingly, colonization puts whiteness on a pedestal, and colorism is intensified. Colorist insults directed at land-based people display the long-term impacts of settler colonialism prevails in the discrimination toward a nonwhite person. This history of settler-colonialism heavily contributes to the disparity of power and wealth between ethnic groups, explaining the marginalization of land-based people like Afro-descendant and indigenous groups. On an institutional level, discrimination subjects nonwhite people to a cycle of poverty.

A country built on settler-colonialism sets up an institutional structure that already limits and voids the possibilities of a good, bountiful life for marginalized groups. According to the 2010 census, there are 14,483,499 Ecuadorians in the country. The ethnic makeup of this group is as follows: 71.9% are mestizos; 7.4% are Montubians (mestizo people of the countryside of coastal Ecuador); 7.2% are African Ecuadorian and 7% indigenous peoples. Education disparity is an ongoing social issue that directly affects urban unemployment and poverty levels amongst

nonwhite groups. Self-identified white people averaged 12 years of schooling, mestizos have 11 years, while indigenous people only get to 7.6 years, Montubians 8.3 years, and individuals of African descent, 9 years. Moreover, in my interview with Dr. Congo, she mentioned that people in Esmeraldas do not continue into high school because of the need to work, the lack of teachers, and academic resources. Urban unemployment rates continue to be high, despite 74.4% (2010 census) amongst Afro-Ecuadorians living in urban areas like Guayaquil, Santo Domingo, Esmeraldas, San Lorenzo, Quito, and Ibarra. Forms of exclusion are present when they are more likely to experience more difficulty finding a job in large cities because of racism and prejudice. It becomes a controversial question of what “white” means in Ecuador because, before colonization, Ecuadorians were all indigenous peoples. Colonization has marginalized land-based people through forms of exclusion, enabling environmental injustices due to capitalist intentions that harm ancestral land-based people.

Environmental Context: Shrimp Farming Operations

The first commercial shrimp ponds were built in 1969, and in 1982, Ecuador had the world's largest area for shrimp production when the shrimp industry became one of the most lucrative businesses by the 1980s. Today, at least 70% of the coastal mangroves have been deforested for shrimp pools and other anthropogenic activities. Now, the shrimp industry is expanding into Esmeraldas, Ecuador which threatens one of the Earth’s tallest and best-conserved mangrove ecosystems on which traditional fishing and los concheros

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40 I say people rather than just afro-descendant groups because indigenous groups are also impacted in land exploitation in Ecuador.
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communities still depend for subsistence.\(^{41}\) Illegal expansion, often due to the lack of clear ownership and land protection enforcement has resulted in serious environmental degradation. It is estimated that 85% of the households that live on the coast depend on fishing and collecting shells. However, the shrimp industry has more than 208,714 hectares of land just for shrimp farms, each 3000 ha of shrimp farms employ only 0.6% of the local population. Mangrove deforestation due to shrimp industry expansion continues to impact the ecology of the coast, the life of communities and ecosystems.\(^{42}\)


Figure 9. Biodiversity Hot Spots, Mangrove Forests, and Unreported Data on Protected Mangrove Land (Muisne and REMACAM) 43

Shrimp farming grew in popularity when valuable shrimp species were profitable with shrimp at $2 per kg and prawns at $9 per kg in 2002. 44 This large profit margin catalyzed unregulated shrimp farming expansion resulting in great mangrove deforestation and water contamination, impacting biodiversity and livelihoods of concheras. In Figure 9, the GFW map displays how all of Esmeraldas is a biodiversity hotspot with mangrove forests around San Lorenzo and Muisne. 45 Despite being a biodiversity hotspot and home to mangrove forests, there is no reported data in 2022 on the protected land, displaying the lack of protective policy implementation. This means that illegal expansion is highly probable and no action has been taken to force industries to take accountability for the destruction of the environment. This map demonstrates the discrepancy between policy and enforcement to protect the land; this lack of protection allows for unnoticed deforestation for illegal shrimp expansion. Not only does this threaten biodiversity and mangrove forests, but it also raises concerns about growing poverty levels and the loss of ancestral land, resources, and water for Afro-descendant people.

Political Context: Rights of Nature and Ancestral Land

Ecuador’s biodiversity and ecoregions have pushed environmental issues into political discussions and constitutions. On September 28, 2008, the people of Ecuador were the first country to vote for a new constitution that gives nature (its mountains, rivers, forests, air, and

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islands) legally enforceable rights to “exist, flourish, and evolve." \(^{46}\) The Rights of Nature stem from *Buen vivir*, or *sumak kawsay* (Indigenous Kichwa language originated from the Andean region and the Amazon rainforest) or Good Living, a key to the philosophy of life in indigenous societies. \(^{47}\) Buen Vivir is a search for personal (identity), social (equity), and broad (nature) harmony, guided by the principles of relationality and reciprocity typical of Andean philosophy and worldview.” Buen Vivir is influenced by criticisms of capitalist modernity and development with the reconceptualization of quality of life and the reconceptualization of human relations with nature (including concepts of sustainability). Thus, decentralization, de-commodification, and dematerialization strategies put people and nature before capital. After Ecuador, other countries like New Zealand have followed suit to preserve their land. \(^{48}\)

The Rights of Nature began when Indigenous peoples and the ecologists proposed a “path to sustainability” stemming from Buen Vivir. This Indigenous movement enacted ideologies of Buen Vivir and the Rights of Nature for all people with an emphasis on ancestral land-based people. Translated from the Ecuadorian Constitution 2008:

**Article 10.** Persons, communities, peoples, nations and communities are bearers of rights and shall enjoy the rights guaranteed to them in the Constitution and in international instruments. Nature shall be the subject of those rights that the Constitution recognizes for it.


Article 14. The right of the population to live in a healthy and ecologically balanced environment that guarantees sustainability and the good way of living (sumak kawsay), is recognized.

Environmental conservation, the protection of ecosystems, biodiversity and the integrity of the country’s genetic assets, the prevention of environmental damage, and the recovery of degraded natural spaces are declared matters of public interest.

Article 21. Persons have the right to build and uphold their own cultural identity, to decide their belonging to one or various cultural communities, and to express these choices; the right to aesthetic freedom; the right to learn about the historical past of their cultures and to gain access to their cultural heritage; to disseminate their own cultural expressions and to have access to diverse cultural expressions.

Culture cannot be used as an excuse when infringing rights recognized in the Constitution.

Chapter 7. Rights of Nature

Article 71. Nature, or Pacha Mama, where life is reproduced and occurs, has the right to integral respect for its existence and for the maintenance and regeneration of its life cycles, structure, functions and evolutionary processes.

All persons, communities, peoples and nations can call upon public authorities to enforce the rights of nature. To enforce and interpret these rights, the principles set forth in the Constitution shall be observed, as appropriate.

The State shall give incentives to natural persons and legal entities and to communities to protect nature and to promote respect for all the elements comprising an ecosystem.
Article 72. Nature has the right to be restored. This restoration shall be apart from the obligation of the State and natural persons or legal entities to compensate individuals and communities that depend on affected natural systems.

In those cases of severe or permanent environmental impact, including those caused by the exploitation of nonrenewable natural resources, the State shall establish the most effective mechanisms to achieve the restoration and shall adopt adequate measures to eliminate or mitigate harmful environmental consequences.

Article 73. The State shall apply preventive and restrictive measures on activities that might lead to the extinction of species, the destruction of ecosystems and the permanent alteration of natural cycles.

The introduction of organisms and organic and inorganic material that might definitively alter the nation’s genetic assets is forbidden.

Article 74. Persons, communities, peoples, and nations shall have the right to benefit from the environment and the natural wealth enabling them to enjoy the good way of living.

Environmental services shall not be subject to appropriation; their production, delivery, use and development shall be regulated by the State. 49

Buen Vivir manifests itself in the Rights of Nature that gives ancestral land rights that are to be protected by the Constitution of Ecuador. Articles 10, 14, and 21 acknowledge indigenous peoples’ and ancestral land rights and livelihoods alongside the rights of nature. This demonstrates the commitment the government pledged to take to protect the land and land-based people. Additionally, Article 21 specifically recognizes the cultural significance of nature for land-based people, and ensures the right to uphold their own cultural identity and practice their

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traditions. 50 Articles 71–74 of the Ecuadorian Constitution recognize rights of nature exist, flourish, and evolve just as a person would. Article 71-74 emphasizes the right to land restoration, nurseries, and take preventative measures to protect biodiversity. This gives people the right to petition on behalf of nature and land to be regulated by the government.

The Rights of Nature have been successful in some cases. For example, the Earth Law Center, the Global Alliance for the Rights of Nature, and the Center for Biological Diversity filed a case against the Ecuadorian Constitution when mining concessions violated the Rights of Nature in Los Cedros Protected Forest. The court voted seven in favor and two abstentions. This was seen as a historic victory in favor of nature. However, capital has outcompeted nature such as petroleum drilling biodiverse hotspots in the Amazon in many court cases and unregulated land. Leaning into Buen Vivir and The Rights to Nature can be impactful for conservation, but enforcing the Rights of Nature continues to have its challenges.

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50 The articles in the Constitutions are environmental issues reported by indigenous and ancestral people. I analyse and discuss this later in Chapter 3.
Chapter 3. Case Studies: REMACAM and Muisne

Case Study 1. The Ecological Reserve of Cayapas Mataje

Figure 10. The Ecological Reserve of Cayapas Mataje in Northern Esmeraldas. Dots represent the size of communities in Ocampo’s study (San Lorenzo and Limones were not a part of the study but were depicted for context). 51

In 1996, The Ecological Reserve Cayapas Mataje (REMACAM - acronym in Spanish) was finally declared a protected land under the Protected Areas National System of Ecuador (Resolution 001 DE 052-A-DE). The National System of Protected Areas (SNAP) are protected

natural areas that guarantee the conservation of important marine ecosystems on land, marine, and coastal levels, including social and cultural resources along with major water sources. REMACAM covers 51,300 Ha, home to some of the world’s tallest mangroves that grow up to 196 ft high in the estuary of Cayapas and Mantaje rivers in northern Esmeraldas. Although REMACAM remains the largest protected mangrove land in Ecuador, illegal shrimp farm operations remain its greatest threat to nature and ancestral people.

Human Geographer Patricia Ocampo-Thomason examined mangroves, REMACAM inhabitants, and the shrimp industry in the reserve in her study titled, “Mangroves, people, and shell traps: impacts of the shrimp industry on mangrove communities in the province of Esmeraldas, Ecuador.” Ocampo conducted fieldwork in rural communities, participation observation, 170 socio-economic surveys, and 100 semi-structured interviews in 12 different communities in REMACAM to better understand the impacts of shrimp farming in Esmeraldas. These surveys include information on the mangrove resources that come to the communities, education, social organization, and emigration. Her research highlights impacts exacerbated by their displacement as a social group and occupation as concheros as she covers the socio-economic characteristics of communities, use and perceptions of the mangroves, natural resource use, duty allocation, and community response.

Already an impoverished area inhabited by predominantly Afro-descendant populations, concheras who live in REMACAM organized to declare this a protected reserve when this region suffered greatly from the Taura syndrome, a virus introduced by the shrimp ponds. This

54 Ocampo-Thomason, P. “Mangroves, People and Cockles,” 143.
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introduction of Taura syndrome resulted in great devastation in the farms and ecosystem.

Because of this, the shrimp industry sought more land north – reaching the northwest region of REMACAM and purchasing 24,000 Ha out of 35,000 Ha in Eloy Alfaro county, an inland region east of REMACAM.55 REMACAM is one of the last places in Ecuador where communities can continue to use the resources, but REMACAM's territory is shrinking because of deforestation caused by pools and palm oil monocultures. The reserve protects the ancestral people of the mangroves along with two hydrographic basins in the northwest of the country, the basin located north of the Mantaje River and south of the Cayapas River, from which the name of the reserve derives. Mangroves thrive here as a result of the abundance of nutrients and the stability of the climate, which enjoys a small annual temperature range. The presence of warm currents throughout the year (between 26-29 °C or 78-84 °F) creates a stable climate in the delta system, supporting life forms in estuaries, channels, islands, islets, sandbanks, and various types of beaches (Figure 10). Generations of Afro-Ecuadorian community members who inhabit this area have benefited greatly from this great mangrove forest for subsistence.56

The mangrove ecosystem is fundamental to the community as fishing and la concha remain the main sources of income for families, as shown in Figure 7. In the study, Ocampo found that “there are 31 rural communities in the reserve, with a total of about 5600 inhabitants. Geographically, the reserve includes the large urban towns of San Lorenzo and Limones (Figure 10), with 13,000 and 7000 inhabitants, respectively. Administratively, they do not belong to the reserve, but in practice, they use the reserve and its resources.” More than 31 communities and

large cities still utilize the benefits of mangroves, while only 0.6% of the people work in the shrimp industry, as displayed in Figure 7. American writer Isherwood describes, "estimated that goods totaling more than $14,000,000 are extracted from the reserve annually." This data supports community advocates who argue that 1 hectare of shrimp farming provides only 0.1 percent of labor for people. Meanwhile, 1 hectare of mangroves produces enough resources for at least ten families, supporting over 20,000 inhabitants in ancestral mangrove land.

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Case Study 2: Muisne

Figure 11. Map of Mangrove and Shrimp Farm Distribution in Muisne in 1969 and 1999.

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The Muisne River Estuary is located on the South Side of Esmeraldas province, north of Manabí. Heavy mangrove deforestation caused by the uncontrolled shrimp farming expansion in the Musine district has resulted in the loss of vast areas of mangroves, creating repercussions for other species and inhabitants. While mangrove land was pristine in 1969, it was estimated that the estuary of the Muisne River had lost 90% of its original mangrove forest due to unregulated deforestation for shrimp farm expansions into the region by 1999. With 90% of the forest gone and replaced with shrimp farms, chemicals used in shrimp farms replaced the pristine water and abundance of life. Consequently, Muisne has lost crucial ecosystem services provided by mangroves such as loss of plant and wildlife species, alarming water contamination, frequent floods in residential and agricultural areas, and high levels of poverty in the surrounding communities. As a result, community members mobilized to protect and conserve mangroves to “restore the traditional link between people and mangroves and reaffirm their identity.”

Building on studies that demonstrate how the shrimp industry impacts the mangrove ecosystem, urban studies scholar Caicedo further develops the relationship of the polluting shrimp industry with the urban territory, focusing on the importance of Muisne as a center for the collection and exchange of seafood to boost the economy. In her Master’s of Urban Studies thesis, “Urban Community and Shrimp Industry: Territorial Resistance in Muisne, Esmeraldas,” she analyzes the local territorial effects of the extractive shrimp industry in the urban community of Muisne by identifying actors such as the Muisne inhabitants, the concheras, the leaders and owners of companies shrimp farms, as well as activists and defenders of the mangrove ecosystems. The methods used in her thesis include a site visit for four days, seven formal interviews with community members, and archival work.

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Her thesis centers around her intention to understand and analyze the location of the industry in a third-world country and a degraded city as a strategic element of analysis of causes and effects. As she analyzed her interviews, she reflects upon the space-time dimension, recognizing the temporal cuts and spatial cuts managed as the city of Muisne. Muisne is where the territorial resistances originated, sparking grassroots movements on a local, national, and global scale. Her results show that community members of Muisne have a relationship with their economic activity, la concha. It provides their livelihood, but it is a projection of their community, which, when violated, generates both economic and social gaps. Water contamination remains a top issue; however, limited resources, funding, and current events in Esmeraldas restrict water testing and research. Community members from her study express that this is highly likely from the expanding shrimp industry operations in the region (Figure 12.)

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60 Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
Figure 12. The land is (a) estuary; (b) shrimp cultivation; (c) urbanization; (d) land for cultivating shrimp; (e) mangrove forest; (f) natural vegetation; (g) deforested mangrove land.  

Photographers: Morocho, Ramiro, Ivonne González, Tiago Osorio Ferreira, and Xosé Luis Otero. 2022.

Mangroves empower women.\(^6^3\) La concha in the mangroves has been the foundation of a strong sense of community amongst Afro-descendant populations living in the mangroves, making this an asset to the mangroves and people. This is a strength for community members to discuss concerns in the community and mobilize to address issues from the voices of the community members. In a country where Afro-descendants and women are almost invisible, the conchas have an intersectionality of identities as a woman, Afro-descendant, and Esmeraldeña.\(^6^4\) In the face of ethnic inequality, la concha has resisted social exclusion by creating an accessible job that has historically provided sustainable subsistence while connecting women and mangroves.

In addition, when the men went out fishing for 1-3 weeks in a row, the women of the community look for cockles in the area near the house in addition to taking care of the household and children.\(^6^5\) Conchas have come together for hundreds of years through the practice of la concha, building a strong community where women have relied on each other. When women bring their families together to la concha, this strengthens relationships between community members. As a result, a strong sense of community amongst conchas is an asset to the mangroves and people that gives strength to community members to discuss concerns in the community and mobilize to address issues. Such strength has prevailed in grassroots movements started by conchas and community advocates. Marcela’s interviews with the directors of C-CONDEM note that the conchas in Muisne were the first to found an organization like C-CONDEM to protect the mangroves. She highlights that C-CONDEM unified and took action.

\(^6^4\) Esmeraldeño/a is used to refer to a man or woman who lives in Esmeraldas. I learned this term during my interview with Marcela.
\(^6^5\) Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
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Now, C-CONDEM is a crucial community initiative for both the people in the community and the environment

**Analysis and Discussion**

I analyze these case studies using an environmental justice lens to understand the dense entanglement of the shrimp industry, ancestral Afro-descendant people, and community resistance to dig deeper into the root issues of settler-colonialism, globalization, and environmental injustice. Toxic pollution, toxic waste disposals, and heavily polluting industries may not have been apparent at first, but environmental injustice prevails in adverse human health effects, environmental degradation, and lack of research. Environmental injustice encounters in Muisne and REMACAM highlight the water and land injustice that disproportionately affects Afro-descendant ancestral communities. Although REMACAM and Muisne are located in different coastal regions, the two case studies share a plethora of similarities and even complemented each other. Upon site visits and interviews, both researchers unveil the significant impact of the grassroots movement and community resistance to protect mangrove land. Investigation on water contamination levels could provide significant data that could be used to regulate or even stop shrimp farm operations near ancestral inhabitants; thus, preventative measures in policy and strengthening implementation can work to ensure the health and safety of concheras and mangroves. Through an environmental justice lens, racism rooted in settler-colonialism has disenfranchised Afro-descendant ancestral communities, especially when looking at space and history.
Entangled Mangrove Roots

Environmental Justice: Globalization

Global demand for shrimp drives investors and the Ecuadorian government to build and operate shrimp farms without considering the consequences on the environment and locals. While toxic pollution, toxic waste disposals, and heavily polluting industries may not be apparent at first, it prevails in adverse human health effects and environmental degradation, as witnessed in the latter case studies. This shows how the shrimp industry has taken the path of least resistance to get away with chemicals that are highly probable of causing adverse health effects. The then president of the World Bank at the time, Lawrence Summers, and the Ecuadorian government attempts to justify harmful land extraction with “economic logic” and to “develop out of poverty.”

Although the Correa Administration did alleviate poverty levels and built more infrastructure, this assistance did not trickle down to support those in more rural areas.

As the government stands silent amidst great deforestation and water crisis, they enable the violation of Articles 14 and 21. Sumak kawsay does not exist when illegal shrimp operations expand into so-called protected reserves, leading to environmental degradation, ecosystem imbalance, and water contamination. Land extraction from neoliberal practices resulted in the slow violence assisted by the government contradicts their pledge made to the environment and land-based populations and violates Articles 14 and 21 in the constitution.

Moreover, mangrove land is a means of cultural identity for ancestral Afro-descendant people; so, the removal of mangrove trees and water contamination strips community members of the right to uphold their cultural identity, traditional fishing, la concha practice, and sense of belonging.

Entangled Mangrove Roots

Environmental Injustice is perpetuated in the shrimp industry’s long history of viruses and intensified antibiotics and chemicals that heavily pollute mangrove estuary waters. The lack of research on water contamination has led to ongoing adverse health effects that infiltrate the lives of Afro-descendant ancestral communities in their occupations, homes, and recreational activities. Even if people fall ill from these contaminants, there is no health infrastructure or finance to fund research, displaying indicators of environmental injustice. Environmental justice scholar Julie Sze focuses on states, “Environmental justice activists argue that pollution exposure, toxic contamination, and environmental destruction are not accidental, but embedded into systems that devalue some lives over others, whether by race, class, immigration status, or some other measure of difference and hierarchy. Activists thus categorically reject the politics of marketization. Deregulation/ privatization, disposability, and invisibility work together for environmental racism to thrive.” This demonstrates how the privatization of mangrove land, disposability of the mangrove ecosystem, and invisibility of ancestral people in Ecuador all work together to allow environmental racism to thrive. Environmental issues that have caused adverse health effects amongst community members have gone uninvestigated for so long due to measures of hierarchy in Ecuador. These circumstances have produced “slow violence.” By slow violence, literary scholar Rob Nixon, “mean a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all.” This demonstrates the subtlety of water contamination has allowed for issues to go unnoticed because it happened so slowly over time. In

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68 Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
the case of Muisne, the Taura Syndrome Virus filled the ponds in the 1990s causing intensified shrimp farming operations with stronger antibiotics, and synthetic and natural agents were used to prevent diseases. This includes chloramphenicol, which was later prohibited in Ecuador in 2002 due to its known severe adverse effects, such as bone marrow toxicity and grey baby syndrome. According to community members, past synthetic compounds are now prohibited, but shrimp farmers continue to use a variety of uninvestigated chemicals similar to chloramphenicol. Although these chemicals allowed for greater shrimp yields, intensified chemicals have led to the decline of mangrove species and higher levels of water contamination (Field Data 2017). If past chemicals were found to be correlated with serious health issues, current chemicals can probably pose similar or worse adverse health effects. Attempts to combat shrimp viruses in the pond have caused a vicious cycle of chemical dependency to address new virus variants which drives even higher contamination levels over time, creating a space of “slow violence” to thrive in mangrove land. It becomes clear in Muisne as it goes deeper than just pollution, but this illuminates the rooted issues hidden by structures of power embedded in the structure and history of Ecuador. Both case studies reveal water contamination and the lack of research is an occurring challenges in ancestral Afro-descendant people’s everyday life.

Water contamination and the lack of research have contributed to serious adverse health effects. Marcela shared how concheras noticed a significant decline in cockle populations when shrimp industries moved near them. A few hours in the mangroves has turned into a full day’s

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73 Treviño Peña, “Disputed Spaces.” 90.
74 Treviño Peña, “Disputed Spaces.” 90.
75 Treviño Peña, “Disputed Spaces.” 90.
76 Treviño Peña, “Disputed Spaces.” 91.
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work to gather a sufficient amount of cockles. Even then, they might not even be able to collect enough. This unveils that intensified shrimp operations are very likely to be associated with the decline of cockles and unknown illnesses amongst community members. When I asked what these illnesses are, she said no one knows, nor they do know how to treat them. This unveils how extreme poverty exacerbates health consequences, health disparity, and lack of resources in mangrove communities. Beyond general illnesses, this also raises serious reproductive health and maternal and infant health concerns. If there are already concerns in general health, women's health could be at risk under new circumstances of working in polluted water.

**Environmental Justice: Decolonizing Structures of Society**

Under a system built by Spanish colonizers, nonwhite Ecuadorians easily became victims of racism and become vulnerable to environmental injustices. Racism is a clear contributor to disproportionate vulnerability and devaluation of Afro-descendant ancestors in the Afro-descendent community witnessed in job and food insecurity due to the shrimp farm operations. Environmental justice scholar Laura Pulido explains how indigenous communities are disproportionately impacted by anthropogenic activities on a global scale. She states, “It’s about money and power. We live in a capitalist world economy that places a premium on economic self-interest. But sentencing millions to die requires more explanation than simply economic self-interest. Such a powerful act requires an equally powerful ideology, as noted in the epigraph. And that is racism.”

This signifies that we live in a world where people become violent to obtain power and money, creating a structure of violence and inaccessibility to education, healthcare, and job opportunities for marginalized communities. Racism has allowed

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room for the invisibility of developing nations but also within the nation. A country that was built upon settler-colonialism sets up an institutional structure that already limits and voids possibilities of a good, bountiful life for marginalized groups. According to the 2010 census, there are 14,483,499 Ecuadorians in the country where self-identified white people averaged 12 years of schooling, mestizos have 11 years, while indigenous people only get to 7.6 years, Montubians 8.3 years, and individuals of African descent, 9 years. Urban unemployment rates continue to be high, despite 74.4% amongst Afro-Ecuadorians living in urban areas like Guayaquil, Santo Domingo, Esmeraldas, San Lorenzo, Quito, and Ibarra. Forms of exclusion are present when they are more likely to experience more difficulty finding a job in large cities due to the heavy presence of racism and prejudice. Colonization has marginalized land-based people through forms of exclusion, enabling environmental injustices due to capitalist intentions that harm ancestral land-based people. It becomes clear that a system built by Spanish colonizers does not align with the needs, culture, and values of the Afro-descendant communities. This system has excluded ancestral land people from decision-making conversations, ownership, and politics.

Structural violence is evident in REMACAM residents’ social exclusion – the lack of education, healthcare, and job opportunity. Western culture’s definition of “success” is seen as influential, educated, and wealthy, which does not align with the culture and values of the concheras, but education that centers the interests of the community can create powerful tools to reclaim ancestral land and identity. Human geographer Ocampo states that the lack of education for children in many communities in REMACAM has heavily contributed to the cycle

79 Belen Congo proposes Ethno-education to decolonize education. This is further discussed in Chapter 4.
of poverty. However, while the lack of education is true, there could also be issues in the current pedagogy in which children and youths can connect to traditional practices through the representation of their cultural background in the education they receive.  

Moreover, Ecuadorian education fails for Afro-descendants who represent almost 7% of the population in their curriculum. Provided that land-based people like Afro-descendants and Indigenous groups have faced a long history of violence, oppression, and slavery, current education has become a new form of perpetuating settler colonialism ideologies, whether it be a conscious or unconscious decision. The country’s self-proclaimed identity of Ecuador reveals that Afrodescendent is not the intended audience for the current system, let alone education. Hence, Ecuadorian education leaves out significant parts of Afro-descendant history and lacks representation of ancestral people. As la concha in the mangroves have been incredibly valuable to the empowerment of women and identity, adjusting education so that it fits and represents Afro-descendant community members can be a tool for them to redirect decision-making powers back to themselves on their own accord. A decolonized education and schooling curriculum centered on the needs and interests of the community can create pedagogies with Afrodescendent representation but also create a passionate space for students to heal from marginalization.

As racism remains a challenge in Ecuador, Dr. Belén Congo proposes ethnic education to heal the aftermaths of settler colonialism amongst marginalized Afro-descendant people. Belén Congo researches “ethno-education” in the Ecuadorian education curriculum to aid community resistance and increase the visibility of Afro-descendant populations. She believes that ethnic education regarding Ecuadorian history is essential to empower historically marginalized people

80 Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
81 Interview with Belén Congo, November 26, 2022.
82 From my experience at school, I often found the gaps and misrepresentations of Asian Americans in my education until high school. In university, I learned more about Chinese American history and reflected on my identity in my Asian American Studies courses at Pitzer College. The representation of my identity in my education empowered me to be proud and to continue learning, reflecting, and taking action to advocate for myself.
of color due to colonial ideologies. Representation through education can help children learn about their unique background story to celebrate and embrace their culture of origin. Diversity can show the possibilities of embracing diverse cultures in the country and abolishing inequalities between ethnic groups while increasing the visibility of the Afro-descendant populations. As efforts are being made to decolonize structures of inequality, community perspectives on mangroves demonstrate spiritual connections between mangroves and people.

Community Perspectives

Mangroves are essential to the lives of Afro-descendant ancestral people. Community members of REMACAM share their connection with the land in informal interviews with Human geographer Patricia Ocampo-Thomason. The following comments were made:

- The mangrove is our life, it gives us shells, crabs, and fish.
- The mangrove is the most important thing for us.
- If we don't have a mangrove we won't eat, we won't live.
- If the mangroves disappear, we will all be finished, the mangrove is our life, our work.

Throughout ancestral mangrove history, la concha is passed down from generations of women, making it a significant cultural tradition in the Afro-descendant community, the identity of women, and history. Local ancestral communities also have a more holistic perspective of the mangrove forest—a source of all life. Many community members believe that if the mangrove disappears, they too will disappear. These statements give us an idea of how essential mangroves

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83 Interview with Belén Congo, November 26, 2022.
84 Interview with Belén Congo, November 26, 2022.
85 Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
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are to the cultural, economic, and life of Afro-Descendant ancestral people in Esmeraldas. This emphasis was paralleled in the life of interviewee Belén Congo.

Interviewee Belén Congo is a part of the Afro-descendant community in San Lorenzo and shares her connection to the mangroves through culture and music. Congo shares, “Tenemos manglares donde se hace la naturaleza y cuidado la vida de la fauna y humanos. Es una conexión de espiritual... como el dio o diosa... no tiene genero.” This translates to, “We have mangroves where nature takes care of plants and people. It is a spiritual connection. Like a god or goddess... who does not have a gender.” Her family and community members feel a spiritual connection with the mangroves which they view as their gender-neutral god. She then emphasizes that these songs are not only an everyday practice, but they also embody spiritual significance that is passed down through oral history, lullabies, celebrations, la concha, and social gatherings. She smiled as she said, her mother and the other concheras almost always sang together and conchean (the plural verb form of conchar) in sync. It is clear that her family has a connection to the mangroves – a connection that is entangled with the shrimp industry which prevails in Congo’s family’s name, culture, and history.

Her parents came to Quito in hopes of finding a new job and a better future for their family. Congo is from Quito, but her mother is from the San Lorenzo community and her father is from Chota in Ibarra, located in the mountains of Ecuador. Congo says there are differences between her father’s and mother’s sides of the family. She says that her mom’s side of the family in San Lorenzo is more open and lively. In contrast, his family worked on the haciendas in the cane and cotton fields, and they tend to be more reserved and cheerful. Additionally, Belén

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87 Interview with Belén Congo, November 26, 2022.
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shares the significance of her last name, “Congo.” This comes from her mother’s side, which is named after a shrimp farm called “Congo,” located behind the San Lorenzo. Although she and her family live in Quito, they often visit her family in San Lorenzo and she teaches ethno-education in schools in Esmeraldas. She is proud of her ancestral background in mangroves and hopes to uplift her fellow Afro-descendant community members to embrace their ancestral background through ethno-education. As time progresses, there have been significant social changes in life in mangroves.

Social Changes

Despite traditional practices in the mangroves, there are different social changes in the perspectives of community members between REMACAM and Muisne. Social changes in REMACAM can be witnessed in the changes in resource allocation and la concha. In REMACAM, male concheros now make up 17.6% of cockle gatherers. According to Ocampo’s interviews, the concheros have expressed that this is now their source of income because they have been displaced from agriculture, shrimp farming, or logging companies. Ex-fishermen have also switched to la concha because of the low yield of fish and increasingly expensive fishing gear. Not only is fishing gear expensive, but it has become common for expensive motors to be stolen while at sea or other forms of violence to occur at sea. Ocampo also discusses changes in some cockle grounds. She states, “Local gatherers are being displaced by big groups of gatherers from San Lorenzo… usually young men traveling in large fiberglass boats with powerful outboard motors. These are improvised groups: the owner of the boats takes them to the cockle

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88 Interview with Belén Congo, November 26, 2022.
90 Interview with Belén Congo, November 26, 2022.
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grounds and then buys the cockles they harvest at a much lower price than the market value.” 91

This shift into la concha is due to the displacement of the men’s ex-jobs in companies and plantations along with the accessibility of la concha in which there is no necessary equipment and because the mangroves are open to all. The locals perceive mangroves as a free common resource. 92 These new gatherers are primarily focused on making the most profit from their labor and utilizing the mangroves for profit. This change in perspective on mangroves in the local community diverges from the traditional practices of la concha, leaving a long-term impact on the cockles. Ocampo states, “Their practices do not leave broodstock or juveniles. They take everything they find and they often tell the traditional gatherers that they do not know how to gather as they are always leaving cockles behind.” 93 This disturbance in mangroves can decrease the abundance of cockles and lead to everlasting changes in the fishery and cockles in the mangroves. These issues are further exacerbated by chemical runoffs from the shrimp industry, making this issue far more complex as there are increasingly different perspectives amongst local residents and their relation to the land. On the other hand, Muisne has been more focused on preserving the traditional practices of la concha.

In Caicedo’s thesis, community members are motivated to defend the mangroves and preserve the traditions of la concha, forming grassroots movements to advocate against the environmental risks, restore mangrove land, and aid impacted populations. Grass-roots resistance movements like the Foundation of Ecological Defense (FUNDECOL - Fundación de defensa ecológica) and National Coordinator for the Defense of the Mangrove Ecosystem (C-CONDEM) are community mobilization that focuses on socio-ecological restoration of the mangrove

92 Ocampo-Thomason, “Mangroves, People and Cockles,” 149.
93 Ocampo-Thomason, “Mangroves, People and Cockles,” 149.
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ecosystem. As community members organize to press the Ecuadorian government to community-voiced strategies to defend the mangrove ecosystem and the livelihoods of inhabitants, they bring together community leaders, environmentalists, and researchers from Afro-indigenous communities in Ecuador towards socio-restoration of mangroves and healing of impacted groups. As concheras are the community advocates leading this organization, they are also members who embody the disproportionate impact of shrimp farm operations, environmental injustice, and community voices.

C-CONDEM stressed self-sufficiency in the local communities of Esmeraldas with food and through forest restoration with sustainable alternatives of resources and environmental justice for community members so that the mutual benefits of nature and the local community are ensured. Today, community-based initiatives like FUNDECOL and C-CONDEM are crucial community initiatives that support the people in the community and protect the mangroves in Muisne. Social changes occur differently between REMACAM and Muisne, evident in the difference in perspectives on mangroves. The practice of la concha amongst older generations remains essential to life in mangroves.

It is interesting to witness different social changes between the two case studies. These social changes and shift in allocations demonstrate the differences in perspectives amongst communities in Esmeraldas. While some people in REMACAM care more about profit and not too much about the mangroves, other people in cockle-gathering areas feel more strongly about protecting the mangroves and ancestral traditional practices. There are far more external factors that prioritize profit that has changed resource allocations and practices of la concha in REMACAM, while grassroots movements in Muisne are defending mangrove land the

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95 Caicedo Ramo. “Comunidad urbana e industria camaronera,” 70.
traditional practices. External factors could be influenced by the geographical location of REMACAM which includes larger cities like San Lorenzo and proximity to Colombia, providing a greater variety of job markets. The need for money could be a possible explanation for why people are moving to bigger cities, getting roped into drug trafficking, and causing more disturbances in mangroves through the unsustainable practices of la concha. The need to profit has led to the growing disconnect to mangroves in younger generations; thus, those with a disconnect are more likely to move away from the coast to find other means of livelihood while those who stay demonstrate resistance to industry, social change, and protection of the environment. To better understand the needs of community members, community participation and education can recenter structures of society that focus on the community needs.
Chapter 4. Community Resistance

Community Assets

Figure 13. Translation: “Let’s take care of our beaches <3 Las Tulitas” Painted on a Rock in San Clemente, Ecuador | Photographer: O’philia Le
Although there are differences in perspectives on mangroves between people in rural areas and people in urban areas, the passion and care community members have for the environment is a community asset that can be used to address environmental injustices. These photos (Figure 13 and 14) were taken along the coast of Ecuador and captures the care community members have for the land and ocean. Citizen Science can be used to combat environmental injustice through community participatory research. Sociologists Aya H. Kimura and Abby Kinchy advocate for citizen science to make science more participatory with a more equitable engagement between experts and the public. Citizen science is evident in cultural and political movements in which community advocates express injustices stemming from the industry. Sociologists Kimura and Kinchy emphasize participatory monitoring of the environment through citizen science. They describe, “The creation of monitoring programs is a typical way governments deal with public concern about the potential consequences of industrialization and technological change. The allure of monitoring projects derives, in part, from the invisibility of many environmental and health hazards, such as radiation and toxic pollution. Monitoring is one of the crucial tools for establishing that invisible risks exist.” This displays how participatory monitoring of pollution and the environment can support the shift and give more credit to citizen science. This provides a more holistic understanding and tells the stories while expressing apprehension about risks and issues that come with illegal shrimp farming expansions. Sociologists Kimura and Kinchy state, “Citizen science projects can level

96 Interview with Marcela Salomé Caicedo Ramos, November 27, 2022.
inequality between experts and laypeople and foster collaboration. Citizen science can also help social movements by filling gaps in knowledge and challenging official accounts. There are indications that citizen science can bring about policy change. It can also be used to catch polluters and bring them to justice.” 99 This shows that Citizen Science can fill in research gaps about water contamination and health effects and challenge the Shrimp Industry and government to take accountability for environmental injustices in ancestral mangrove land in Muisne. In other words, Citizen Science addresses inequality by creating accessibility to research and research accreditation of community members. A more holistic approach using citizen science allows gaps to be addressed through the narratives of community members. Citizen Science uses the foundation of restorative environmental justice to decolonize structures of violence to uplift the environment and community.

Collaboration to restore environmental justice in Muisne and REMACAM allows Afro-descendant communities to speak their truth through their data and create powerful tools to reclaim ancestral land and identity. American studies scholar Julie Sze writes about community-based activism in restorative environmental justice. She highlights, “restorative environmental justice is explicitly decolonial and integrative, including humans as animals and imagining humans and nonhuman nature in a non-extractive mode.” 100 This demonstrates the decolonial approach with humans as part of nature and ecology. In other words, restorative environmental justice aims to restore issues rooted in the system and find solutions through decolonization. Sze looks further into the rich history of fighting against environmentally influenced diseases through community-based activism in Flint, Michigan’s water crisis. She

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writes, “Until scientific and health testing revealed what Flint residents already knew, locals were actively ignored. Cultural and theoretical lenses (to complement sociological and geographical ones) can help explain why. Water is both “matter” (or material) and “metaphor” (meaning). Some lives—whiter and wealthier— “matter” more and deserve more protection than those (poorer and black) exposed and made vulnerable. Water regulation/ deregulation and privatization always ‘violently racialize.’” \(^{101}\) This demonstrates how the government did not acknowledge the concerns citizens expressed about water contamination until scientific and health testing revealed alarming data. Sze uses cultural and theoretical lenses to better understand water as a material and meaning that exposed marginalized communities especially vulnerable to the adverse effects of contaminated water. The water crisis in Flint is paralleled in Muisne where community members are expressing their concerns, witnessing their loved ones passing from unknown illness, and increasing cases of illness. Despite these reports, government actions have yet to be taken and the shrimp industry has yet to take accountability for the contamination they have caused in mangrove waters. The privatization of land poses an environmental risk to Afro-descendant ancestral people because power and monetary wealth overpower land-based people.

Mangrove Conservation

![Figure 14. Loss and Gain of Mangroves in Esmeraldas between 1998 and 2016](image)

Stronger protection implementation to conserve mangroves must be enacted to not only restore the land but also heal the wildlife and people that come with the mangroves. Although the dilemma between development and conservation remains a challenge in Ecuador, there are proposed solutions that hope to meet both parties in the middle. As Shrimp pools are highly toxic and often abandoned after 20 years, ecologist Zug proposes to revitalize abandoned shrimp pools for new shrimp farms instead of building new ones.  

This will prevent and decrease deforestation for the creation of shrimp pools. Another solution entailed planting mangroves in abandoned shrimp farms. Despite serious losses, ecologist Zug states, “Replanting mangroves is one of the easiest things we can do to conserve our planet.” Mangroves can be easily restored with the support of people and land protection in just a short amount of time. In a two-decade

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103 Interview with Rebecca Louise Zug, November 17, 2022.

104 Interview with Rebecca Louise Zug, November 17, 2022.
analysis, the map in Figure 14 displays the difference in mangrove forest cover in 1998 versus 2016. Restoration over the last two decades was made possible by preventing shrimp farms from expanding into protected mangrove reservations, letting mangroves restore themselves over time, and human efforts to replant mangroves. This demonstrates how the declaration of mangrove land has allowed for mangrove recovery, supporting the livelihood of ancestral people and wildlife. In Figure 15, community initiatives such as the restoration effort led by Greenpeace to replant mangroves in a shrimp pool in 2000 allow for mangrove revitalization. Despite challenges, collaborative efforts work to resist the harms of the shrimp industry, globalization, and settler colonialism. Community efforts to restore mangrove land can work to heal ancestral Afro-descendant people and mangrove land, paving the way for more life.

**Figure 14.** Action to replant mangroves in a shrimp pool, October 2000 - Greenpeace / photograph by Daniela Beltrá
Conclusion

Incredible ecosystem services are the embodiment of the possibilities of mangrove restorations beginning in the environment and wildlife. Under globalization and capitalism, *Samak kawsay* does not exist when illegal shrimp operations expand into so-called protected reserves which enables the violation of Articles 14 and 21 and slow violence, harming people and nature. I investigated my research question: *How does the shrimp industry disproportionately impact Afro-descendant ancestral people in Esmeraldas, Ecuador mangrove land?* My research confirms the disproportionate impact of Afro-descendant ancestral people on mangrove land and even shows how the shrimp industry violated the constitution by severely degrading the land and stripping the human rights of ancestral people.

It is no coincidence that capital-driven shrimp industries have chosen to operate in a developing country like Ecuador. Muisne and REMACAM are environmental encounters in which environmental injustice is perpetuated by a structure built on the history of settler colonialism and the shrimp industry’s long history of viruses and intensified chemicals. However, citizen science and collaboration to restore environmental justice can help speak their truth through their data collection and create powerful tools to reclaim ancestral land and identity. The dense entanglement of the shrimp industry, ancestral Afro-descendant communities, and resistance run deep into the root issues of settler colonialism, globalization, and environmental injustice. Even if toxic industries may not be apparent at first, environmental injustice prevails in adverse human health effects, environmental degradation, and lack of research that amongst Afro-descendant ancestral communities. In my thesis, I am empowered by my intersectionality of identities as a woman of color, a first-generation college student, and a daughter of refugees to tackle issues stemming from settler-colonialism, globalization, and
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environmental injustice. This thesis stands to support and uplift other communities facing environmental injustices through the narrative of Afro-descendant ancestral people. Hence, grassroots resistance movements play a vital role in healing both the land and the people. Our entanglement with the environment, wildlife, and all other beings pushes us to consider our footprints beyond borders and reflect on our positionality in this world. Mindful consumerism, mangrove restoration, community engagement, and ethno-education can be effective and scalable interventions to address environmental and social issues in Esmeraldas. Like a mangrove, our world’s entanglement has the power to heal exploited lands, impacted marginalized communities, and restore balance.
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Interview Guides

Professor Rebecca Zug
Goal: General overview, understanding the ecological importance of Mangroves, Role in the biosphere, how it affects communities in the area, biodiversity, and science.

1. Can you give a brief overview of mangroves and their importance?
2. What crucial ecosystem services does it provide for the environment and us?
3. What is the biodiversity like in the mangroves? And what is so unique about this ecosystem?
4. What has happened and is happening to the mangroves in Ecuador?
5. What is causing the deforestation of mangroves?
6. Who and what is affected by this?
7. How does deforestation impact biodiversity on the coast of Ecuador?
8. How are conservation projects helping the mangrove ecosystem?
9. Given what we have discussed in class about the loss of Earth's biological diversity, how can the study of conservation biology help us understand nature more and the ways this loss can be prevented?
10. How can restoration projects impact/ improve the environment in Ecuador?
11. Like we talked about in class and from the Rights of Nature video, do you believe that the Rights of Nature would help further protect Mangroves? Do you think that Ecuador can pioneer and further this conservation on an international level?
12. Mangrove video: saw that there are a lot of conservation efforts and gaining publicity through media, what are the challenges with community and mangrove conservation against capitalism?
13. What would happen if mangrove deforestation continues at the rate it is going?
14. What do you think needs to be done to preserve mangroves in the future of Ecuador?
15. How can we as students understand and support this movement? And help with the restoration and conservation of mangroves?
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16. Do you know anything about the situation in Muisne?
17. Do you happen to know anything about how the deforestation of mangroves impacts the Olmedo community in Esmeraldas?
18. Anything you would like to add?
19. Do you have any questions for me?

Entrevista con Marcela
Meta: Panorama general del impacto de los manglares en las comunidades de Esmeraldas, cultura en los manglares, adaptación a vivir en el ecosistema de manglares, por qué está interesada en los manglares, que aprendió en su tesis.

Universidad: arquitectura
Másteres: estudios urbanos
1. ¿Puedes hablar más sobre tu tesis sobre los manglares?
2. ¿Por qué eligió escribir su tesis sobre los manglares? ¿Qué te interesa de los manglares?
3. ¿Qué aprendiste sobre los manglares?
4. ¿Cómo fue tu experiencia en Muisne?
5. ¿Por qué elegiste Muisne?
6. ¿Cómo se han adaptado las personas a vivir en el ecosistema de manglares?
7. ¿Puede describir la relación entre el ecosistema de manglar y los miembros de la comunidad? ¿Tiene una relación cultura?
8. ¿Existen espirituales, historia oral o cuentos populares que incluyan a los manglares?
9. ¿Cómo ha afectado la industria camaronesera la vida, la economía y la salud de las comunidades que viven en el ecosistema de manglar en Esmeraldas?
10. ¿Por qué la pobreza en Esmeraldas es más alta que en otras áreas en Ecuador?
11. ¿Cómo pueden los proyectos de conservación impactar o mejorar el medio ambiente en Ecuador?
12. Ahorita, hay un movimiento para dar los derechos por la Naturaleza - los Derechos de la Naturaleza, ¿crees que los Derechos de la Naturaleza ayudarían a proteger aún más los manglares?
13. ¿Cómo podemos nosotros como estudiantes entender y apoyar este movimiento? ¿Y ayudar con la conservación de los manglares?
14. ¿Sabes algo sobre cómo la deforestación de los manglares impacta a la comunidad de Olmedo en Esmeraldas?
15. ¿Algo que desees añadir?
16. ¿Tienes alguna pregunta para mí?

Translation:
Goal: Overview of the impact of mangroves on the communities of Esmeraldas, culture in the mangroves, adaptation to living in the mangrove ecosystem, why you are interested in mangroves, and what you learned in your thesis.

University: architecture
Masters: Urban Studies

1. Can you talk more about your thesis on mangroves?
2. Why did you choose to write your thesis on mangroves? What interests you about mangroves?
3. What did you learn about mangroves?
4. How was your experience in Muisne?
5. Why did you choose Muisne?
6. How have people adapted to living in the mangrove ecosystem?
7. Can you describe the relationship between the mangrove ecosystem and the members of the community? Do you have a cultural relationship?
8. Are there spirituals, oral histories or folk tales that include mangroves?
9. How has the shrimp industry affected the life, economy and health of the communities that live in the mangrove ecosystem in Esmeraldas?
10. Why is poverty in Esmeraldas higher than in other areas in Ecuador?
11. How can conservation projects impact or improve the environment in Ecuador?
12. Right now, there is a movement to give the rights for Nature - the Rights of Nature, do you think that the Rights of Nature would help to further protect the mangroves?
13. How can we as students understand and support this movement? And help with the conservation of mangroves?

14. Do you know anything about how mangrove deforestation impacts the Olmedo community in Esmeraldas?

15. Anything you want to add?

16. Do you have any questions for me?

**Entrevista con Belén Congo**

Meta: Panorama general del impacto en las comunidades de Esmeraldas, cultura en los manglares, adaptación a vivir en el ecosistema del manglar, lazos personales, y lazos familiares.

1. ¿Puede dar una breve visión general de los manglares?

2. ¿Qué importancia tienen los manglares para la comunidad afrodescendiente de Esmeraldas?

3. ¿Puede describir la relación entre el ecosistema del manglar y los miembros de la comunidad?

4. ¿Cómo llegó la comunidad a Esmeraldas?

5. ¿Cuál es la historia/historia de eso?

6. ¿Existen roles de género o expectativas en la recolección de conchas?

7. ¿Tiene usted vínculos personales con el ecosistema del manglar?

8. ¿Cómo se transmite la historia, las historias y la música de generación en generación?

9. ¿Hay canciones hablan sobre los manglares?

10. ¿Hay historias sobre los manglares? ¿Historia oral?

11. ¿Por qué las tasas de pobreza en Esmeraldas son más altas que en otras áreas?

12. Hablamos un poco de discriminación y racismo en la lectura. ¿Cuáles son algunos encuentros comunes que una persona de afrodescendiente enfrentaría?

13. La Etnoeducación Concepción es un tema en su lectura.

14. ¿Cómo este enfoque empodera y fortalece la solidaridad dentro de la comunidad afrodescendiente y más allá?

15. Me gusta esta pregunta en su lectura:
16. ¿De qué manera la institución educativa favorece las identidades culturales del Ecuador dentro de sus lineamientos y políticas públicas, y qué podemos hacer los y las maestras para transformar y potenciar esta diversidad de identidades dentro del aula de clase?

17. ¿Cómo responderías esta pregunta?

18. ¿Existen movimientos sociales para abogar por los derechos de las personas y la protección de la tierra?

19. ¿Cómo pueden los estudiantes o las personas que no viven en los manglares apoyar los movimientos y proyectos de restauración de los manglares?

20. ¿Sabe cómo la deforestación de los manglares impacta a la comunidad de Olmedo en Esmeraldas?

21. ¿Tiene comentarios que le gustaría agregar?

22. ¿Tiene alguna pregunta para mí?

Translations:

Goal: Overview of the impact on the communities of Esmeraldas, culture in the mangroves, adaptation to living in the mangrove ecosystem, personal ties, and family ties.

Questions:

1. Can you give a brief overview of the mangroves?

2. How important are the mangroves for the Afro-descendant community of Esmeraldas?

3. Can you describe the relationship between the mangrove ecosystem and the members of the community?

4. How did the community come to Esmeraldas?

5. What's the story/history of that?

6. Are there gender roles or expectations in shell collecting?

7. Do you have personal ties to the mangrove ecosystem?

8. How is history, stories, and music passed down from generation to generation?

9. Are there songs about mangroves?

10. Are there stories about mangroves? Oral history?

11. Why are the poverty rates in Esmeraldas higher than in other areas?
12. We talked a little about discrimination and racism in reading. What are some common encounters that a person of African descent would face?

13. Concepción Ethnoeducation is a theme in his reading.

14. How does this approach empower and strengthen solidarity within the Afro-descendant community and beyond?

15. I like this question in your reading:

16. In what way does the educational institution favor the cultural identities of Ecuador within its guidelines and public policies, and what can teachers do to transform and promote this diversity of identities within the classroom?

17. How would you answer this question?

18. Are there social movements to advocate for the rights of people and the protection of land?

19. How can students or people who do not live in mangroves support mangrove restoration movements and projects?

20. Do you know how the deforestation of the mangroves impacts the community of Olmedo in Esmeraldas?

21. Do you have comments you would like to add?

22. Do you have any questions for me?