

Human-Mangrove Entanglements in Shyamnagar, Bangladesh

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Field site in Shyamnagar (photograph by author)

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Abstract

This thesis examines the intricate relationship between mangroves and humans in Shyamnagar, Bangladesh. Mangroves in Shyamnagar are found both in the Sundarbans, the largest mangrove forest on earth, and in adaptation projects called nature based solutions (NbS), framed by the resilience narrative. The first part offers an introduction to these discourses, including the role of NGOs and governmental institutions, and critically analyzes the ways in which capitalist and modernist worldviews have influenced the establishment of new interaction zones between humans and mangroves through NbS projects, highlighting the omission of power dynamics and histories of dispossession. The second part delves into the nuanced relationships with the mangrove that transcend dominant global and organizational discourses. By emphasizing the agency of the mangrove as an active participant and co-creator of society in Shyamnagar, the boundaries between humans and nature, and communities and non-humans, are blurred. This challenges the notion of human exceptionalism and underscores the interconnectedness of all beings in shaping local landscapes, dynamics, and identities. The final part explores the relationships of care between humans and mangroves, recognizing the significance of care and affect in shaping human subjectivities and relationships with the biophysical environment. This thesis thereby emphasizes the importance of maintaining multispecies care even within practices that introduce anthropocentric, capitalistic, and market-oriented worldviews. By critically examining these dimensions, this thesis offers insights into the complex interactions between mangroves and humans in Shyamnagar, ultimately contributing to a broader understanding of the interplay between nature, society, and resilience.

Keywords: Multispecies Political Ecology, Resilience Narrative, Imagination, Care

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Introduction

“She embraced all the life and foliage in the jungle and made up her mind to live there and never go back. She cried a lot, and her sadness affected the life of the forest. The leaves in the jungle comforted her, telling her that they would take care of her”¹ - Bhanvi, fisher and mangrove nursery worker.

This account is referencing the story of Banobibi, the Goddess of the Sundarbans, the largest mangrove forest on earth, shared between India and Bangladesh. The focus of this thesis, however, is on Bangladesh. More specifically, a town in Shyamnagar, a coastal settlement bordering the Sundarban forest. The Sundarbans forest has been an ecosystem of great focus both globally and locally due to its biodiversity, carbon sequestration ability, coastal protection from storms, tidal waves and cyclones, tourism, and its social and cultural significance. Coastal people's livelihoods have traditionally depended on, for example, fishing, the use of non-timber forest products, and collection of honey from the forest. Internationally, this ecosystem's characteristics have been recognized as important to the climate change adaptation abilities of coastal Bangladesh, calling for not only conservation of the Sundarbans, but the plantation of more mangrove trees, both in afforestation initiatives along the coast and integrated mangrove aquaculture (IMA) efforts. These types of projects are said to be adaptation techniques ‘inspired by nature’, and have been adopted under the umbrella term, nature-based solutions (NbS).

A few recent titles from recognized multilateral institutions that portray how they frame resilience in coastal Bangladesh include, *“Continued Investment in Coastal Resilience is Critical for Sustainable Growth in Bangladesh”* (World Bank, 2022), and *“Bangladesh” Tackling Climate Change Through Integrated Nature-Based Solutions* (UNDP, 2022). With Bangladesh used in international discourses as both an example of a vulnerable country to climate change and as a leading country in adaptation, and with NbS becoming a preferred way to address the climate crisis, this thesis set out to understand how mangroves and humans interact at this site, and in which ways they might participate in the creation of what these institutions label, a ‘climate resilient coast’. The research was conducted keeping the

¹ Complete origin story can be seen in the Appendix.

following question in mind: In what ways are people and mangroves in Shyamnagar entangled? I hope to contribute with a different perspective on NbS in Shyamnagar with this research by discussing the different relationships with mangroves that persist, develop or are lost as NbS and its narratives are introduced in the area.

Thesis Structure

As an introduction to this thesis, I start by providing a background of the Sundarbans and coastal Bangladesh, specifically the factors that contribute to its ‘vulnerability’ to climate change, a description of the context in Shyamnagar and of mangrove plantation as a NbS, and an introduction to the most prominent interlocutors in this thesis. I will then outline previous research on mangrove-human interactions in the area, and the theoretical field and methodological framework I used, as well as methods.

In Chapter one, I present the global discourses and actors, such as NGOs and governmental institutions, that have facilitated the diffusion of the resilience narrative in Shyamnagar. I look at how the NbS projects implemented, stemming from worldviews of development, capitalism and modernity, have introduced new mangrove-human contact zones. In Chapter two, I discuss the relationships with the mangroves that go beyond the global and organizational discourse and worldviews, and involve the mangrove as an actor and co-creator of society in Shyamnagar. Chapter three discusses the relationships of care between humans and mangroves, and how care has been central in traditional relationships with mangroves, and in the creation of new identities and relationships to the mangrove brought in by NbS.

I chose this structure to mirror how I approached the field. I arrived in Dhaka not knowing my specific field site and started interviewing individuals that could help me access it and understand the context of the Sundarbans. This led me to the closest city and ‘entrance’ to the Sundarbans area, which is Khulna, where most of the organizations have their main offices. There, I met with experts from the local university to learn about the mangroves as a species, and the Sundarbans. I also met with local organizations to understand where most of these initiatives were located, and in some sense, ended up following the resilience narrative until it led me to its ‘beneficiaries’.

The Sundarbans

In this thesis, I will focus on mangrove-human entanglements. This means I have researched entanglements with the mangrove forest, Sundarbans, but also with planted mangroves that do not form part of the Sundarbans.



Figure 1: Map of the Sundarbans

The Bangladeshi Sundarbans is a mangrove forest and UNESCO World Heritage site located in the southwestern part of Bangladesh, covering an area of approximately 6,000 square kilometers (UNESCO). ‘Sundar’ is Bengali for beautiful, and ‘Ban’, forest. The forest is home to a variety of flora and fauna, including the Royal Bengal tiger, saltwater crocodiles, spotted deer, monkeys, and multiple bird species. The Sundarbans provide an ecosystem important to coastal protection, carbon sequestration, and fisheries support, as well as a source of livelihoods for local communities.

However, the Sundarbans is said to be under threat from a variety of factors, including climate change, sea-level rise, industrial development, and overexploitation of natural resources (IUCN, UNDP, World Bank). Cyclones and tidal surges have become more frequent and intense in recent years, leading to erosion and loss of forest cover, and the construction of a coal-fired power plant near the Sundarbans has been a concern among the local communities for its potential environmental impact (Ganguli 2020). Due to these concerns, the government of Bangladesh has established the Sundarbans Reserve Forest and the Sundarbans Mangrove Forest Division to manage the forest, which means that forest rangers patrol the Sundarbans, and

impose regulations and fees on local communities that depend on them for subsistence and tourism. From the government's perspective, this serves the purpose of protecting people from wildlife, and protecting the forest from individuals.

The Sundarbans was divided between a 'Sanctuary' area and 'Reserve' area. Only the reserve can be frequented. Furthermore, it is prohibited to cut down the mangrove trees, and there is an entry ban between June and August, as it is breeding time. To enter the forest, people need permission from the Forest Department, as well as a boat license certificate (BLC), which costs around 10 cents per year. People enter the forest to fish species, mostly crab and shrimp, collect honey, and collect *Nypa* leaves that can be used for home structures, and fruits. People also collect mangrove seeds as fuel, which is banned.

As I am not a citizen of Bangladesh, extra regulations applied for entering the forest. I had to pay to rent a boat, pay a boat tax, an entry tax, and for two guards to accompany me. This amounted to US\$60. Meanwhile, my interpreter, who is a citizen, had to pay an entry tax of 40 cents, and was not obliged to be followed by guards. This regulation impacted my fieldwork, as it did not allow me to enter the forest with my interlocutors without guards, which would have been unnatural and restrictive to our interaction. Therefore, I had to listen to their stories and experiences and then try to imagine them, once I finally entered the forest. The day I finally made it into the Sundarbans, the head of the local forest department invited me as a guest, however, which meant I did not have to pay. This type of hospitality was something I encountered throughout my time in Shyamnagar. Many would invite me for tea and dinner at their homes and wanted to show me around as a guest. In the Sundarbans, this meant that instead of getting a tourist experience as I thought, I was able to follow a forest ranger during one day, which provided other insights that I was able to use in this thesis.

Making a Vulnerable Coast

The Sundarbans are described by environmental institutions in terms of their protection of vulnerable coastal communities to climate change. I will now talk about the different factors that are deemed to make the coast vulnerable: sea level rise, salinity intrusion, and weather related disasters such as cyclones and tidal surges. Some of these, however, are disputed as consequences of climate change.

As I entered the field, Dr. Hossain, a Sundarbans expert and vice-chancellor of Khulna University (known for its forestry department), mentioned that sea level rise is actually highly contested in research as a climate change factor in Bangladesh. This is because of the geographical characteristics of Bangladesh. As mentioned by van Schendle (2020) in “A History of Bangladesh”, “without the Himalayas, Bangladesh would not exist” (p.3). This is because as the ice and snow of the mountain melts, it forms rivers that reach the sea, which carry sediments that are then deposited and help build up the delta. In the South, many rivers come together into the Ganges, through which 2.1 billion tons of sediment come to the bay of Bengal each year of which 20% gets redistributed along the coast (Hossain 2022). This signifies that the rate of sedimentation is higher than sea level rise. However, erosion and accretion is a process that allows for the physical coast to be ever changing.

The second factor, salinity intrusion, is also highly contested as a consequence of climate change. One of the largest factors in the area that influences salinity is tidal surges that inundate freshwater ponds with salt water, the rise of shrimp farms, and the malimplemented embankment system that allowed for salt intrusion to creep further inland. Firstly, communities in Shyamnagar have traditionally relied on rice cultivation and forest dwelling for their livelihoods, but a history of cyclones and tidal surges flooded fields creating salt water ponds. This, along with a global demand for shrimp allowed for the shrimp industry to take off in Shyamnagar in the 1970s (Akter et al. 2023). This led to more landowners pumping saline water into their rice fields (Amin and Shammin 2021, p.77). Runoff from the shrimp farms also facilitates the salinization of freshwater ponds.

The embankment system has also aided salinity intrusion, with the construction of the Farakka barrage in 1975 being one of the most detrimental to freshwater flow (Iftekhar and Saenger 2008). The barrage aimed to divert water from the Ganges into the Hooghly river, but by doing so it reduced the amount of sediment and freshwater that the Ganges flows into the Bay of Bengal. This, along with embankments along the coast has shifted the distribution of silt along the coast, clogging and therefore narrowing the rivers, meaning that water has had to find other paths to travel as they could not reach the sea. This helped distribute salt further inland due to backwash from the Bay of Bengal, and the narrowed rivers that allowed for water to find other paths into freshwater sources. These factors that ‘make’ a vulnerable coast, however, are

man-made, and exacerbated by the third factor, natural disasters, which are made more frequent by climate change.

The Plantation

In anthropology, the plantation is a concept which brings attention to the power dynamics of gender, class, race (Haraway et al 2016), and even species (Chao 2022) that are involved in the labor intensive production of cash crops. It acknowledges the history of colonialism and slavery that was and is still associated with the monoculture system where both humans and non-humans are impacted. The mangrove activities used as NbS in Shyamnagar are referred to as the plantation, which is how I use the term in my thesis, rather than as the plantation concept described in anthropological literature. As I will discuss later on, there are still power dynamics involved in NbS, but I refer to the plantation not as a cash crop with a history of colonization and alienation (Haraway et al. 2016, p.556) of people and the natural environment involved in it, but rather as a NbS concept that will be criticized independently.

Mangrove plantations are one form of NbS found in Shyamnagar. In this thesis, I have focused on human relationships with both the mangroves in the Sundarbans and the planted mangroves. These plantations are found along the coast, as an alternative to the embankment, and integrated in aquaculture, as a way to create “sustainable” fisheries that according to the NGOs “enhance biodiversity by creating a robust aquaculture value chain in the Sundarbans, together with increasing the amount of carbon sequestered, and making villages less susceptible to natural disasters since”. These plantation initiatives are referred to as afforestation or reforestation when the purpose is to build a sea defense and increase the accretion process to stabilize land (Mahmood et al. 2022), and as integrated mangrove aquaculture (IMA) when plantation of them serves the purpose of enhancing fisheries, such as the crab hatchery that will be discussed in chapter 1.



Figure 2: Integrated Mangrove Aquaculture project

According to Bangladesh's 2016-2030 REDD+ strategy (GOB 2022), coastal afforestation is highly valued and has been a program since 1966. In Shyamnagar, afforestation initiatives are mostly conducted by the Social Foresters Department (a part of the Forest Department), and by NGOs. The most common mangrove plantations start from the mangrove nursery phase, by picking seeds that are washed away from the Sundarbans, and then transferring them to newly accreted land, where it is then fenced off to protect it against grazing animals that hinder the success of the planted forest. Another way is to fence off an area of newly accreted land and allow for seeds carried by the river from the Sundarbans to latch onto the soil. According to the NGOs, it generally takes around 5 years for the plantation to be able to thrive by itself without protection. It is important to note that the Sundarbans is on the other side of the river from the settlements, meaning that the Sundarbans is the first line of defense against weathering events, and the planted mangroves along the coast are second.



Figure 3: NGO nursery in front of forest department's plantation (photography by author)

The hope of afforestation, according to the government and NGOs, is to create a green belt that defends the coast from natural disasters, as well as provide for rich ecosystems that allow for livelihood improvement, as mangroves increase the health and productivity of natural fisheries and other life. The plantation is therefore also seen away from the embankment, in aquaculture. For decades, mangrove species selection, nursery care, plantation methods, pest control and other information of the plantation have been a topic of great importance to researchers, academics, government agencies, NGOs and more, with the publication, “Nursery Raising, Planting Techniques and Plantation Management of Climate Resilient Mangrove Species in Bangladesh” (Hossain et al. 2020) being recognized as the current beacon on this information. This publication by GEF, UNDP, the Forest Department of the Ministry of Environment, Forest and Climate, also calls for integrating community-based adaptation into afforestation and reforestation programmes in Bangladesh.

The Field

I spent most of my time in Shyamnagar and took some time off in Dacope, as a way to gain perspective on my time in Shyamnagar. In Bangladesh, the administrative geography is divided as follows: The central government, divisions, districts, sub-districts also known as ‘Upazilas’, which then divide into union councils, municipalities or city corporations depending on whether you are in a rural area, a town or a metropolis. These are then divided into villages or wards. Both of the sites I spent time in are located in Khulna district. My main field site was located in Shyamnagar, which is an Upazila, and I spent most of my time at a specific hamlet by the embankment, on the other side of the river from the Sundarbans. The map below illustrates the general area where I conducted research (outlined by the red dotted line on the left). The darker green area portrays the Sundarbans, and the field site bordered the forest. The red dashes on the right outlines the general area where I spent some time, which will sometimes be brought up for comparative reasons. It also borders the forest as seen on the map.



Figure 4: Map Outlining the Field Site

Shyamnagar

Most of Shyamnagar is made up of open fields, seen in figure 5, divided into rice paddies that later turn into watermelon farms, and mostly fisheries, including shrimp and emerging crab hatcheries. There are not many buildings, especially closer to the coast, with the exception of cyclone shelters, a few resorts and training centers, the buildings that surround the main bazaars, and mosques. The main mode of transportation are electric vans, which are electric bikes with a cart attached to the bike, as well as rickshaws, which have more formal sitting, and the occasional motorbike. It is not always accessible or easy to go places with transportation, however, as many of the roads are uneven or nonexistent, as previous tidal surges have destroyed them.

Along the embankment you either find mangrove plantations, or ‘illegal’ settlements mostly inhabited by people who are forest dependent, some with ponds next to their houses and even little gardens. I place illegal into quotations because it is generally accepted, but still have repercussions based on land rights, such as the fear of getting evicted or people claiming to be landlords charging more rent. The hamlet I lived in barely had any ponds. Houses in this area are mostly made up of mud and mangrove nipa palm, as these can be reinforced and built up easily during disasters. Apart from people, goats, ducks and geese are prominent members of the settlements as well. Close by you can find wooden boats that are either rented or belong to people at these settlements. The coast varies depending on the time of day, as the tide sometimes exposes the gray, shiny and slimy sediments at the bottom of the river and leave the boats on land.

Across from the river you find the Sundarbans, which might appear further or closer depending on where you are, and the tide. There is not much movement or noise that comes from that side of the river except when people decide to jump in their boats to fish in the river, or part on a long journey into the forest. In Shyamnagar, I stayed next to one of the nurseries, and visited nursery and plantation projects by the government and two NGOs, with a total of 9 plantations and nurseries. I also visited a crab hatchery that integrates mangroves into their aquaculture.



Figure 5: Shyamnagar (photograph by author)

Dacope

I also spent some time in Dacope, mostly to gain a bit more perspective on the situation in Shyamnagar and what makes this context specific. Dacope is also bordering the Sundarbans, but in the East, and is very close to an important port, Mongla. At this site, there are a lot more rice paddies than fisheries (as seen in figure 3), not as many people are forest dependent as they go to work at the port, and there is a lot more development in the area. There are also a lot more people that grow crops next to their houses and take advantage of their ponds, than in Shyamnagar. Although I went around different parts of Dacope to understand how people relate to mangroves, I lived inside a space called the Banojibi Campus. This infrastructure was developed by a grassroots organization as a way to create a collective for forest dependent people. ‘Banojibi’ is the Bengali term for those whose livelihoods depend on forest resources. Their aim is to improve those livelihoods by developing the processing and packaging of the products, as well as opening up new markets in which the Banojibi can participate under the eco-label ‘Banojibi’.



Figure 5: Field site in Dacope (photograph by author)

The interlocutors

The interlocutors in this ethnography vary from experts in the field of climate change and development, NGO workers and grassroots founders, to Shyamnagar and Dacope inhabitants, mostly day laborers and forest dwellers (Banojibi). The term Banojibi is used to describe forest dwellers from both Hindu and Muslim communities, other forest dwellers include the Munda community. The Banojibi usually live by the embankment across from the Sundarbans in illegal settlements. Munda is an indigenous community that has its origins in India. During colonial times, they were brought to Bangladesh to clear the Sundarbans for agriculture (Roy 2020). They have their own traditions. In Shyamnagar, the Munda community are climate migrants who came to the area following a devastating cyclone in 2009.

The main characters in this thesis include (all pseudonyms) grassroots founders, Amit and Bishwa; Abeer, a former community leader and honey collector; Jidan Munda, a Munda community leader; Bhanvi, a nursery worker and fisher; Dipesh, a PhD student on mangroves; and Jagdish, an NGO employee and former tiger tracker in the Sundarbans. These were the interlocutors that I encountered most frequently, but there are also other individuals that play a

role in this ethnography that will be mentioned throughout. Apart from Bhanvi, these interlocutors are mostly older men. This was common in my encounters in Bangladesh, where most of the NGO workers and community leaders are men, although most of the people I encountered in the hamlet were women, as well as the nursery workers. This is due to the gendered social structure and the outmigration of men in the area that go to cities to work in construction and factory jobs. Because of the hospitality culture in Shyamnagar, I did not notice an impact of gender during my personal interactions with interlocutors. Other than only women showing affection in the form of hugs, both men and women showed care for my well being.

I will also refer to different mangrove species by their common (Bengali) names. From the 20 species listed in the mangrove nursery handbook, the ones I got to know during my field work include Baen, Kakra, Keora, Nypa palm, Sundri, and Gewa². This means that they are the ones I spent the most time with and learnt to recognize by the end of my research. Baen and Kakra are the most common nursery species. I encountered Keora mostly at the plantation phase and through the tasting of its pickled fruit, and gravy. Nypa palm was prominent both by the embankment and in the infrastructure of my interlocutor's homes. I got to know Sundri and Gewa mostly through the experiences of my interlocutors as Sundri being one of the most prominent in the Sundarbans, and Gewa for temporarily blinding people. These species will come up through different accounts in this thesis.

Field of Research

In this section, I outline previous research on mangrove-human engagements in Shyamnagar, and introduce the fields of relevant research to this thesis. This includes criticisms of the resilience narrative and the concept of radical resilience, and multispecies political ecology perspectives with concepts of imagination, landscapes, becoming, embodiment and care highlighted within these perspectives, which will appear as frames of analysis in later chapters.

² Scientific names: *Avicennia officinalis*, *Bruguiera gymnorhiza*, *Sonneratia apetala*, *Heritiera fomes*, and *Excoecaria agallocha*, respectively.

Previous Research on Human-Mangrove interactions in Bangladesh

Previous research on human-mangrove interactions in coastal Bangladesh include geography perspectives focusing on factors influencing tree distribution patterns in the Sundarbans, with Ellison et al. (2000) highlighting competition between species, Saenger and Siddiqi (1993) focusing on factors such as pests, and Rahman (2020) emphasizing water and soil factors, and human interference. These induce reduced freshwater flow, primarily caused by the construction of the Farakka barrage in 1975 (Iftekhar and Saenger 2008).

There are also Ethnobotanical perspectives that outline what types of mangroves and mangrove products are used as medicinal plants (Islam et al. 2022; Tama et al. 2021), and socio-ecological management and resilience perspectives. Ecological management perspectives focus instead on ecosystem services and their valuation (Iqbal 2020; Rahman et al. 2018), and protection (Neogi et al. 2017). There are also studies on perceptions of such ecological management, such as Roy's (2016), which examines attitudes towards management practices in a local community and finds a general positive attitude towards mangrove conservation as long as it provides an economic alternative.

Amin and Shammin (2021) present the case study of Shyamnagar as a success story of a resilience framework application through, among other projects, mangrove restoration. They argue that the framework, which involves the community envisioning the future they want, can in turn inform how to develop “climate resilient community-based adaptation initiatives and nature-based solutions in other vulnerable communities in South Asia and elsewhere in the world” (p.70). This snippet of the previous research in mangrove-human relations in coastal Bangladesh is centered on their ecological changes based on human interference, and on how to value and manage the services mangroves provide. I will focus on human-mangrove entanglements from less anthropocentric perspectives that take into account mangroves in the narrative.

Resilience Narrative and Political Ecology

The concept of resilience has been widely discussed in different disciplines, often used interchangeably with terms like conservation and adaptation. The literature on resilience is scattered, with human sciences adopting the term from ecologists and physicists, and definitions encompassing more than its simplest definition: The ability to remain in a desired regime no

matter the external circumstances and disturbances. Barrios (2016) emphasizes that resilience definitions did not originate in anthropology, insinuating that other subject areas would need to be included to understand the resilience discourse. The concept was first seen within disciplines of psychology (Garmezy 1973, Werner 1995) and has since been applied to a wider array of groups and adversities, such as climate change adaptation.

However, this narrative of resilience to climate change has been criticized by many scholars. Lindström's et al. (2016) highlight the importance of acknowledging that reducing "multifaceted environmental phenomena" into "fast narratives" can be detrimental to finding novel "socio-ecological engagements". Beymer-Farris and Bassett (2012) also discuss environmental narratives by studying how REDD+ projects in Tanzania build upon these narratives and neglect the real environmental histories in their mangrove forests. Dewan (2021) is also critical of these, and suggests that sustainability narratives of, for example, water rising, have replaced development narratives to justify the implementation of development projects in Bangladesh in the name of resilience and adaptation.

Barrios (2016) argues that multiple aspects of the term, 'resilience', make it inept for understanding the social as it tends to depoliticize a process that is highly political due to disasters stemming from "colonial, nation-building, and development processes" (Hsuet al.2015 & Oliver-Smith 1999 in Barrios 2016). (p.30). This follows Haraway's et al (2016) engagement with the term 'anthropocene' as they brainstorm new terms like 'Capitalocene' or 'Plantationocene', since they take into account unequal social costs of the industrial mode of production, unequal responsibilities, and undervalued reproductive forces.

Their criticism is also reminiscent of Stefania Barca's (2020) take of the 'anthropocene' as another way to diffuse the master hegemonic narrative of human supremacy over nature, which ignores power asymmetries and reproductive forces. Barrios' (2016) argument then, is that resilience interventions should not occur at the local level, but rather at the systemic one. He then proposes the concept of the social production of vulnerability to understand the resilience narrative in the context of climate change, in contrast to resilience as a way to combat vulnerability (p.32). He writes:

"If resilience is the capacity of adaptation on the part of indigenous coastal communities to the hazards created by environmentally destructive practices of capitalist industrialization, then the concept of resilience does not mitigate disasters

but serves as a mechanism for the maintenance of the “system” that creates them” (p.31).

Wapner and Elver (2016) concur with this criticism of the resilience narrative. Instead, they propose a new framework that they term ‘radical resilience’, that aims to acknowledge the inequality, exploitation and injustice that the resilience narrative ignores. Their thesis is that one should focus on transformations that include “community learning, building capacity among previously neglected groups, constructing networks for collaboration, embracing uncertainty, and sharing stories of vulnerability to generate social mobilization” (Zellner et al. 2012 & Randolph 2012 in Wapner & Elver 2016, p.138). This is portrayed using the example of nuclear power. It is not radical because it still relies on technology, current unequal power relations, and mining of uranium for it to work (Wapner & Elver 2016, p.142) and therefore does not reduce the extractivist mindset. Radical resilience is an interesting lens through which to compare the resilience initiatives that occur in Shyamnagar. These criticisms of the resilience narrative agree with literature on political ecology.

Definitions of political ecology are complex, as some regard it a theory, others a methodology and some merely a perspective. In its simplest terms, it connotes studying the politicization of environmental issues. It has neo-marxist roots first used in 1972 to research the power relations behind interactions between humans and nature (Biersack and Greenberg 2006), as well as review social inequalities (Karlsson 2015). Robbins (2020) views political ecology as a field that unravels “the political forces at work in environmental access, management, and transformation” (p.3) and as one that stipulates that there are “better, less coercive, less exploitative, and more sustainable way of doing things” (p.17). The outcome being to understand the political, social and economic effects of environmental issues and the uneven distribution of their impacts as well as underlying or resulting power asymmetries. Something it shares in common with the concept of radical resilience.

However, there has been a shift in the way political ecology is framed. Biersack and Greenberg (2006), for example, speak of a reimagination of political ecology where it does not differentiate symbols from materialities but instead views reality as “discursive” (p.4). Additionally, feminist and new-feminist political ecology highlights the “everyday and the experiential” (Robbins 2020, p.66), which signals an embodiment of geo- and ecopolitical disturbances. This means that feminist political ecology calls for a change of theories and

methods to be able to include other categories to describe the value of nature, such as ‘affect’, which can highlight the “personal and emotional relationships” with nature as well as redefining what we view as “research subjects” (p.66). This broader understanding of the research subject is found in integration of political ecology with multispecies perspectives.

Multispecies Perspectives

Anthropology has seen a turn as ethnographic research has come to include other types of life and or materialities that have been “overlooked” and “marginalized” in anthropology (Lien and Pálsson 2021), instead acknowledging their biological and political lives. Eduardo Kohn’s (2013) call for an “anthropology of life”, Donna Haraway’s (2008) description of “contact zones” where such nature-culture line is blurred, Anna Tsing’s (2015) “assemblages” and her description of human nature as “an interspecies relationship”, among others call on the importance of this type of research.

Escobar (1999) acknowledges the constructed categories of nature and aims for a political ecology that “weaves in’ the cultural and biological”, which follows Latour’s (2004) call to abandon ‘nature’ as outlined in political ecology, criticizing a sole focus on the ‘scientific’ management of nature and dismissal of other types of knowledge. Haraway’s (2003) ‘nature cultures’ is proposed as a way to account for the histories of multispecies entanglements (Chao 2022), and non-humans treated as persons, such as spectral presences (Cole 2020) into the social world. Philippe Descola (2013) brings up the notion of ‘technical existing beings’, where he does not consider the ‘other’ ontologically, but as what we are in relation with. This highlights a broader understanding of the ‘social’, or what authors like Ingold (2013), (Ingold and Pálsson 2013), and Lien and Pálsson (2021) call ‘sociality beyond the human’.

While Latour (2004) also calls for dismantling the nature-culture divide, he problematizes the act of researchers speaking *for* nature. This brings forth the question of whether nature communicates, and if so, who can speak for nature? Anthony Trewavas (2017) provides the idea of “plant intelligence”, where he argues for the intelligence of plants as they compete for resources, while Daniel Chamovitz (2012) redirects the discussion towards “awareness” instead. Chamovitz describes this ‘awareness’ as the biochemistry behind plant responses to changing environments. Meanwhile, authors like Hall (2019) and Marder (2013) provide a basis on how to regard the non-human and the way that *being with* plants can instruct us with knowledge on *plant*

being. Ethnobotanists and ethnobiologists also include plants in social categories and see their role in, for example, the political economy (Hayden 2003).

Some authors like Vigh and Sausdal (2014) and Hornborg (2017) criticize this ontological turn by expressing concerns in the methodological approaches due to different worldviews dividing humans to non-humans, and their dismissal of the environmental history of capitalism. Hornborg (2017), writes that “the promotion of posthumanist discourse is ultimately tantamount to looking away while neoliberal capitalism continues to destroy the planet” (67). Furthermore, as Lien and Palsson (2021) point out, anthropologists “for whom attributions of subjectivity to animals might have seemed ‘unscientific’” frame the investigation of these types of ethnographies as “‘native belief’, animism or anthropomorphism”, (p.9). Marder (2013), for example, frames the way concepts like intelligence and sensitivity are attributed to plants as anthropomorphism. However, Hall (2019) describes this language not as “self projection” but as “a bridge between two types of being, from human to the plant that is so obviously different in its outer and inner form” (p.xxv).

I will draw from both political ecology and multispecies perspectives to discuss human and mangrove interactions in this thesis. Furthermore, concepts of imagination, landscapes, becoming, embodiment and care will be important in this discussion.

Imagination

Imagination is important to this thesis as it is used to either perpetuate the resilience narrative or to step out of the set narrative that resilience encompasses. Page West warns of the power of imagination in perpetuating harmful images that make it easier to reproduce categories of vulnerability. In her ethnography of the coffee industry, West (2012) highlights how images of Gimi peoples in the highlands of Papua New Guinea used to advertise and sell coffee, misrepresent and rely on a narrative that portrays them as primitive, poor, and ‘backwards’. These images might sell coffee in the market, but distract from the actual structure that maintains poverty in Papua New Guinea. Like the criticism of resilience suggests, some imaginaries create and reinforce narratives of resilience, but others can produce sites that have value to ‘think with’.

Wapner and Elver’s (2016) *Reimagining Climate Change*, turns to imagination when seeking for answers to the question of how to think outside this resilience narrative and looks for alternative approaches to climate change problems. For them, imagination “represents the ability

to dream, envision, conjure, and otherwise subvert existing, conceptual classifications” (p.5). They further deepen their focus to reflect upon Mill’s “sociological imagination” by arguing that it is imagination that connects our actions in the present to the future. That is to say that “political decisions and action” (p.176) are given meaning because one can imagine how current behaviors and decisions will lead to future outcomes. But also, as Taylor (2004) mentions, this imagination is often “carried in images, stories, and legends” (p.106).

Cons (2018) focuses on imagination in adaptation projects for climate change resilience in the “Bangladesh Borderlands”, which he views as “heterodystopias”. By ‘Heterodystopias’ he means that coastal spaces are managed to prepare for, and reflect on, a dystopian climate crisis world, but also that these spaces become ‘spectacles’ of the resilience taking place, as they show effectiveness of ‘resilience’. The spaces described as heterodystopias are therefore those that are embedded in framings of the future, and engaged in “experimental management for future crisis” (Cons 2018).

Morita and Suzuki (2019) make a call for an emerging multispecies imagination and ask people to “imagine collective life, including infrastructure, land use, resource consumption, and companion species, as composite bodies affected by the changing planet”. Whittington’s (2013) focus of “thinking with care about open futures” places climate change as a “form of speculative anthropology” (p.231). This means not only that reality is not exclusive to human perception, but that the act of writing about climate change is speculative.

Vaughn (2017) speaks of “geological imaginaries” to portray how mangrove restoration projects in Guayana (GMRP) can lead to more creative problem solving on vulnerability to climate change as they “participate in the material constitution of expert practices” and in “knowledge production and epistemic politics that make adaptation imaginable” (p.263). For instance, participants in the GMRP constantly test and refine their practices in sea defense and find ways to integrate their actions and thinking with mangroves.

Ogden (2011) includes other beings in the creation of the landscape. Her view is on how **landscapes** are formed through the mobility of different beings and the images, real and imaginary, past and present, that they provide (p.75). She also uses “landscape ethnography” to investigate how “becoming human, becoming alligator, becoming mangrove, and so forth are contingent processes”. Their contingency makes them imaginary, but also “specific to particular temporalities, power relations, and geographies (material and imaginary)” (p.28).

Agreeing with Ogden on the importance of relations between humans and other beings in the creation of landscapes, Tsing (2015) comments on landscapes' "unintentional design" as "overlapping world-making activities of many agents, human and not human" (Tsing 2015, p.152). Concepts of the landscape will also come in use in my thesis not only as they include other beings in their creation but because they serve as a reminder and a memory of social reproduction. This is because of what Ogden (2011) mentions as their 'hidden humanity', since they act as "repositories of cultural memory, false memories, mythology, and social identity and as sites of production and reproduction" (p.27).

This understanding of the landscape includes concepts of **becoming** and multiplicity (Deleuze and Guattari 1987), ideas that acknowledge the interdependence and complexities used by various anthropologists to understand sociality as one beyond the human (Lien 2015, Ogden 2011). Haraway (2016), for example, speaks of sympoiesis, meaning "making-with" (p.58) to comment on the complex interactions of becoming, disputing the idea of 'self-organizing' beings, and expands on previous criticisms of the anthropocene, with the term, Chthulucene, describing "ongoing multispecies stories and practices of becoming-with in times that remain at stake, in precarious times, in which the world is not finished and the sky has not fallen—yet" (p.55).

Within speculative anthropology is the call to include other species in discussions on relations of care. **Care** is a broad concept within anthropology, but in this thesis I will draw from Kimmerer's (2013) call for interdependency and how 'ecological consciousness' is carried out through an acknowledgement of reciprocity with the rest of the natural world. Puig de la Bellacasa's dimensions of "labor/work, affect/affection, and ethics/politics" (p.5) By acknowledging the intersections or interdependencies of the different dimensions, Puig de la Bellacasa describes a way to navigate through these "ambivalent terrains of care" in multispecies existence. Important to multispecies care is the concept of **embodiment**, as a way to relate and empathize with the other. Haraway's (2003) engagement with this concept is the idea of "situated knowledge" as a way to think with care.

Of importance to this thesis is the idea that "moving to an understanding of plants as beings of value requires finding ways of supporting imagination and empathy" (Reiko Goto Collins and Timothy Martin Collins in Bastian et al. 2018, p.12). However, Puig de la Bellacasa (2017) also mentions how "to effectively care for a thing we cannot cut it off from the

composition of its political ecology”. I therefore ground myself in the multispecies political ecology perspective, as one that seeks to broaden the subjects valued for their political and social lives to engage with my research question of how human and mangroves interact in Shyamnagar.

Methods

I used a combination of political ecology and multispecies perspectives to make sense of the multispecies entanglements in Shyamnagar. I also kept in mind what Miller describes as sensory ethnobotany in *Plant Kin* (2019) for its focus “on the transformations and continuities of human and plant lived experiences and their relationships over time” (p.5), including how their relationships are “valued or devalued” along different spheres (political, economic and cultural) (p.6).

With this multispecies and specifically ethnobotany perspective, theories on plant communication need to also be considered. Pitt (2017) offers a view on ethnography that argues can deal with this view on plants. Pitt uses Ingold’s and Pink’s ideas of co-production of knowledge, specially the idea of learning and apprenticeship, to place “participatory action research in dialogue with attempts to know plants” and how this can “redress plants’ marginalization” (p.92). This also follows ideas like Marder’s (2013) *Plant Thinking* that regards the more-than-human in a way that *being with* plants can instruct us with knowledge on *plant being*.

Hartigan’s (2017) *How to Interview a Plant* chapter draws from aforementioned ethnobotanists like Marder and Chamovitz, Natasha Myers’ ‘planthropocene’, but also from Craig Holdrege’s model of ‘exact sensorial imagination’ (p.254) when discussing how to interview non-humans during his work on botanical gardens in Spain. He outlines several steps in his chapter, from reading the literature on plant communication, finding a location to observe plants, reflecting on positionality regarding the non-human, describing what one sees with a big focus on drawing as a tool, theorizing through such descriptions, walking with an expert to gain knowledge, making connections between what is learnt and observed, contextualizing the knowledge, and finally, analyzing. Through these steps, Hartigan (2017) conducts ethnographic research on plants as it “helps us to understand its position in social spaces” (p.270). He emphasizes Holdrege’s stance on “looking and describing” as it fits well into ethnographic observation (p.262).

This framework emphasizes the need to understand the complex interactions between humans and non-human species, and to recognize the diverse ways in which different species are valued and used in specific contexts. In the context of mangrove-human entanglements in Shyamnagar, this multispecies political ecology will involve examining the political and social processes that shape the relationships between humans and mangroves, while also recognizing the ecological and social significance of mangroves as a vital part of the larger multispecies environment.

When accessing the site, I first relied on secondary research to understand the context and background of coastal Bangladesh, as well as interviews with different experts to choose my field site based on where these afforestation initiatives were most prominent as well as the areas that according to these climate and development experts are seen as vulnerable according to the resilience rhetoric used. At first, I tagged along with a grassroots organization as the general sentiment of the people I had been asking advice from was that it would be difficult for me to travel to Shyamnagar. Once there, I relied on participatory observation, interviews, elicitation (the use of sensory material like pictures or recording, useful during interviews to encourage participants to talk about them (Pink 2009)), and sensory methods. I used a snowball technique, and most interviews were informal and unstructured, with the exception of a few more structured ones, once I got to know individuals more personally, and when encountering more formal settings, such as at the university.

I engaged in ‘deep hanging out’ at the two sites by living in the locality and was able to perform the same lifestyles (to the best of my ability) as the people in the community, including having various cups of tea a day at different tea houses, which is where people hang out and talk about their days. In Shyamnagar, I lived next to a mangrove nursery and across a small river from the Sundarban forest, so I was able to sensorily experience what the people in the community experience every day. I also visited various mangrove plantation sites and talked to the individuals involved in its care. In Dacope, I lived in the Banojibi campus and a member of the community introduced me to people involved with mangrove plantation, allowing me to observe and talk about what was going on at the site.

One of my main methods was walking or movement for sharing and embodying knowledge. This was used during most of the interviews. Through this practice, I was able to experience an understanding of the knowledge they provided through ‘co-imagining’. For

example, walking with women at dusk to collect water in the village, I was able to understand more of their day and even share more private moments through the journey. Walking also allowed for the interlocutor to take charge of an interview, and many would choose to walk along the river, showing me their boats, their family homes and telling me stories from their childhood, as memories came to mind based on physical spaces. An example is when one of my interlocutors walked me by her father's home, which prompted her to tell me about her childhood and what had changed in the village since then.

Walking also allowed for people to choose to come talk to me, which meant that I did not have to always feel intrusive. The walk became my daily routine, as I had to walk by the hamlet to get to the bazaar to be able to take transportation anywhere else, which meant that most people recognized me and would engage in conversation immediately.

In mangrove nurseries, the movement of women's bodies while weeding allowed for a space for story telling and natural pauses for both parties to think. It also allowed me to get close to the mangrove seedling as the women told me about it. An example is from one of the first times I spent time in a nursery. I asked the women how they care for the seedlings. They were able to show me instead of describing how they carefully weed and move throughout the nursery.

I thought I would use a lot more elicited material, but it was mostly a method used when talking to people from the different organizations and projects, not with people from the community. This is because most of the sensory material I would want to discuss based on was present without a recording or picture. For example, the mangroves were always seen, heard and could be touched, smelled, etc. So it was only when I was at an office or talking to someone via email or phone, that many would choose to send me photographs and videos of mangrove-related activities to illustrate their point. Given a second chance, I would like to have invested in a camera that some of the interlocutors could have taken with them when going into the Sundarbans. A tool that I did not anticipate I would use as much, but became really handy was google maps to see how much the geography changes in the area, but also to have a better sense of how communities and the mangrove plantations are organized in the area.

Finally, secondary research was important to my research. It was crucial in understanding the history of mangroves and conservation as well as the current discourse in Bangladesh in order to conduct my research. I also needed to learn about mangroves' ecology, as it was an important aspect of sensory ethnobotany, which I tried to use during my fieldwork. This was a

challenge as ethnobotany includes the way plants grow, move and communicate, which was hard to understand and measure in such a short period of time. I tried to spend time with the mangroves to get to know them. An example of how I recorded this was through drawing and description of changes I noticed. My drawings were not perfect, but figure 4, below is an example of my first attempt to know the mangrove seedlings at the nursery.

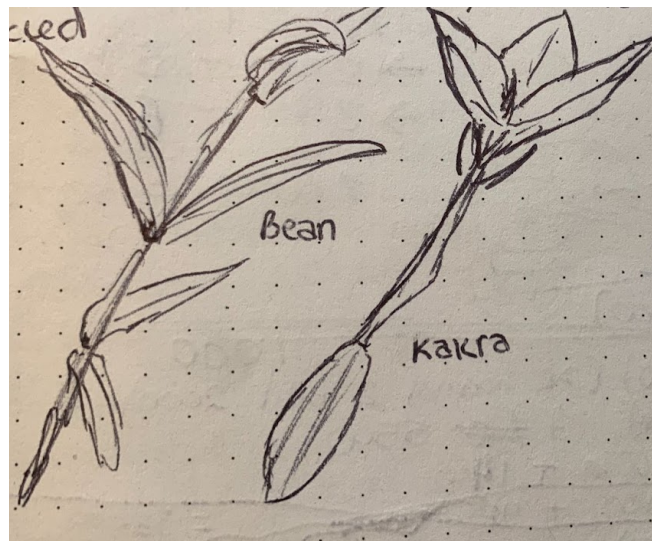


Figure 6: Drawing Baen and Kakra seedlings

Ethics

The first time I visited Shyamnagar, I went along with one of the grassroot organizations that has a cyclone shelter and implements projects in the area. They had an event that meant that many people from the community gathered at the cyclone shelter, along with local politicians. During that meeting, I was able to present myself and inform them of who I was and my purpose for being there. Although I always asked for verbal consent from the people I talked to and was clear of my purpose if anyone asked, it was also helpful to have had that initial presentation when everyone was gathered.

One of the biggest challenges was when situating myself at the field site. Many people asked why I had chosen Bangladesh and even more asked about my parents. This is because it is not common for women in Bangladesh to travel unaccompanied and even more for a woman my age not to be married. A great part of my choice of the context and reason for the accessibility to the field is that my dad works in the development sector. I found myself in the situation that I

did not want to lie to anyone, but I also did not want my role as a researcher to be blurred by the information that my dad works in development. Although he is not personally involved in any of the projects in the area, he represents the office so even though I know that my connection to him does not influence my research, people knowing my connection to him might. I was lucky that no one seemed to treat me differently because of it at the field site level, but I do need to acknowledge how many doors it did open for me at the macro level in terms of getting advice, help and connections when accessing the field.

Finally, one more challenge arose from the language barrier. Although I tried my best to learn Bengali, it was nowhere near enough to conduct research in, which meant I always had to travel with an interpreter. In order to keep the people we interviewed safe, they all signed an anonymity agreement, and we agreed that it was important to translate exactly what I said and keep themselves at a distance. But because most of my data was dependent on the interpreter's translation, my analysis was influenced by that, which means that what I noticed and learned from people is probably different from what a local student might reproduce. This is even more exacerbated by the fact that people in the area are very used to foreigners coming to do research and to implement developmental projects, so some conversations might have been influenced by already thought-through scripts. However, working with interpreters was also an asset as they could guide me through the context, such as of how a woman my age should behave in society. Additionally, having someone to bounce off ideas with at the end of the day was also helpful.

Chapter 1: Introducing New Mangrove-Human Contact Zones

This first chapter will discuss the global forces that have contributed to the creation of new mangrove-human contact zones in Shyamnagar. These include a global resilience narrative shaped by various international institutions and dictated by development and market integration ideals that brought a demand for fisheries in the area, and anthropocentric geological changes that keep people from alternative livelihoods. Accordingly, I will first outline the resilience discourse as well as the government and NGO actors present at the site, and discuss how the narrative enabled those actors to introduce or change contact zones between the humans and the mangroves in the community.

The Resilience Narrative

This thesis discusses different ways in which humans and mangroves meet in a coastal site in Bangladesh. My research stemmed from an interest in how the global resilience discourse on the importance of community-based nature-based solutions (Cb&NbS) actually plays out at said community level. Although my focus was not on researching the resilience discourse in Shyamnagar, it is an important starting point to understand key human-mangrove junctions. There is a global discourse on resilience that encompasses Cb&NbS and relates to ecosystem services, conservation and restoration, and sustainable development. Known multilateral actors such as the United Nations, the World Bank, and the International Union for Conservation of Nature (IUCN) contribute to the creation of said narrative and help legitimize its implementation along with other actors from national governments, academia, international NGOs and grassroots organizations.

According to Pauleit et al's chapter, *Nature-based Solutions and Climate Change - Four Shades of Green* (2017), the term nature-based solutions first appeared as a concept in the late 2000s, through an effort by the World Bank and the IUCN to emphasize biodiversity conservation as crucial to climate change mitigation and adaptation (p.31). The European Commission's definition gives a summary of NbS as "actions which are inspired by, supported by or copied from nature" (p.32), but its connotation is more complex. Pauleit et al (2017) provide a summary of the main concepts that encompass this approach. Firstly, they mention it is broadly aligned with the concept of sustainable development, as it aims to further biodiversity conservation and ecosystem services while creating economic growth. Secondly, it says it embraces "participatory approaches to co-design, co-creation and co-management" of various "stakeholders" (p.33) rather than purely top-bottom implementations. This is the community part of community-based solutions. Lastly, it is said to be "action-oriented" (p.33). The 'action' connoting work at the community level rather than at policy level³.

Certain concepts used by these institutions to define NbS form part of a larger narrative, such as ecosystem services. According to the Stockholm Resilience Center (SRC), ecosystem services include "water and air purification, flood control, erosion control, generation of fertile soils, detoxification of wastes, resistance to climate and other environmental changes, pollination, and aesthetic and cultural benefits that derive from nature" (SRC). Made popular by

³ However, different actors still highlight regulatory frameworks to monitor and evaluate the scalability of projects.

the Millennium Ecosystem Assessment (MA) and similar to NbS, the term, ecosystem services, was also aimed at highlighting the importance of biodiversity conservation (Gomez-Baggethun et al. 2010 in Pauleit et al. 2017, p. 37) as it outlines the benefits of ecosystems to humans. This has given space for discussions on their valuation and grouping. The MA Ecosystems and Human Well-being Framework (2005) provided the following categories: Provisioning Services, which are products obtained from ecosystems such as food; Regulating Services, which are benefits from the regulations of ecosystem processes such as erosion control; Cultural Services, which are intangible benefits through spiritual, aesthetic and other experiences such as recreation; and Supporting Services, which are those necessary for all the other services and indirectly impact humans. Erosion control could also be a supporting service as the process impacts humans indirectly and can occur over a long period of time, as well as atmospheric oxygen production (p.56-60). Ecosystem based adaptation (EbA) is also a term used similar to NbS.

There is also a strong connection between NbS to climate change mitigation and adaptation, and the concept of sustainable development. The World Bank's article (2022), *What You Need to Know About Nature-Based Solutions to Climate Change*, for example, frames the results from NbS through the valuation of ecosystem services provided, and furthermore frames the loss of such ecosystem services as a "developmental issue". According to the United Nations Development Programme (UNDP), which is the leading institution framing sustainable development, sustainable development is defined by the achievement of Agenda 2030 and its 17 Sustainable Development Goals (SDGs), which were adopted in 2015 as a call to "end poverty, protect the planet, and ensure that by 2030". Goal 11 stands out as it aims to "make cities and human settlements inclusive, safe, resilient and sustainable". This portrays how terms such as resilience, sustainability, and sustainable development are used interchangeably to denote a state of being in which people's standard of living is increasing, the economy is growing, and nature is protected to provide wellbeing to humans. Cb&NbS therefore being in focus as a means to this end.

In many of these definitions, mangroves are used as an example. WWF (2020), for example, involves mangroves into their example of NbS for addressing the climate crisis.

“Take mangroves, for example. Mangrove forests along coastlines are not only important for sustaining fisheries but also for providing protective natural barriers against erosion and strong storms. They filter water, provide valuable timber and food resources to coastal communities, and can store huge amounts of carbon. Conserving and restoring these ecosystems benefits people in coastal communities by reducing vulnerabilities and increasing their resilience to the effects of climate change”.

In this excerpt, WWF outlines some ecosystem services and how they benefit local communities, as well as how they reduce their vulnerability and increase their resilience. It is through these buzzwords that mangroves are spoken about by different actors in Shyamnagar, which is why Lindström et al (2016) warn about the detriment of ‘fast narratives’ to actually novel engagements, such as envisioning an alternative to this imaginary.

Humans, however, are still at the center of this narrative. One does not protect or restore ecosystems for its intrinsic value, but for its use to society, and as a reasonable action taken to adapt to the causes of what has been termed the anthropocene. Just as anthropologists and other academics (Haraway et al 2016; Barca 2020), have questioned the term ‘anthropocene’ for not taking into account the unequal costs and responsibilities, and reproductive and productive forces involved in environmental degradation, this resilience narrative should also be questioned for how it deals with these power asymmetries. I will therefore take this criticism and apply it to the narrative of NbS in Shyamnagar.

Shyamnagar and Resilience through NbS

As Camelia Dewan (2021) points out in her work, *Misreading the Climate Delta*, “the policy theory in Bangladeshi climate change projects tends to be climate reductive: the country will drown because of rising sea levels caused by global warming” (p.105). Not only are the types of projects brought to the area an effect of fast narratives of Bangladesh as a vulnerable country, but also of fast narratives of NbS reducing this vulnerability. I already encountered this on the flight from Stockholm to Dhaka. I was engaged in conversation with a man sitting next to me from northern Bangladesh. He showed me on the airplane map where his home was and then asked me where I was going. I told him somewhere close to the Sundarbans. He immediately mentioned how important the Sundarbans are and that he had always wanted to visit. He told me about a

known saying, *“If the Sundarbans survive, Bangladesh survives”*. This mantra implies a reliance on the mangroves for the survival of all Bangladesh. I also encountered the fast narrative of vulnerability in coastal Bangladesh, when I told people I met in Dhaka that I would be doing research in Shyamnagar. Their reaction was always to tell me how beautiful this area was, but then proceeded to question my decision, asking me to reconsider due to the marginality of the site. *“There is nothing there”*, *“It is the most vulnerable place”*, *“Are you sure you want to go alone?”*. People were even more perplexed by the amount of time I was going to spend in Shyamnagar.

Although I encountered these types of narratives before even reaching the site, actors like UNDP, USAID, the government of Bangladesh, universities, a number of international and grassroots organizations, and national and international businesses all have a hand in this discourse. Like highlighted by Paprocki (2018), “as development practitioners imagine Bangladesh’s climate dystopia and pursue climate action on the basis of it, they produce not only a regime of adaptation in Bangladesh but also a global adaptation regime that responds to dystopic visions of a climate-changed future” (p.260). Amit, the founder of one prominent grassroots in the area, was one example of an individual that believed in the benefit of protecting the Sundarbans as well as planting mangroves, but as all organizations, donors and other support is needed to implement the projects. He mentioned the project grant application process as one with intricate diction and ‘buzzwords’ that allowed for certain visions of his to become realities.

I noticed it myself. I was sent various project proposals, and was constantly involved and exposed to the saturation of the words, “resilience”, “vulnerability”, “adaptability”, “conservation”, “stakeholders” etc. The following excerpt from Amit’s organization’s website is a typical example of the way projects are described in the area. The “overall goal of the project is to promote healthy mangroves, thriving coastal communities, and robust aquaculture value chains in the Sundarbans”. The main projects in the area that involve the mangrove come in the form of training and facilitation of Sundarban conservation, afforestation initiatives with the purpose of forming a coastal green belt, and as integrated mangrove aquaculture (IMA) initiatives. Plantations involve seed collection, nursery care, plantation, and care for the plantation. These are activities that according to many of the informants were brought by the projects, which point to a new way of encountering the mangrove at this site.

I will first discuss how NGO's use of mangroves through the resilience narrative has played out in Shymanagar. Bisha was another grassroot founder passionate for the mangrove and for improving the livelihood of the community. He would randomly call me or message me whenever he thought of something new to share with me about his organization. He mentioned his old age at various times and how glad he was that young people 'like me' were *"still interested in the symbiosis between humans and nature"*. I find it important to mention that individual intention can come from a place of care and philanthropy, but the global discourse still paves the way in which these passions are expressed.

When these organizations implement projects under the NbS title, it inherently assumes that ecosystem services will lead to sustainable development. By the narrative's standard, it is effective in improving livelihoods, but from a political ecology perspective, needs to be questioned as specific power dynamics come into play through these initiatives. It frames traditional and local activities as ⁴unsustainable. As Robbins (2020) highlights, the narrative's use of "sustainability," "community," and "nature", hinders the "local systems of livelihood, production, and socio-political organization" (p.19). This global and national drive to preserve the environment also helps legitimize the narrative.

The government is involved in this legitimization as both conservation and afforestation form part of the national strategy to tackle climate change (GOB 2022). From a political ecology perspective, the government can use this narrative to control. Control through this narrative is viewed in terms of the laws and regulations for the conservation and safe-guarding of the Sundarbans. These prohibit and regulate different types of forest activity. It is illegal to collect timber from the Sundarbans, and non-timber related activities such as fishing and honey collecting are regulated. To enter the forest one must have access to a boat, and then apply for a boat license (BLC). For this, a character certificate, a testimonial from community leaders and an ID card is needed. The BLC costs 10 taka, which is around 10 cents, per year. Then, permission needs to be requested from the Forest Department for the specific week or weeks that one will enter the forest. The cost of entering the forest is 15 taka per week plus a 15% tax. The person needs to pay one more time according to what resources are taken from the forest. For example,

⁴ Although progress has been made with the latest biodiversity COP, Target 22 calling for, " full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge..." (CBD 2022).

if people go for crab (kakra), they would pay 12 taka per kg plus 15% tax based on how much one sells it for. This sum differs according to what is caught. There are also regulations on when and where one can go. The Sundarbans is divided into a sanctuary area, where no one can take anything from, and a reserve, where people can take resources depending on the time of year. For example, honey collectors are only allowed to go to the forest in april-may.

This is enforced by forest rangers, who are arguably the furthest from the forest, while the people impacted by these laws and regulations are the most entangled with the forest. This is because these government agents rotate duty stations. The systematic rotation means that they have acquired a different relationship and knowledge of the forests than the local residents, and are there to implement the government's ideal of conservation disregarding the relationships that already exist, such as the spiritual tie to the goddess of the forest, Banobibi, and traditional forms of subsistence. This 'intercultural conflict' as emphasized by Kiik (2019), comments on what is regarded as reality and how nature is defined. This commentary is also brought by Escobar (1999), as he mentions the separation between 'nature' and 'man' as a view "brought about by capitalism and modernity (Escobar 1999, p.1). From this perspective, the view of reality from the ranger's perspective and the local resident's perspective differs, with the rangers imposing modernity into a reality that relates to nature in a different way. These realities can morph and change through history as modernity and capitalism become more present in Shyamnagar. An example comes from the origin of afforestation initiatives.

Afforestation on the embankment is generally accepted by the community. Women have the opportunity to enter the workforce as day laborers at the nursery and others are able to apply for the position of eco-guards, which means that they are in charge of making sure that the plantation is safe from grazing animals and other activities that may harm the plantation for the first five years. Although the plantation itself is voluntary, the community is still willing to partake as they see, and sometimes imagine, the benefit of a buffer zone from natural hazards. This imagination of a better future through the mangrove will be discussed in the second chapter, the important point right now is that people believe in what the project promises as well as accept the responsibility of partaking in its care. This acceptance of responsibility is framed by Robbins (2020) as the "environmental subjects and identity thesis". This is the idea that mentalities are shaped into caring for the environment rather than vice versa. The way that actors have become involved in afforestation initiatives in the area, according to them, is through the

education and facilitation of residents into responsibility over their environment, and their community.

While most informants attribute this knowledge about the benefits of the mangrove plantation to the organizations in the area, the idea of community organization was not always attributed to them. According to one informant, there was a collective mentality of taking care of polders and embankments that was lost due to the combination of the introduction of shrimp farms and a government takeover. In summary, following multiple cyclones that flooded rice paddies with salt water, and an increased global demand for shrimp, shrimp farming became more popular in coastal Bangladesh in the 70s, with its development being framed as a modernization wave, which encouraged a shift from rice cultivation and a loss of the collective. As opposed to rice paddies, which are labor intensive and provide a need for many hands and even teamwork, the shrimp industry only needs 3-4 people for weeding, catching the shrimp, and then sending it off to the market. This individualism brought on by capitalism and a culture of modernisation hindered community organization. At the same time, the government began taking more responsibility through the social foresters department in the plantation sector, driven by the resilience narrative allowing for this allocation of governmental resources to take place and for organizations to start similar projects. This little piece of remembered history, also mentioned in secondary research (Amin and Shammin 2021), shines light on how the introduction of global forces hindered collective processes to begin with.

Furthermore, although the forest rangers are a more clear example of how the forest dependent's livelihoods are controlled through the control over forest resources, the social forest department also exercises a form of control, as they own the land that most afforestation initiatives depend on. As with many cases of modernization, an unequal distribution of land is one of the biggest contributing factors of vulnerability in Shyamnagar. This land ownership allows for control over the community in multiple ways. Most importantly, it allows for the control of resources and therefore controls how the community interacts with the planted mangroves. As I talked to different residents, I found that most people were convinced that the same rules and regulations of the Sundarbans applied to the planted forest, but most of the afforestation initiatives by NGOs and grassroots frame the planted forest as an exception to these strict rules. The following section will discuss the unequal rights to planted mangroves in Shyamnagar.

NbS - but on whose terms?

Afforestation is one of the responsibilities undertaken by the Social Foresters Department. This department and the NGOs appear to have a good relationship where the afforestation projects are facilitated, but a honey collector and community leader shone light on the asymmetrical right to the plantation of mangroves in the area. Abeer is part of a local committee made up of men who are fishermen, non-timber wood product collectors, and honey collectors (*Jele, Bowali, Mowali Shomiti*). The committee includes about 160 members from 6 unions and 16 villages. Each member pays a monthly fee that is then distributed when a member needs it. This could come in the form of financial support when, for example, a boat needs repair, and they also plant mangroves. They received donor funding to start the afforestation process, but it took six months for them to obtain permission to use land to plant. Up until now, the process described by NGOs that have afforestation projects in Shyamnagar have been similar, and if they have had to lease out land from the government to plant, it has been with little trouble.

However, Abeer explained the tedious and long process that they were met with when deciding to plant mangroves. He mentioned that they asked for the permission from the corresponding government institutions to plant, but were denied based on the premise that it was the government's responsibility to plant the mangroves and they would therefore carry out this job. Abeer continued that they all knew this was not going to get done, so they proceeded to engage in a six months appeal process. The outcome was that they would be able to plant mangroves on the land, if they leased it. Furthermore, the committee can decide if there is a need to cut down a tree in the future, for which the center would get 60% of the profit, the government 20% and the rest allocated to the corresponding institution.

This account provides an insight on how the resilience narrative can obscure the asymmetrical responsibility and access to mangrove plantation present in Shyamnagar. This misplaced focus of responsibility, and the depoliticization that occurs at these sites is a criticism that many, including Barrios (2016), provide. It is easy for NGOs to operate based on what the community should do in order to be resilient and planting on 'government land' to achieve this, while focusing on individuals' responsibility to adapt rather than on a systemic change, disregarding the power dynamics and history of land ownership and land rights that hinder the community from executing the same initiatives as the NGOs.

The narrative can also devalue other histories, and brings an interesting question of what is worth conserving. The historical degradation of the Sundarbans attributed to human activities led to human activities being hindered in the name of conservation. Other activities that also led to changes in ecosystems and in traditional livelihoods, however, have not been regulated, such as salinity intrusion. Salt intrusion led to the extinction of freshwater mangroves (Rahman 2020) and as an interview with Jidan Munda revealed, salt from shrimp fisheries, brought on by market demand, led to the extinction of rodents and snails that form the basis of the traditional Munda diet (Naushad 2015). This account emphasizes the priorities of the government. Allowing for global demand of shrimp and crab to continue contributing to salt intrusion in the area, affecting agriculture opportunities as well as traditional livelihoods of individuals, while on the other hand protecting the Sundarbans by placing the responsibility on these traditional livelihoods due to another type of global demand that the resilience narrative brings; that of healthy ecosystems that help combat climate change, which is not driven by individuals in Shyamnagar.

Barrios (2016) highlights this uneven distribution of the effect of geological changes “along lines of race, class, gender, and ethnicity” that are exacerbated by social and developmental policies. In Shyamnagar, these allow the government to control forest dweller’s activities, while at a more global scale benefiting, through fisheries, from other forms of degradation, such as salt intrusion and the very relationship people have to the Sundarbans that they try to hinder. Paprocki (2018) mentions that “the adaptation regime is built on a vision of development in which urbanization and export-led growth are both desirable and inevitable”. In Shyamnagar this was evident through the shrimp and crab industry.

Using the mangrove to get ahead

“If resilience is the capacity of adaptation on the part of indigenous coastal communities to the hazards created by environmentally destructive practices of capitalist industrialization, then the concept of resilience does not mitigate disasters but serves as a mechanism for the maintenance of the “system” that creates them” (Barrios 2016, p.31).

Another intersection between humans and mangroves occurs at integrated mangrove aquaculture (IMA) projects. There is one crab hatchery that is particularly interesting. It is a developmental project in the form of a hatchery that opened my eyes to how the Sundarbans are involved in society even from the other side of the river.

“This process is natural”, is the answer Mostakim gave when asked about his change of jobs from one soft shell crab hatchery to the next. Mostakim is in charge of one section of the operation made up of the hatching pond, the youth pond and the waiting pond (these are not the official names). The hatching pond is where 20 mothers were kept to hatch babies that were then transferred into another pond until they got old enough to get transferred into individual cages that are then continuously pulled in rows, one by one, by woman day laborers. The demand is specifically for soft shell crab, which means that this ongoing pulling and checking is needed in order to freeze the crab at the soft-shell window. If the window is missed, the shell will be hardened again and will not be useful for the market. It would then become a *“grade 2 or 3 product”*. Only grade 1 products are sold in the Japanese, Chinese and South Korean market according to Mostakim, which is where the money is.

What makes this process ‘natural’, he explained, is that instead of relying on medicine and other methods, the health and productivity of the crab is instead increased through an ‘integrated mangrove approach’. I call this *pairing the kakra*. For this concept to make sense it is important to note that *Kakra* is the Bengali word for both crab and the *Bruguiera gymnorrhiza* mangrove species. Essentially, by planting mangroves, an oxygen and nutrient rich environment is achieved in which the crab thrives in, *“just like in the Sundarbans”*, according to Mostakim. I took a look around and recognized the little Baen and Kakra mangrove seedling growing around the ponds. Interestingly, these two namesakes are being paired up in the name of productivity. *Natural, just like the forest*, except not really. McSherry et al. (2023) found that “the biophysical conditions required for most of the services provided by intact mangroves are not present in IMA systems due to their fragmented nature”. In this case, the kakra crab and kakra mangrove are not living in symbiosis as is known in the forest, with the mangrove providing a rich ecosystem.

Furthermore, the IMA system does not follow the natural cycle of a crab's life. One mother can hatch many times, except they do not. At least not in the hatchery. Since the global soft-shell crab market awaits, they do not wait for the 3-4 month hatching cycle of crabs, instead they *“release the crab back into the forest”* and fish for crabs that are about to hatch. The fast

narratives are once more present in this IMA initiative as the framing of it as a sustainable project allows for its implementation despite consequences and interferences to the natural environment, as well as a reliance on forest activities that are regulated by the forest department, as the hatchery requires forest dependents (Banojibi) to fish for crab in the Sundarbans.

This is what the development project promises, a more sustainable way to sell crab to the market, but the premise of sustainability lying in the hands of export-led growth is another way that the global market intrudes in Shyamnagar. This crab hatchery tries to tackle harmful practices on the environment by farming crab instead of selling crab directly from the Sundarbans, as well as by integrating mangroves into their aquaculture to provide for a healthy productive environment instead of relying on harmful chemicals. However, it still operates within the current imaginary. Bohland et al. (2019) mention the importance of separating the imagination from imaginaries. Wapner and Elver (2016) offer an alternative to the current resilience narrative; ‘radical resilience’. Could a more radical imagination of resilience help achieve a more just society that involves a multispecies perspective? Currently, the crab hatchery reproduces the power asymmetries that have already been in place instead of challenging them. The concept of radical sustainability comes from Wapner & Elver’ (2016) thesis. Instead of focusing on technology or adaptation, one should focus on transformations of the current operating system.

Although the aim of the crab hatchery is to reduce environmental degradation and increase jobs, the ones who are truly gaining are the companies who sell to the international market and the organizations who partner up to implement projects. Firstly, this international market benefits from the labor and knowledge of the forest dependents that both the global discourse and national government are trying to hinder. Secondly, it accepts the ‘new norm’ of salinity in the area, as they dive into brackish water aquaculture. The IMA project does not try to bounce back to a time when people could participate in agriculture for subsistence, but instead reinforces the system that facilitates salinity intrusion and contributes to the dispossession of agrarian life (Paprocki 2018, p.966). Lastly, although it provides jobs in the area, it still follows the system of day laborers, which can bring uncertainty, and pays women less than men due to accepted gender roles in society.

My trip to Dacope provided an important point of comparison. As I mentioned in the description of each field site, Shyamnagar and Dacope differ in landscape. The site in Dacope

has more infrastructure, more crops farmed in people's yards, and more rice paddies than fisheries, and fisheries use an integrated mangrove approach (IMA) owned by beneficiaries, while Shyamnagar has more fisheries and IMA projects are more large-scale, like the crab hatchery. An important factor in this comparison is that Dacope faces Mongla, the largest port in Bangladesh. This provides easier access to other markets than Shyamnagar, job opportunities, and easier access to land. Most people I talked to owned their land, which meant that IMA initiatives were done in their own ponds, with NGOs helping facilitate and train people on IMA. A couple who had recently started with IMA told me that the *“productivity of the fishery had increased so much that they were able to open a tea house next to their pond”*, which is where I sat drinking my 5th cup of tea of the day. While the IMA technique proved to improve their livelihoods, I wonder if it will send Dacope down the path of Shyamnagar, with increased fisheries causing extreme salinity intrusion and affecting other forms of subsistence in the area.

Investing in the narrative

“While climate change and the biodiversity crisis are driving demand for NbS, more needs to be done to build confidence in nature-driven solutions. In order to incentivize additional investment, we need a stronger evidence base, more stories, champions, credible analyses, and proof that NbS projects are working—across different landscapes, in different climates, and for different purposes” (IISD).

As seen with the International Institute for Sustainable Development's (IISD) excerpt at the beginning of this section, the narrative asks for more. It wants documentation of these resilience narrative driven initiatives to further legitimize it, growing its demand. As mentioned in the IISD's statement on the demand for NbS, to increase investment, organizations need proof of its effectiveness. This involves academics, the government and the community itself to legitimize it.

Plantation initiatives, experts, researchers and other academics are involved in investigating the best way to ensure the success of the plantation. From seedling selection, to nursery raising and planting itself. The nearest university to this area, for example, produces a significant amount of information on the mangrove and funding is possible because of this. This need is specifically interesting in juxtaposition to what experts on the subject communicated to

me about the reality of the plantation: you can get the same outcome by fencing off an area and letting nature take its course. According to Dipesh, a PhD student, there is actually no need to collect seedlings, or carefully choose them, or create nurseries, but there is a demand for it. If an area is fenced off, seeds that wash up from the Sundarbans can grow in newly accreted land. This method is preferred by some NGOs as well. However, seed collection and nursery raising provide jobs in the area and engage the community, while fostering ecosystem services, which means that it satisfies the narrative's definition of a successful implementation of NbS.

While I was conducting research, COP27 was taking place in Egypt. Bangladesh took a stance in negotiating for 'loss and damage' funding for "vulnerable countries to climate disasters" (UN Climate Change News 2022). Although it is difficult to theorize how this fund will be handled and how the communities most impacted, like my interlocutors in Shyamnagar, will be compensated for damages after cyclones and other weather events, it shifts the narrative in an important way. While the resilience narrative places pressure on 'resilient subjects' with most impacted individuals taking the responsibility of adaptation rather than the world taking charge of systemic change, this fund recognizes the damages and losses that adaptation takes. From the stories told by my interlocutors, some of these losses come in terms of the already entangled lives of humans and mangroves that have been lost due to an adaptation that accepted salinity intrusion in Shyamnagar, rather than trying to fight it. The next chapter will focus on these already entangled lives of humans and mangroves.

Chapter 2: Entanglements Beyond the Global Worldviews

The last chapter focused on new human mangrove entanglements brought by NGOs and facilitated by the resilience narrative, as one based on capitalist and modernisation ideals that place responsibility on the community as 'resilient subjects' that should adapt to reproduced categories of vulnerability, such as by working at 'sustainable' IMA projects, which further dispossesses the agrarian life. In itself, this narrative requires an imagination of what an ideal way to 'adapt' to climate change is. However, as Bohland et. al (2019) reminds us, "imagination is limited if the images it produces only serve to contribute to the strengths of a dominant or governing imaginary" (p.35). The alternative concept of radical resilience was brought up in chapter one as an imagination of resilience outside the set imaginary. In this chapter, I discuss not only how imagination plays a role in anthropology as it allows for new ways of understanding

the world, but also the ways imagination is involved in the already entangled lives of humans and mangroves in Shyamnagar. In turn, opening up the idea of sociality beyond the human (Lien & Palsson 2021, p.4).

Knowing mangroves

Even if mangroves as nature based solutions (NbS) were brought to Shyamnagar through an array of global forces, the way in which these projects developed cannot be placed solely on the human. This thesis aims to echo the merge of a nature-culture that many scholars have called for, which is why this section will focus on how mangroves and people are involved in creating the knowledge on plantation practices.

One day, I was spending time at the nursery where I was staying, wondering how the organization had selected the types of mangrove species to plant. There were a few Sundri seedlings growing in the nursery, and I asked specifically about those. Jagdish, an employee of that organization, mentioned that they were growing them for fun. They do not plant Sundri because it does not thrive, and when it does, it dies after a certain height. This, he says, is something that researchers have been trying to understand for a long time. Sundri is abundant in the Sundarbans, in fact, some say that is where the forest got its name, but this species is mostly concentrated in the East.

I asked my friends at the nursery why they did not plant Sundri, and Jagdish's reaction was to immediately let me know that Banojibi women were not going to know the reasoning behind it. I asked anyway. Their answer to my question was "because Sundri does not grow in the West, only the East". This understanding of why Sundri was not included in the plantation is not what Jagdish would describe as scientific, but comes from their time spent in the Sundarbans, observing. This way of knowing is explained by botanists as how *being* with plants leads to knowledge of plant *being* (Marder 2013). Even individuals that do not have a traditional relationship with the mangrove get involved in this process of learning with the mangrove. This was clear to me through interactions with people from the different organizations involved with mangrove initiatives.

One example is of how people working for NGOs in the office learnt to understand what the mangroves needed by spending time with them when visiting the different projects. Most of the nurseries are built close enough to the embankment, so that they can get water from the

natural tide cycle throughout the day. However, the one in my hamlet is watered by humans. One day, the water reserve tank that is filled during the rainy season ran out (mid me showering, may I add), and it took days to change the pump system to extract water from a nearby pond. In the days after this incident I had met up with three people from another organization who spent the day showing me around their nurseries and plantations. They insisted on dropping me off at home and got curious about this nursery, and the first thing they said was, “*these mangroves are not doing good*”. His work for the organization allowed him to develop an understanding of the seedling’s needs, even though to me they looked the same.

Learning with the mangrove is a concept that Pitt (2017) pushes for. She mentions the importance of apprenticeship, by Pink and Ingold, when co-producing knowledge with plants. I took on this challenge of learning by observing mangroves when conducting research in Shyamnagar by spending time every morning at the nursery, drawing the seedlings, asking questions about them to the nursery workers, and even reading through the mangrove booklet. I made a conscious effort to call different trees I encountered when visiting the plantations by name, and by the time I finally made it into the Sundarban forest, I was happy to recognize the species I had spent the most time with. For example, I recognized Sundri by its leaves, as the top is green but the bottom silver, and it sounds dry when folded, as if it had broken into fragments like leaves during autumn, when in reality it remains intact.

Additionally, I also noticed that the way NbS develop in Shyamnagar, and the success of the initiatives also depends on what is learned with mangroves. In the discourse of the anthropocene, humans are geological agents that have a hierarchical standing over all other beings and hence impact in the way the world looks (Lien & Palsson 2019, p.8). The concept of the mangrove as a geological agent, however, acknowledges that non-humans also have a force. In Vaughn’s (2017) work of mangroves as experts in climate change, she argues that participants in the mangrove restoration projects constantly test and refine their practices in sea defense as they find ways to integrate their actions and thinking *with* mangroves. This means that although mangrove plantations are a way humans are changing their landscape, these initiatives only develop through constant learning and interaction with the mangrove. Afforestation initiatives in Shyamnagar first began with monocultures. This led to pests as there was not enough diversification for the ecosystem to thrive (Saenger and Siddiqi 1993). People learned from this

and started developing the ‘enrichment plantation’, as named by these organizations, which involved the diversification of previous monocultures (Hossain et al. 2020).

Furthermore, it is through this process of integration with what is learnt about the mangroves that the thoughts on the plantation have also developed. The most labor intensive part of these afforestation initiatives is the day that the seedlings are planted by the embankment, and this is the only part that is conducted voluntarily by the community. At one of the plantation sites, 10 men and women came down to check why the eco-guard was opening up the fence. They entered with me all speaking over each other about how much silt had been added since they had planted the mangroves. Even though a forest has not grown yet, the roots are prominent and tricky to walk through. I looked at them for guidance on how to walk through this area. Luckily, the tide was low, so I could see where I was placing my feet. I could see little crabs walking around and my companions picked Keora fruit for me⁵, which is uncommon to see this time of year.

Me: I had Keora gravy last night for dinner. It was delicious, is this something you would usually make?

*Hasan: We can, but will not come to pick fruit here until the forest becomes more abundant. Do you see all of this? *he moves his arms around showing the extent of land we have been walking through* We can already see the benefits of this plantation.*

Experiencing how well these mangroves have stabilized the land in their community has made them accept the benefits of mangrove plantation, but also change their actions accordingly, as they integrate what they have learnt from the plantation process, and decide that it is not worth picking Keora fruit for a while in order to have a safer future from erosion. This imagination of a better future through the mangrove as a barrier portrayed a new developing relationship between mangroves and humans through the co-production of knowledge on NbS. Additionally, as I will discuss in the next section, mangroves are also involved in the co-production of Shyamnagar.

⁵ They gave me the Keora fruit as they were excited that I was able to recognize it by name, but also due to the culture of hospitality in the region.

Co-creating a 'vulnerable coast'

"We have tried several times to plant in this spot, but the mangroves just do not like it here" -

Abdullah, eco-guard

Earlier on in this thesis, I provided a background on the different factors that make coastal Bangladesh 'vulnerable'. These included mostly the impact of human interventions on erosion and accretion, salinity intrusion, and deforestation that exposed the coast to more damages from natural weathering events that have been exacerbated due to climate change. I aim to turn away from the anthropocentric view that only discusses how humans shape landscapes by, for example, historical deforestation of the Sundarbans, and more recently by creating a green barrier when planting mangroves along the coast. Instead, I want to regard how mangroves and other non-humans are not void of influence in the creation of these landscapes, and therefore society.

As Ogden (2011) writes, "landscapes are experienced by bodies in motions" (p.75). The landscape in Shyamnagar, as described previously, is constantly changing and I argue that it is humans together with what Li (2014) terms the "materiality of the milieu" (p.88) that influence it. The history of numerous cyclones and tidal surges, the erosion and accretion processes of the river, embankments and polders that increased salinity intrusion and facilitated the extinction of multiple beings, and deforestation, disease, and afforestation activities since the 60s constantly shifts the landscape.

Furthermore, landscapes are significant in the sense that they tell the story of the communities that shaped them and serve as a reminder and a memory of social reproduction. In Shyamnagar, the landscapes hold memories, the worries of erosion, the hope for a future protected from cyclones and tidal surges, traditions, myths, and much more. For example, when walking with Bhanvi through the hamlet, looking at the river before the Sundarbans, prompted her to tell me about her son. *"Five years ago, my son was taken by the river. He drowned right over there. I prayed to Banobibi to bring him back to me safe, but he is with her now"*. This river forever holds the last memory of her child. Other grief is held in the landscape.

My second day in Dacope I met with a 'beneficiary' of an NGO, Sharmine, at her home. She showed me around her house and took me to the river side. *"I get sad when I come down*

here. I used to have so much land", she pauses for a minute and continues, *"I still do, but it is now over there"*. She pointed at the Sundarbans right in front of us, on the other side of the river. What she is referring to is again this pattern of sedimentation gain and loss, which means that as the river takes land from one side it ends up on the other, or further along. This follows Tsing's (2015) view of how "telling stories of landscape requires getting to know the inhabitants of the landscape, human and not human" (Tsing 2015, p.159). Sharmine's understanding of the erosion and accretion processes leads to the constant reminder of her loss. She still sees what is not there as hers as the other side of the embankment gains sediment. While her attachment to her land remains from afar, it now belongs to the Sundarbans.

The landscape also tells the story of how mangroves inhabit these spaces. In an interview with Abdullah, one of the eco-guards at a plantation, I noticed that there was a bald spot in the planted area. He mentioned that they had tried planting mangroves there multiple times with no success. *"The mangroves just don't like it here"*, he mentioned. This agency in part of the mangroves portrays that even through expert practices and apprenticeship, these beings might just not grow. As mentioned by Ogden (2021), "landscapes are assemblages of collective species, the product of collective desires and the asymmetrical relationships between humans and non-humans" (p.28). From a more anthropocentric perspective, human-non-human asymmetries usually place the human in the position of power over other beings. However, mangroves can also have power over the way people exist in society.

One day I was walking with my friends from the nursery to collect drinking water a little further than the village market. There was a small wooden door to what I assumed was private property. Inside, there was a large old building that looked important, but also abandoned. At the end of the property a family was sitting outside feeding their animals and making tea. Due to this region's culture of hospitality, they invited us over for tea, and after some small chit chat, Syed, the head of the household wanted to show us around the property. It turns out that the building was an old food storage facility, and on the other side of the property used to be a port, where ships could dock in order to take and leave food in this storage to ensure food security during the changing seasons in the area. Syed was a government agent, positioned at this facility by the government to oversee the port and the storage.

Me: What happens at this facility now?

Syed: *Nothing. It is empty. There is no dock for ships to come and therefore no way to bring food to store at the facility.*

Me: *What happened to the port?*

Syed: *Erosion. It took the port away, and the street that ran along the coast, so there is no easy way of accessing this site anymore. It is useless.*

Me: *Could this have been prevented with coastal afforestation?*

Syed: *Mangroves do not grow here, so it was also useless. A decade has passed and the only thing that changes is more erosion.*

Me: *What is your role since the facility closed?*

Syed: *I have no role, there is no work for me here. I am just waiting for the government to transfer me. I cannot quit because I need to support my family, so I just spend my time growing trees to make juice, and waiting for my rotation here to be over.*

A decade of the mangrove's 'unwillingness' to grow by this embankment meant that there was never the possibility to keep this port open, which led to the storage facility shutting down, and for this man's job to become obsolete. He is constantly in this waiting game, not knowing when the government will transfer him, and unwilling to do much about this precarious situation for fear of not being able to support his family anymore. I want to emphasize that it is not only created by this human-mangrove assemblage. The river, for example, becomes a central agent of change through the erosion and accretion process that both hinders and allows mangroves to be planted. The ideal condition for the plantation is on newly accreted land. If the mangroves do not grow on it, there is nothing to stabilize it leading to erosion. It then becomes a waiting game of the river will give sediment again for a second attempt to plant. In order to fully comment on the creation of the landscape I too, like Tsing (2015) calls for, would have to get to know all beings that take part in it, but it did not fit the scope of this thesis.

The scholars that have written about landscapes often refer to concepts of *becoming* as landscapes are made up of more-than-human assemblages. In Shyamnagar, Banobjibi have a complex entanglement to the mangrove. To them, the mangrove is always in a phase of becoming as it enacts barrier through the plantation initiatives, a roof through the use of *Nypa*, a mother through the spirit Banobibi, a provider and protector as they harvest from the

Sundarbans, and it is through these entanglements, that both beings' identities are shaped, or how this scholarship would frame it, how people become Banojibi.

The Banojibi Identity

I am Mowali because the sound of bees has attracted me since childhood” - Abeer.

The image I had of the mangrove has morphed throughout the process of researching and writing this thesis. Before heading to the field, I imagined one much like the picture below. This is how I learned about mangroves at school, and how most representations of them during my pre-field secondary research looked. This image was of a tree with large tangled roots and bright green leaves that protected communities, provided for healthy ecosystems, and sequestered CO₂. However, this imagination quickly morphed into a multiplicity of images of the mangrove, and getting to know the mangrove also changed my perspective as a researcher. This process was part of understanding how people view themselves in relation to the mangrove.

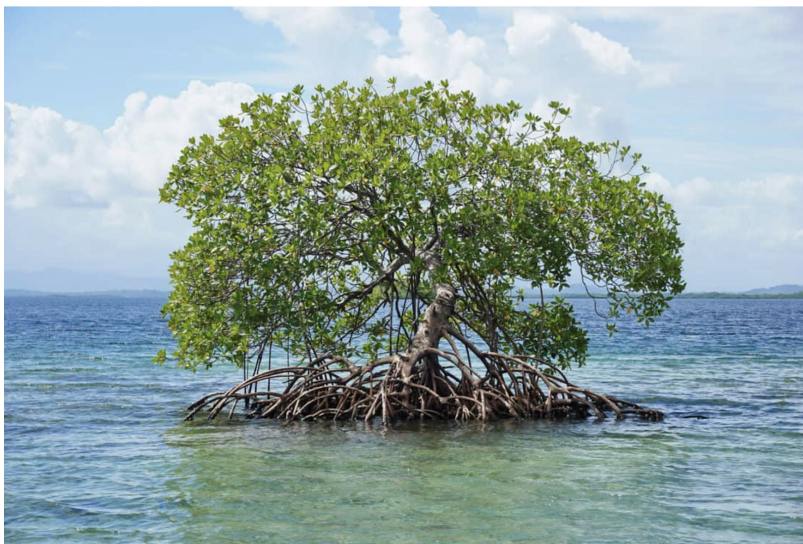


Figure 7: The mangrove (Photograph by Zack DeAngelis, 2022)

The identity of Banojibi is one that was shaped due to a traditional relationship to the forest that still persists. Being Banojibi is about peoples experience, perspective and emotion towards the forest. This acknowledgement of how human identities are shaped by an entanglement to other

beings is what many in the anthropology discipline call for. In Shyamnagar, the Banojibi subjectivity is defined by interactions and experiences. This includes their character being evaluated for the BLC to enter the Sundarbans, collecting and building roofs using Nypa palm, cooking with fuel from mangrove seeds, praying to Banobibi, the mother and goddess of the Sundarbans, fishing, and collecting honey. Banojibi earn a living from harvesting resources in the Sundarbans, and their leisure comes from spending time in the forest. What produces this identity is the proximity and entanglement with the Sundarbans.

This became present during an interview with Abeer, a community leader and honey collector (Mowali), who spends the off-season away from the Sundarbans and makes a living by being a van driver.

After the 1988 cyclone happened, I started going inside the Sundarbans for earning. Before that, I used to do a little work in my local area. At the time I was 7/8 years old. When the 1988 cyclone happened, it was the winter season. That is why most of the paddy lands were destroyed. People had been facing so much scarcity searching for any kind of work here. So we started to go inside the Sundarbans to collect shrimp.

Abeer, however, does not identify as a van driver or a fisher (Jele), rather as Mowali, even when he is not collecting honey. His identity is formed in relation to the bees. He mentioned that “*the sound of bees is like a calling to him*”, and that even when he is driving his van, he is “*missing this feeling, and wanting to collect honey instead*”. Abeer is also part of a Banojibi cooperative. He explained:

The Sundarbans Jele Bowali Mowali Committee is the pillar of our togetherness. The institution is there not only to help each other financially when there are tough times, like helping each other solve problems, like when the forest department changes guidelines and license rates to enter the Sundarbans, but also to inspire other people to plant mangroves by the riverside.

In this sense, the Banojibi subjectivity is not only entangled to the Sundarbans, but to other humans. It brings people together and creates a united, involved community. This allows people to access help that they do not otherwise get from the government. Interestingly, this Banojibi subjectivity is strong in these embankment communities that traditionally worked in the rice paddies, but weak among the Munda community I encountered. I did not meet anyone who identified as Munda who went to the Sundarbans to sell forest products. Instead, as a conversation with Jidan Munda demonstrated, a traditional Munda will look down on selling forest products and will only go into the forest for their own consumption. This aspect of ethics or morality will be discussed later.

While the Banojibi and Munda identities are formed through relations to the Sundarbans, the mangroves too have their ongoing relations to other beings. As Ingold (2011) mentions, “the social world is not exclusively human because ‘stones too have histories, forged in ongoing relations with surroundings that may or may not include human beings and much else besides’” (in Bastian et al. 2018, p. 31)”. The mangrove interacts with other mangroves to create the prominent image of the mangrove forest, and with other beings to create an ecosystem. Being in the nursery, looking at each seedling growing in separate polybags, made me pay attention to the neglected individuality of the mangrove, and made me reflect on their influence independent to humans, something Marder (2013) terms the “vegetal does of beings to their environment” (p.9).

This made me reflect on the image of the mangrove and how it is never valued (by the actors involved in the NbS discourse) as an individual, but as a community, often called a mangal or mangrove forest. The root system will only stabilize the moving sediments when there are many, and it is the forest that creates a healthy ecosystem for fisheries, not the mangrove. So too, the identity of the mangrove is built in relation to others and to each other. The possibility of the mangrove to also *become* a mangrove through its interaction with all other beings in the assemblage is what Deleuze and Guattari (1987) call the “wisdom of plants”. They write, “even when they have roots, there is always an outside where they form a rhizome with something else - with the wind, an animal, human beings...” (p.11).

Imagining a future through mangroves

There is also an emphasis on how the future is envisioned through the mangroves. The resilience narrative dictates that because of the characteristics of the mangrove, using them as a NbS will

bring resilience to a climate vulnerable community. However, this relationship is more complex. For an initiative that has been present in Shyamnagar since the 60s, the mangrove plantations that I encountered were still very new, and it meant people talked about it in a very speculative way, of what will happen in the future. Mangroves planted for integrated mangrove aquaculture (IMA) projects are also at early stages of growth, which also led to speculation of what the mangroves would provide once they were grown.

The afforestation plantation is imagined for five years until the forest is at the capacity to provide what is promised from these projects. This meant that individuals in Shyamnagar spoke about the promises of the afforestation initiatives as something that will happen in the future. Even if people need to wait years before these images become ‘real’, they still choose to stay away from these areas so they can thrive. This view of mangrove initiatives as something distant but still happening today is interesting. This is a definition of imagination that Whitaker (2018) calls “the ability to manifest the inchoate” (p.122). The inchoate being that which has just begun and not fully formed.

The Banojibi campus in Dacop was also a space, mostly imagined. This campus is also a compound where Banojibi can come to process and package their forest products. Jele can come to store their fish and package them, Mowali can process and package their honey, Bowali can even make their own mustard to include in their pickled mangrove fruits. It is still under construction, but spoken about by the NGO and beneficiaries as a project that was already running. This could be due to the community’s involvement in building the campus, and working in its garden. They are therefore exposed to the vision of what the campus is trying to achieve in the future. This type of space, which is experimenting with alternative ways of imagining a ‘resilient’ future, is what Cons (2018) frames a ‘heterodystopia’. The idea of Banojibi being able to access the market through a joint eco-label fits this description of a heterodystopia because under the normative worldview where the government places rules and regulations that try to keep Banojibi from earning from the forest, the Banojibi campus is facilitating these activities as an alternative.

While Cons (2018) discusses development projects in his work, he does not look into the mangrove plantations as an example of these spaces. I argue that there are various factors that fit this category. While the Sundarbans are highly regulated, the norms and regulations are very different on the plantation. Part of what makes these afforestation initiatives attractive to the

individuals in Shyamnagar, is that they promise to increase resources such as the natural fisheries and honey in the area. The experimental management of spaces is imagined to lead to more resilient futures, by offering the relationship and harvesting opportunities that they get from the Sundarbans, while not having to seek permission from the Forest Department. These relationships can be more complex than anticipated, however, given the involvement of humans and mangroves in ways of caring that are affectual but also based on respect and ethics. I will discuss these relationships of care in the next chapter, as well as how new ways of caring have developed with the introduction of NbS in Shyamnagar.

Chapter 3: Persisting Care

In the first two chapters, I discussed how the resilience narrative along with other global forces have introduced NbS projects in the area, which have opened up new spaces to relate to the mangroves in Shyamnagar. I also argued that through traditional ways of relating to the mangrove, and even in these new spaces, the agency of the mangrove is important to consider. The mangrove is involved in this process of landscape, identity building, and therefore in the creation of society in Shyamnagar. This acknowledgement aims to step away from the anthropocentric view of nature as separate from humanity, and therefore something there to use and change by humans. Part of stepping away from this narrative is imagining in a way that steps outside normative imaginaries, and as will be discussed, part of this task of speculative anthropology in multispecies theory, is thinking with care. This final chapter will hence deal with the care relationships that persist and shift with the introduction of NbS.

Dhuko meets Banobibi

I introduced this thesis with an excerpt of the story of Banobibi, the goddess of the Sundarbans. In the origin story of Banobibi, seen in the appendix, nature is portrayed as sensitive, communicative, and intelligent, something that Hall (2019) highlights as important for stepping away from an anthropocentric view on nature, and instead ascribes them as “more than just the silent servants of humanity” (p.xxvi). Below, I present a short part of the story, where nature protects Gulal, a pregnant woman abandoned in the forest by her husband, from giants in the forest:

Gulal woke up and found her husband nowhere. She screamed, "Oh my husband! Where are you?" It became clear to Gulal that her husband had left her. She cried uncontrollably, wondering how her husband could leave her in the jungle while she was seven months pregnant. She embraced all the plants and foliage in the jungle and made up her mind to live there and never go back. She cried a lot, and her sadness affected the life of the forest. The leaves in the jungle comforted her, telling her that they would take care of her.

During the night, she could hear the sounds of giants approaching, calling for food. Feeling scared, Gulal asked for help from the Banyan tree. She begged the tree to save her and her unborn children's lives, stating that the tree resembled her mother. The Banyan tree responded by opening up and taking Gulal inside its trunk. When the giants arrived, they found nothing, but could sense the presence of a human body nearby. The giants touched the tree's body and spent time alongside it. The Banyan tree warned the giants not to come close as it was not feeling well. It advised the giants to stay 100 hand-lengths away from it, as it feared they would detect Gulal's presence. The Banyan tree offered Gulal shelter in its trunk until her babies were born.

Through this myth, the care that nature provides for people is evident. Engaging with the stories and sentiments towards the mangroves and Banobibi required me to imagine what a connection to the Sundarbans as your mother could feel like, and although it was easy for me to understand these feelings, as I have always felt a connection with nature, taking these stories metaphorically was also helpful in understanding the social imaginary in Shyamnagar.

Myths are not simply stories, but rather, structured systems of thought that reveal underlying patterns and meanings (Levi-Strauss 1955). As written by Hall (2019), "the role of myth is to extend the scope of human beings, using stories to force us beyond our own experience, to create a sense of belonging and to show us how to behave in the world" (p.xxii). One way in which the mangrove participates in the social world in Shyamnagar is through this metaphorical space of the myth. As mentioned previously, people in Shyamnagar discuss the mangrove as kin, and it was through a story told to me that I began connecting these myths to the realities of a resident of this hamlet in Shyamnagar. I will use the story of Dhuko as told by Bhanvi, a nursery worker, Banojibi, and excellent storyteller, to comment on how mangroves

fulfill the needs of people otherwise provided by other aspects of society. I want to make a disclaimer that most of the magic of the story was in watching Bhanvi tell it.

Once upon a time, there was a boy named Dukho who lived near the Sundarbans area. He was so unfortunate that he lost his father after one year of his birth. His mom raised him, facing difficulties and financial problems. They did not own property or enough food to live as his mother worked as a day laborer. One day, when Dukho was 9 or 10 years old, his uncle, Dhonumon, came to his mother, touched her feet, and burst into tears, saying, "Oh my Bhabi (sister-in-law), would you please send your child Dukho to the forest with me and cook food while we collect honey to sell?" But Dukho's mother expressed her feelings of fear and distress; if something happened to him, what would she do then? Dhonumona, Dukho's uncle, tried to convince his mother that if Dukho came with them, there would be an opportunity for Dukho to change their fate. He reminded Dukho of how much his mother struggled to raise him working as a day laborer, so Dukho convinced his mother and agreed to go with his uncle to the jungle. His mother said goodbye to her son and told him to ask for help from Bonobibi, if anything bad happened to him.

*"If you (Dukho) sense something evil,
Please remember your mother of the jungle, Bonobibi
Who always helps us when we ask her for help,
and she will protect you from the worst situations."*

So one day, they started their journey towards the jungle. In the jungle, there lived a monster cursed by a priest whose name was Dokhini Roy. He roamed around in the jungle, pretending to be a tiger, and killed innocent people who came into the jungle. As Dhonumona started praying for any way he could collect honey from the jungle and not go back home empty-handed, the Giant, Dukhini Roy, came to his boat and offered to sacrifice Dukho's life in return for honey. Dukho overheard his uncle agree. The following day, Dukho's uncle left him alone in the boat and Dukho understood his fate, but he thought about his mother's words. If he ever faced danger in the jungle, he should call for help from Bonobibi, who was considered the mother of the jungle. So Dukho prayed to God and wept, asking for Bonobibi's help, as if she were his mother.

Bonobibi heard Dukho's cries and appeared on the boat as Dukho's mother, soothing him and telling him not to cry. Dukho was amazed at how his mother had come such a far distance. Bonobibi revealed her face to him and assured him that she would protect him from Dukhi Roy, which she did, allowing Dukho to return to his mother.

Various parallels between this story and Bhanvi's life can be drawn. Bhanvi is a day laborer at the mangrove nursery, and has three children that she is having trouble supporting as they go to school. She is also landless as she lives by the embankment, which means that it is technically government land, and is therefore subject to corrupt 'government agents' that can ask her to pay as much or little as they want, and even evict her. Because her job at the nursery is not enough, she also goes to the Sundarbans to fish with her husband, and in her free time, she turns to the forest for a "*feeling of calmness*", which she gets when sitting in her boat, "*in the presence of Banobibi*".

These sentiments are juxtaposed by her unwillingness to let her children go into the forest. "*They do not know the way of the forest because they go to school*". Bhanvi did not go to school and she instead started going into the Sundarbans to fish with her father from a young age as the rise of shrimp farms left him out of his job at the rice paddies. She recounts how the government has made it harder to be Banojibi. "*When fishing started becoming more regulated, everyone thought that the government had sold the Sundarbans to foreigners*".

The similarities between the story and Bhanvi's worries, remind me of Archambault's (2016) work on the relationship between gardeners and their gardens. Archambault takes the statement, "my plants are my lovers" and views it both literally and metaphorically as a "critique of the politics of love and intimacy" in this context. The recounting of the folklore of Banobibi allowed me to see how "Banobibi is my mother" could also be seen metaphorically in the context of Shymnagar, to criticize the ways they are neglected in society. Shyamnagar, as a coastal town that has suffered from devastating cyclones and tidal surges, is extremely disconnected from the rest of Bangladesh. Agriculture is limited due to salinity intrusion, roads and modes of transportation are limited, many are landless, and have been displaced due to extreme weather events, and due to bureaucracy and corruption they have not been able to receive government aid to recover from these disasters. People, then, turn to the mangrove, as a non-human kin, to provide the care that the government does not.

I looked at how the statement, “Banobibi is my mother” could be taken as a metaphor to understand society in Shyamnagar. But this kinship and family relationship to the mangrove is also literal, and experienced through care. Stemming from my conversation with Jidan Munda, a Munda community leader, I wanted to understand how non-Munda individuals thought about resource harvesting in the Sundarbans. As a reminder, a traditional Munda regards selling forest products as disrespectful to Banobibi. When visiting one of the plantations, an old man approached me and asked if he could show me the shrine to Banobibi that he had outside his home. I took the opportunity to ask him about his relationship to the goddess and what she thought about resource harvesting. “*Doesn’t your mother want to ensure your wellbeing?*” is the answer I got. Yes. “*Well then why would the forest mind us taking what is needed to survive? She helps us get what is needed for our wellbeing*”. His answer portrayed how this kinship was involved with relationships of care.

New identities in Shyamnagar

Multispecies care has enabled individuals in Shyamnagar to develop and reinforce communities, where care for the mangrove has become an integral part of their emotional and social identity. As a result, new subjectivities have emerged, such as identifying as an “eco-guard” or a caretaker of the nursery. The first is through nursery care. In the nursery stage, women’s work is dependent on when the mangroves need to be cared for and their working day will last as long as there are weeds to weed. Whenever I spent time at the nursery talking to these women, I noticed that they did not necessarily have to look down at the seedlings to pick the weeds. Their hands had become accustomed to differentiating weed from mangrove. It also provided spaces for women to come together to chat and catch up. The first day I met them they were deciding who was the ‘bravest’ based on the amount of time they had spent in the Sundarbans. The winner had been fishing for two weeks and had just come back. Every day there was a new topic, sometimes more serious ones. The nursery therefore created a space where they could care for each other by listening and understanding while taking care of the seedlings.

Eco-guard is another identity that arose as the plantation needed to be cared for. At the plantation site, the eco-guards become attached to a physical space for a period of five years, walking up and down the plantation keeping a look out for a broken fence or an infiltrated animal, all day, every day. Their routine became one with the animals at the hamlet, always on

alert to sensing some disturbance in the plantation. And whenever I asked the eco-guard about this work, they always referred to a feeling of honor and pride to be able to look after the plantation. The position of the eco-guard, in turn, was filled through a selection process of who could be trusted in the community, placing the identity of eco-guard in par with an identity of morality.

New day laborer positions also arose for women, as they are needed to care for the crab at the crab hatchery. The introduction of the mangrove in aquaculture has also led to a specific embodiment of other beings (crab) by the women at the crab hatchery. As mentioned in chapter one, the global market has provided a soft-shell crab demand. The legitimization of the crab hatchery through the use of mangroves in the process, has allowed for a new type of human-nature entanglement. Women spend the whole day looking into every box, checking for when the crab's shell becomes soft. Their bodies move in unison, timed by the natural-cycles of the crab. While this is care labor, it does not necessarily signify that it is affectual (Puig de la Bellacasa 2017). There are also processes of care that are based on affect, such as the voluntary work that the community does to care for the mangroves.

Who cares for whom?

“For what worlds is care being done for?” (Puig de la Bellacasa 2017, p.65)

Following Bhanvi's story of Dhuko, I asked her how she knows when she is in the presence of Banobibi. Her response was that Banobibi's presence is sensed. She “*gets goosebumps, hears a ringing, and smells incense*”, and “*everything tastes better in her presence*”. Anthropology literature on care terms these sensory affects, referred to by Haraway (1988) as “situated knowledge”. Within feminist theories, this emotional or affective personal relationships are a way to value the other. Interlocutors like Bhanvi and Abeer often described their relationship to various aspects of the mangrove sensorially and emotionally. As I never entered the Sundarbans with them, I made sure to remember their stories when I finally made it into the Sundarbans with the forest rangers.

Journal entry: I jumped on the boat, excited to finally enter the Sundarbans. Marjia is sitting next to me and I am thankful that her excitement is just as big as mine. Due to the proximity of the Sundarbans to Shyamnagar, as it is just across from a river, I was always in the presence of its beauty, but as we got further from the inhabited side and deeper into the forest, the hamlet disappeared as if it never existed, I was now completely encapsulated by the greenery and sounds that I had not heard in Shyamnagar. Hearing both chirping and cooking of birds and other animals, but also a silence. Silence not in the literal sense, but more silence within me as I was not thinking too much, but rather trying to take it all in, the sun fighting to warm my face as the crisp wind smashed against my face. Later that day I went up a tower at the forest ranger camp and was able to see the forest from above. This was impressive, as I saw no end to the forest, but it also made me overly aware of my presence and disturbance in it, especially on top of the manmade structure. I preferred being at ground level, submerged by the greenery.



Figure 8: The Sundarbans from above (photography by author)

The ranger stopped to inspect a boat and buy a beautiful large fish called Koral. We cooked it at the camp, and although it was probably a combination of great spices and the freshness of the fish, Bhanvi's words resonated with me: *"everything tastes better in the presence of Banobibi"*. This was definitely the best meal I had while there and I made sure to thank Banobibi for it, as I too felt her embrace. However, I acknowledge that as Puig de la Bellacasa (2017) reminds us, it is important to question how care can influence "how we observe and present things" (p.66). Through interactions with my interlocutors I developed care for their experiences and as I was touched by their stories, I took the task of believing their reality. This along with the way I also embraced developing a relationship to the mangroves at the nursery, influenced the way I cared and therefore how I present my research.



Figure 9: The Sundarbans from the boat (photograph by author)

In the last chapter, I presented the Banojibi identity as the product of a relationship to the Sundarbans. I am now going to describe how embodiment helps understand this relationship. Going into the Sundarbans as a honey-collector, for example, requires a specific type of body movement. This is to smoothly walk through the intricate branches and painful crowded roots, while simultaneously looking up in the look out for the hive, but forward so you do not encounter a tiger.

Many of my interlocutors shared with me that, *“if you are not aware of your surroundings in the forest”*, it is easy to fall for the trap of the tiger. *“Let me show you”*, mentioned one of the forest rangers after we were done eating. Ingold (2000) writes that “to show something to somebody is to cause it to be seen or otherwise experienced” (p.21). When in the Sundarbans, the forest rangers made sure I walked through a section of the forest, seen in the picture below. Although I cannot compare it to following, for example Abeer, into the

Sundarbans while he collects honey, I was able to understand how difficult and painful walking through the forest can be.



Figure 10: Author walking through the Sundarbans (photograph by forest ranger).

Care is also seen through ethical and moral relations to the forest. Ingold (2000) engages in a discussion of the difference between hunter, gatherers and cultivators is that the former expect the forest to give unconditionally and the latter expect yields in a reciprocal manner (p.43). This could be compared to the different ways people engage with the mangrove. Banojibi, as mentioned previously, speaks of the forest in an unconditional manner. The Sundarbans is their mother, and therefore is expected to provide for them the way a mother would.

The Munda community, however, engages more reciprocally. They only take what is needed for their survival and adhere to strict rules of respect towards Banobibi. They will not defecate directly on the soil, but will place a barrier in between, they sacrifice a red hen on special occasions, and they do not add any sugar to honey taken from the Sundarbans, as it would be disrespectful to poison it with additives. At the plantation, however, the Banojibi

engage reciprocally, providing care at the multiple stages from seed collection to guarding the forest for 5 years until it can fend for itself. The planted forest gives back in terms of protection and forest resources. Voluntary plantation is also something individuals do affectionately to care for their community.

“As children raised by strawberries, we were probably unaware that the gift of berries was from the fields themselves, not from us. Our gift was time and attention and care and red-stained fingers” (Kimmerer 2013, p.24-25).

Kimmerer’s (2013) quote from *Braiding Sweetgrass* explains this type of care quite beautifully. In the plantation, the gift of protection against cyclones and tidal surges, and the additional resources the community will be able to enjoy as it becomes a forest, comes from mangroves, but there is also a gift provided by the community for the community; the amount of time, attention and care that it takes to plant the mangroves. The planting of the seedlings on newly accreted land often happens for a day or a few days. These sessions are very intense, with a lot of physical labor cutting bamboo, building the fence, being knee deep in soil digging holes to place the seedlings. These enactments of care are seen in the photographs below.



Figure 11: Building the fence (photograph by NGO)



Figure 12: Planting the seedlings (photograph by NGO)

The other face of reciprocity

“It is a terrible punishment to be banished from the web of reciprocity, with no one to share with you and no one for you to care for” (Kimmerer 2013, p.307).

Based on these rules of respect towards the forest, there are also stories of punishment when this multispecies ethics is not abided. For example, the tiger bushes get their name as a tiger can hide well in them and come at you out of nowhere, especially if you have not respected Banobibi, and the sap of Gewa is temporarily blinding. Among the Banojibi and Munda community, the story of the tiger widows speaks of the punishment when this reciprocal contract is broken.

It is believed that a tiger attack signifies that the women (mostly the wives of those killed by tigers) have brought shame to their families. These ‘tiger women’ are hence shunned from society after their husbands have been killed. Kimmerer’s quote in *Braiding Sweetgrass*: “it is a terrible punishment to be banished from the web of reciprocity, with no one to share with you and no one for you to care for” (p.307) portrays this sentiment. I reflect on this quote as I hear the stories of the tiger widow, shunned by society for being believed to be the reason for Banobibi’s punishment.

I brought up this belief with Jidan Munda. His response was that “*only Muslim and Hindu communities get killed by tigers. Because they do not respect the forest*”. Banobibi is a caring mother, but care needs to be reciprocal for all beings in this entanglement to thrive. Puig de la Bellacasa (2017), speaks of care as “concomitant to the continuation of life for many living

beings in more than human entanglements” (p.70). I understand this quote not only through the story of the tiger widows, as respect for the forest is said to save lives, but also through the respect for the plantation as eco-guards devote 5 years of their lives to its care and people stay clear of the area, not picking fruits or conducting themselves in a manner that might harm it, while the plantation then ensures continuation of lives through protection against erosion and weathering events.

Furthermore I understand the quote as extinction of different beings through neglect. Neglect being the lack of care. This neglect is seen through the processes of individualization that came from the shrimp fisheries that dissolved circles of reciprocity and led to the violent intrusion of salt into Shyamangar. This salt intrusion then led to multiple beings being eradicated including the rodents and snails that were traditional Munda forms of subsistence, and freshwater mangroves (Rahman 2020). The neglect of these other beings also portrays the way in which the continuation of life of many beings is dependent on multispecies care.

Conclusion

*On the banks of the seven-faced river, lies the beautiful Sundarbans,
Witness the countless creeks, rivers, and forests, a wonderland,
When evening falls, the gathering of fireflies illuminates the night,
Underneath the sun's rays, a playground for creatures, a sight of delight;
Boatmen come to collect golpata leaves,
Baul singers arrive, offering diverse remedies;
Chitranadi river at Narail, catches fish in its bounty,
See how Jele tame the fierce boal with dexterity;
Banojibi search for the elusive crab,
Accompanied by the guardian of the forest, Banobibi,
In the labyrinth of the Saptakhan,
The divine goddess resides in this jungle span;
This is their life!
I am the Sundarbans!!⁶ - Poem by Wahida Khatun*

This is an excerpt from a poem called *I am Sundarbans*, which describes the Sundarbans as entanglements of Banojibi, Banobibi, and other creatures of the forest. This traditional relation to

⁶ Poem found in Appendix

the mangroves and beautiful description of it juxtaposes that of the resilience narrative, which in turn describes and values the Sundarbans for their biodiversity and carbon sequestration abilities, coastal protection from storms, tidal waves, and cyclones, and significant social, cultural, and economic value for the coastal communities whose livelihoods depend on activities such as fishing, non-timber forest product utilization, and honey collection. Moreover, recognized multilateral institutions, such as the World Bank and UNDP, have emphasized the importance of investing in coastal resilience and implementing nature-based solutions (NbS), including mangrove afforestation initiatives and integrated mangrove aquaculture (IMA) efforts. Therefore introducing new spaces of interaction with the mangrove. This thesis aimed to explore the entanglements between people and mangroves in Shyamnagar and their role in the creation of a 'climate resilient coast' by investigating the relationships that persist, develop, or are lost as NbS and its narratives are introduced in the area.

The first time I encountered mangroves I actually walked right by them, not knowing what it was that I was supposed to be meeting. Six months later, no matter what I had learnt in school about mangroves, and all the research I conducted before starting fieldwork, I can say that ethnobotanists were right; knowledge on plants comes from spending time with them. Not only did fieldwork lead to an understanding of mangroves, but a new perspective on my encounters with plants that have already been part of my life.

In this thesis, I have explored the intricate relationship between mangroves and humans in Shyamnagar. First, I provided an introduction of the global discourses and actors, including NGOs and governmental institutions, that have played a significant role in promoting the resilience narrative in Shyamnagar. I focused on how these narratives, rooted in capitalist and modernist worldviews, have led to the establishment of new zones of interaction between humans and mangroves through NbS projects, providing a critique on NbS as not taking into account underlying power dynamics and histories of dispossession, such as the unequal access to land to plant mangroves, and the acceptance of salinity intrusion by the integrated aquaculture technique that led to the extinction of species and traditional livelihoods.

Secondly, I delved into the nuanced relationships with the forest that transcend the dominant global and organizational discourses by highlighting the agency of the mangrove as an active participant and co-creator of society in Shyamnagar. Blurring the boundaries between humans and nature, and communities and non-humans, like Banobibi, I aimed to challenge the

notion of human exceptionalism and considered the interconnectedness of all beings and their in shaping local landscapes, dynamics and identities.

Finally, I shifted the attention towards exploring the relationships of care between humans and mangroves, aiming to recognize the significance of care and affect in shaping human subjectivities and relationships with the biophysical environment as well as the maintenance of multispecies care even through practices that aim to introduce anthropocentric, capitalistic, market-oriented worldviews.

A pivotal moment arose when discussing the characteristics of mangroves with Dipesh and how they offset the consequences of climate change. He interrupted suddenly and said, “*an important thing to remember is that mangroves are not **salt loving**, they are **salt tolerant***”. This statement clarifies what I, and I believe most people, have been overlooking. We boast about mangrove’s tolerance to salt and wonderful adaptive and mitigating capabilities towards climate change, but like humans, just because one *can* adapt, does not mean one does so justly. It speaks to the pressure that is placed on mangroves in the climate change discourse, but also to the pressure that is placed on communities to adapt.

This thesis therefore calls for the dismantling of narrow conceptions of Nature-based Solutions (NbS) that place pressure on mangroves and humans to solely work towards adaptation. Instead, I call for the acknowledgement of the reciprocity, care, and individual agency of all beings involved in both human-Sundarbans and human-plantation relations. As I have shown with the example of mangroves in this thesis, by embracing a more holistic understanding of the intertwined social and ecological dynamics, we could forge a path towards more inclusive modes of coexistence.

Early in this thesis I outlined the use of plantation as one not based on the anthropology critique of how the plantation as a cash crop has a history of colonization and alienation (Haraway et al. 2016, p.556) of people and the natural environment involved in it. The mangrove-human entanglements in Shyamnagar actually demonstrated another way of relating to the plantation, one more in line with how Lien (2022) writes about entanglements of domination, exploitation and care in the Domus. This thesis therefore also demonstrated that there are other ways related to the plantation, ones that even in the face of capitalism, modernity, unequal land rights, and gender dynamics, are still based on relationships of care. It is here where future research lies, in looking at other engagements with plantations in anthropology.

Appendix:

The origin story of Banobibi, as told by Bhanvi

A wealthy landowner named Ibrahim lived happily with his wife Dulal, but they had no children. One day, Ibrahim expressed his sadness to Dulal about their childlessness and requested her permission to remarry. Dulal agreed, but on the condition that he would forever fulfill all her wishes. Agreeing to the terms, Ibrahim married a woman from a poor family named Gulal. When he went to propose to Gulal's father, he was surprised that a wealthy man like Ibrahim would want to marry his daughter. After the marriage, Gulal faced a lot of hardship from her sister-in-law, but coming from a poor family hindered her from speaking out against her husband's first wife.

The situation worsened when Gulal became pregnant with Ibrahim's child. Dulal feared that if Gulal had a child, she would become Ibrahim's favorite. So, Dulal made a plan to separate her husband from Gulal. She reminded him of his promise to fulfill all her wishes and asked him to leave Gulal in the jungle and never bring her back. Ibrahim was unwilling to abandon his pregnant wife in the jungle and said, "Oh Dulal, how can I leave my Gulal in the jungle when she is five months pregnant? I would rather sacrifice my life than leave Gulal to suffer in the jungle". However, the first wife insisted that it was her only wish that Ibrahim needed to fulfill.

One day, Ibrahim called his second wife and said, "Oh Gulal, it has been a while since you visited your father's house. It's the right time for you to go there so they can take care of you". Gulal disagreed with her husband and said that she couldn't travel at that time because she was feeling sick and tired due to her pregnancy. However, Gulal knew that it was better to go to her father's house because of Ibrahim's first wife's punishments, so she agreed. Ibrahim's eyes filled with tears as he realized that God would never forgive him for casting Gulal away to the jungle.

At that time, Gulal was seven months pregnant, and it was too difficult for a woman to move or travel during this time, so during their journey, Gulal felt very tired and sick and requested her husband to rest in the nearby jungle for a while. With a heart full of love, she wished to lie down and rest her head on her husband's lap for a while. Ibrahim sat under a banyan tree and allowed Gulal to use his legs as her pillow. Gulal fell asleep

on her husband's lap. Ibrahim thought that this would be the best opportunity to leave Gulal in the jungle. So he gathered some leaves and made a pillow beside Gulal's head. Because he felt guilty about leaving his wife in the jungle, he decided to call her name three times before leaving.

He left while calling out "Gulallllllll, Gulallllllll," but he kept his hand over his mouth. He called her name two times, and on the third call, Gulal woke up and found her husband nowhere. She screamed, "Oh my husband! Where are you?" It became clear to Gulal that her husband had left her. She cried uncontrollably, wondering how her husband could leave her in the jungle while she was seven months pregnant. She embraced all the plants and foliage in the jungle and made up her mind to live there and never go back. She cried a lot, and her sadness affected the life of the forest. The leaves in the jungle comforted her, telling her that they would take care of her.

During the night, she could hear the sounds of giants approaching, calling for food. Feeling scared, Gulal asked for help from the Banyan tree. She begged the tree to save her and her unborn children's lives, stating that the tree resembled her mother. The Banyan tree responded by opening up and taking Gulal inside its trunk. When the giants arrived, they found nothing, but could sense the presence of a human body nearby. The giants touched the tree's body and spent time alongside it. The Banyan tree warned the giants not to come close as it was not feeling well. It advised the giants to stay 100 hand-lengths away from it, as it feared they would detect Gulal's presence. The Banyan tree offered Gulal shelter in its trunk until her babies were born. After ten months of pregnancy, Gulal felt labor pains. The Banyan tree calmed her down and advised her to be patient. It then asked her to come out of its trunk and pray to Allah for her safety. So she bowed down and started praying.

Gulal had given birth to twins, a girl and a boy named Bonobibi and Junguli, respectively. Gulal feared how she would be able to feed three mouths if she had trouble feeding just herself, so she carried only her son, Junguli, and left her daughter under the banyan tree. Bonobibi felt sad as her mother had left her, but wished to God for her mother's safety and to save her from all kinds of evils. Gulal roamed around the forest, searching for a way to leave the jungle. Bonobibi grew up without her mother, and the

deer and other animals of the jungle helped to feed her. She drank deer's milk during that time.

After 2-3 years, Ibrahim's conscience weighed too heavily and he left for the forest in the middle of his prayer to save his wife. Upon reaching the jungle, he screamed Gulal's name and asked God if Gulal was alive. He wished to see his wife and children before his death. He entered the deep jungle, continuing to scream Gulal's name, and finally found her, but the banyan tree said that he could not take them with him as he had left them in the jungle. So, he left the forest only with his wife. The forest then offered the two children their own land, saying that Bonobibi and Junguli were the owners of the forest. All around the forest, Bonobibi would be considered their mother, and she would have the power to save any life, especially any child facing danger in the forest, such as giants pretending to be tigers. All the animal life safety would be in her hands, and all the animals and trees would obey Bonobibi.

I am Sundarban, poem by Wahida Khatun

*On the banks of the seven-faced river, lies the beautiful Sundarbans,
Witness the countless creeks, rivers, and forests, a wonderland,
When evening falls, the gathering of fireflies illuminates the night,
Underneath the sun's rays, a playground for creatures, a sight of delight;
Boatmen come to collect golpata leaves,
Baul singers arrive, offering diverse remedies;
Chitranadi river at Narail, catches fish in its bounty,
See how Jele tame the fierce boal with dexterity;
Banojibi search for the elusive crab,
Accompanied by the guardian of the forest, Banobibi,
In the labyrinth of the Saptakhan,
The divine goddess resides in this jungle span;
This is their life!
I am the Sundarbans!!*

...

*From April to the month of July,
The Mowali arrive, oh, my,
For seventeen days they toil,
Hunting in the forest, their life embroiled;*

*Life's struggles reverberate with every breath,
In the intoxication of honey, they journey towards death;
Fearless of the unknown,
Engrossed in work every moment shown;
I am the Sundarbans!*

*Amidst the bustling of daily life,
Where everyone meets like-minds in stride;
In festivals, even the stars join the fray,
On the branches, birds find their way;
Baen, Garan, Geowa trees,
Every kind of bird dances with ease;
Bhatiari, Banobibi, Jhumur's rhythmic beat,
In the festival's melody, peace is complete;
Mangrove forests, a spectacle to behold,
In the enchanting nature's shelter, manifold;
Embraced by all,
I am the beautiful forest, Sundarbans!*

*In the intoxicated flow of the Matla river,
Amidst the nesting of the bird sanctuary;
On the banks of the Piyali and Kalindi,
Sundari and Keora trees surround it kindly;
In the herds of spotted deer,
Thirst quenched in the cool water, crystal clear;
In the embrace of nature's vast canopy,
A natural shade, where tranquility is seen vividly;
How beautiful it is!
I am the Sundarbans!*

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