

Who Owns the Coast?

Fishery-Tourism interaction in Saint Martin's Island, Bangladesh

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Fisheries and tourism related activities share coastal space of the Saint Martin's Island. (Photo: M. A. Baten, 2021).

Saint Martin's Island is the only coral-bearing Island in Bangladesh that has a settlement of traditional small-scale fishers. In recent decades, the island became a tourist hotspot of Bangladesh, leading to competing interests in fisheries and tourism. While the expanding tourism industry helps local fishers in improving their livelihood by creating alternative income opportunities, the negative impacts of unregulated tourism and irresponsible tourist activities are now clearly visible through degradation of coral habitat, environmental pollution, and competition over coastal space between fishers and tourism entrepreneurs. Thus, small-scale fishers face competition in defending the coastal space and surrounding coral ecosystem on which they depend for their livelihoods and well-being. This study calls for restriction measures, such as assessing the carrying capacity of the island and implementing regulations for the protection of islands and surrounding coral ecosystems.

Introduction

Saint Martin, the only coral island of Bangladesh, stands in the Bay of Bengal. Known for its attractive scenic beauty, the island has been declared as one of the country's ecologically critical areas (ECA) (DoZ, 1997). According to the principle of ECAs, several restrictions and prohibitions exist in order to maintain the ecological balance and ensure the conservation of the natural settings of the ecosystems. For example, illegal cutting or collection of trees, hunting or killing of wild animals, harmful fishing practices and other activities that are harmful to aquatic life, industrial establishment, polluting the water by disposing waste, and any other activity that could destroy or change the natural ecosystem are prohibited in ECAs areas of Bangladesh (Sajal, 2018). The co-occurrence of multiple habitats, e.g., coral colonies, seaweed, and seagrass meadow spreads in shallow water areas adjacent to the island, and the mangrove habitat along the frontal line towards the Bay of Bengal contributes to its distinction as one of the more unique ecosystems on Earth (Hasan, 2009). Saint Martin's Island is a resource-rich island that bears multiple coastal and marine resources such as corals (166), mollusks (187), crabs (12), fish (204), marine algae (154), reptiles (27), birds (120), mammals

(19) etc. (Tomascik, 1997; Feeroz, 2009; Habib & Islam, 2020). Among the 11 globally endangered marine turtles, 3 species, explicitly Olive ridley turtle (*Lepidochelys olivacea*), Green turtle (*Chelonia mydas*), and Loggerhead turtle (*Caretta caretta*) used Saint Martin's Island as nesting and hatchling ground (Hossain et al., 2004). Sea turtles still use this habitat as their breeding, nesting ground, nevertheless facing multidimensional threats of both natural (e.g., climate change) and anthropogenic origins (e.g., beach lighting, pollution). Saint Martin's Island is considered a social-ecological system as it is an interdependent and interconnected system of people and nature. Since ancient times thousands of people lived on this island, majority of whom are small-scale fishers, used to catching fish in the vicinity of Bay of Bengal. The inhabitants are highly dependent on the wide variety of Saint Martin's Island's ecosystem services. The main livelihood activities of islanders include fishing, tourism, agriculture, seaweed collection, coral harvesting, coconut selling, service sector, day labor, mollusks shell collection, and other petty businesses, all of which are seasonal activities (Afrin et al. 2013; Touhiduzzaman & Rahman, 2017).

Fishing is the most extensive livelihood activity of the 8,500 residents on and around the island. Fishers depend on reefs and adjacent marine waters for subsistence fishing and commercial harvesting (Rani et al., 2020). The collected fish is sold to local merchants. A substantial amount of fish is sun-dried locally by the five local large fish-drying farms and by individual households, and is afterward supplied to business people in Cox's Bazar and Chittagong (Touhiduzzaman & Rahman, 2017). Another important economy sector is tourism. The island has been used as a tourist destination since 1996-1997 and while, initially, the number of tourists was negligible, the island started gaining interest, especially after the publication of a 2007 Bangla film 'Daruchini Dwip' that covered the unique landscape and local culture on the island (Alam et al., 2015). Recently, the island has become the most popular tourist destination in Bangladesh, with the main tourist season lasting from November to February (Barua et al., 2020). During the peak time, 6-7 ships and local trawlers carry a large number of tourists to this island each day. Between 4,000 to 6,000 domestic and foreign tourists visit this island, with

60 percent of them staying for 1–4 days on St. Martin’s Island (Rani et al., 2020). Unsurprisingly, the island-based tourism industry has had a significant impact on the local economy.

Tourism and local livelihoods

The world’s tourism industry is constantly increasing; in 2018, the tourism contributed 10.4 percent to the global Gross Domestic Product (GDP), representing 319 million jobs or 10 percent of the total global employment (World Travel & Tourism Council, 2019). In Bangladesh, the tourism and travel sector has contributed 4.4 percent to the GDP. This is expected to increase by 4.7 percent (World Travel & Tourism Council, 2017) and create employment opportunities for over 1 million people, generating 8.4 million USD on an annual basis (Sarkar et al. 2018). The development of tourism on small tropical islands has several advantages: it improves local livelihoods, conserves fragile coastal and coral ecosystems, promotes small and medium tourism enterprises, ownership and business opportunities, and provides learning experiences (Lechner et al., 2020). Saint Martin’s, locally called ‘*Narikel Jinjira*’ is the only tropical coral island of Bangladesh. It is divided into four major administrative units, namely Uttar para, Golachipa, Dakhin para, and Cheradip (Figure 1a). The primary livelihood activities of the majority of islanders are fishing (Figure 1b) and tourism-related services (Figure 1c). Although fishing is the main sources of employment on the island, tourism is one of the primary sources of income, especially during the tourist season. The tourism industry of the island annually provides 19.4 million USD to the national economy (Rani et al., 2020). Approximately 480–500 people are directly connected to tourism activities on Saint Martin’s Island, including 34 registered tourist guides and operators (Kamruzzaman, 2018). Many people are also involved in indirect tourism services, such as constructions of hotels, motels, or resorts, running of rent-a-car business, selling umbrella benches, part-time beach-tour operators and guides (mostly students). In addition, many individuals are involved in catching and selling of dry fish to various parts of the country (Uddin et al., 2021). Booming tourism may allow

the islanders to have an increasing economy, create alternative job options (part-time, full-time), reduce poverty and hunger levels and improve their living standards. The islanders also agree that the tourism can improve the quality of life (Miah & Mawa, 2019). In recent times, local tourist authorities introduced scuba diving and speedboat sailing so that the tourists can witness the beauty of the corals and its associated biodiversity. There are also plans to bring water skiing and other sporting facilities to the island to attract more tourists (Hasan, 2009). The most southern part of this island, locally known as Chera Dip, is the most famous spot for scuba diving activities (Uddin et al., 2021).



Figure 1. Fishing, tourism, and local livelihoods interactions in Saint Martin's Island (a) land use map of study area (Adapted from Feroz, 2009); (b) Small-scale fishermen ready to start the fishing trip in the Bay of Bengal area; (c) tourist activities on coral habitat, seaweed, and seagrass bed during low tide. (Photograph b & c taken by Md. Abdul Baten, 2020).

Tourism: the other side of the coin

The positive impact of the tourism industry is well known. However, the negative effects of the tourism are, in a sense, the other side of the coin (Saarinen, 2007). The considerable negative impacts of tourism include traditional clashes such as introduction of bad practices brought by the tourists that hampered local lifestyle, culture, custom and heritage (socio-cultural); seasonal jobs, financial leakages and inflation (economic); construction of infrastructure and contamination of the natural place (environmental) (Bac, 2003). Although the tourism industry in Saint Martin's Island improved the livelihoods and economy of both the local people and the nation, it has had a significant negative effect on the entire ecosystem of the island. One of the most important drawbacks of tourism is the degradation of the coral ecosystem. The destruction of the coral ecosystem was caused mostly by anthropogenic activities such as unplanned and uncontrolled tourism, irresponsible touristic activities, coral extraction for the purpose of selling them as souvenirs, increased sediment load by tourism activities on the coast, oil (diesel) pollution, disposal of single-use plastic, waste from hotels and restaurants, habitat destruction and infrastructure development along shorelines — all of these have caused dramatically adverse impacts on the coral population of Saint Martin's Island (Ahammed et al., 2016; Gazi et al., 2020). To increase tourist accommodation, the land use pattern of Saint Martin's Island has changed dramatically, and the built-up area has increased by 175 percent in the last 14 years (2005–2019) (Ara et al., 2021). The demand for freshwater is ever increasing due to the growing needs of the local population and a large number of tourists, resulting in the drop down of the water table on the island (Barua et al., 2020). The unusual sound produced by hotels, motels, crowding, or even intentional loud music from the tourists is disturbing the calm situation in recent years. The nighttime lighting on the island seriously hampers the natural homeostasis of the marine faunas; for instance, natal homing behavior of sea turtles nesting, latency period of hatching and conservation have been seriously hampered due to beach lighting and anthropogenic pollutants.

Local people collect different types of coral species for lime making, construction work (building and roads), and for selling them to the tourists as a souvenir (Touhiduzzaman & Rahman, 2017; Uddin et al., 2021). At the same time, small-scale fishers on the Saint Martin's Island are facing a series of challenges, including degradation of fish habitat, competition with the industrial fleet, conflict with the fishing fleet of the neighboring countries, water pollution, climate change, and a lack of access to markets. Tourism indirectly impacts the livelihood of small-scale fishers by lowering their income and increasing the price of daily commodities, leading to immeasurable hardship for the locals who have to struggle to fulfill their minimum costs of living (Afrin et al., 2013). According to one key informant, *"Most of the hotel, restaurant, and cottage owners were not residents of this island, but they stay on this island during the entire tourist season with their staff. The local fishermen often sell their land to tourist agencies for their infrastructure development due to economic crisis, thus being displaced from their land"*. The land area of Saint Martin's Island is decreasing day by day due to the establishment of new infrastructures and natural causes like sea-level rise. Another key informant said, *"Usually, new land was formed with the accumulation of seaweed, seagrass, and sediment in the coast of Saint Martin's Island. But this has not happened for the last 10 years due to the decline of seaweed and seagrass bed in the coral Island of Bangladesh"*. Apart from the natural and anthropogenic threats, global warming and climate change pose a high risk to the biodiversity of the marine ecosystem on St. Martin's Island (The Daily Star, 2009). Notably, sea level rise causes inundation on different parts of the islands during high tides. One key informant NGO official said, *"Literally, the island is sinking due to too many people on a too small-scale space."*

There is also competition regarding the use of coastal spaces. Previously, the local fishers predominantly used coastal space for boat making, repair, net making, or even fish drying. Nowadays, increased tourism infrastructure (e.g.; beach camping, petty shops for tourists needs), or tourist mobility is restricting this space for fishers. Many local fishers are worried that in the near future, the island may be converted into a tourist resort that will restrict fishers' access to coastal spaces and fishing areas or even displace

them entirely in the long run. Some respondents even worried that too many tourists in the islands are disrupting their traditional social fabrics.

Conclusion

While tourism improved the standard of livelihood of fishers involved in small-scale fisheries and boosted the national economy, unplanned and unregulated tourism significantly degraded the coral ecosystem on Saint Martin's Island. Since the tourism has created a considerable number of alternative livelihoods for small-scale fishers, putting a stop to the tourism on the island is not a viable option. But perhaps we can introduce ecotourism, where a certain number of tourists can visit and enjoy the scenic beauty of Saint Martin's Island without harming its natural setting. Thus, it is necessary to estimate the carrying capacity of Saint Martin's Island. The study of Hasan et al. (2014) suggested that real carrying capacity (RCC) and adequate carrying capacity (ECC) were 2,913 and 1,835 tourists per day, respectively. The current environmental setting on Saint Martin's Island can hardly cope with 900 tourists a day, but currently more than 6,000 tourists come every day for an overnight stay during the peak tourist season (Rani et al., 2020). This is alarming news. How can a small island cope with a large number of tourists? Clearly, it is necessary to restrict the number of tourists.

Saint Martin's Island is an environmentally protected zone as per the Bangladesh Environment Conservation Act (1995). Based on the act, the government declared the island as an Ecologically Critical Area (ECA). The key aim of conserving ECA is to protect the major environmental features from encroachment by skewed development. Unfortunately, the prohibitive activities such as polluting water by discharging waste or any other activities that could destroy or change the natural characteristics of an ECA continue to unfold unabatedly. Stricter implementation of the ECA rules should be implemented in order to protect the island from the impacts of tourism. Additionally, increasing local awareness through effective education programs that focus on improving the knowledge of ecosystem protection is much needed. Fisheries-based ecotourism can be

an option as it can open the door to generating alternative income, without disturbing nature, which is something that may be used to sustain small-scale fishers on Saint Martin's Island. Special policy and managerial attention and transdisciplinary collaborative initiatives are also essential to sustainably maintain the lucrative beauty of this ECA while maintaining the carrying capacities and the homeostasis of its biotas.

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