Life in "Paradise" a social psychological and anthropological study of nature conservation in the Caribbean Netherlands

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The Fishery Sector of Bonaire and its Management Through Time..

The industrialist was horrified to find the fisherman lying beside his boat, smoking a pipe.
"Why aren't you fishing?" asked the industrialist.
"Because I've caught enough fish for the day."
"Why don't you catch some more?".
"What would I do with them?"
"Earn more money. Then you could have a motor fixed to your boat and go into deeper waters and catch more fish. That would bring you more money to buy nylon nets, so more fish, more money. Soon you would have enough to buy two boats, even a fleet of boats, then you could be rich like me."
"What would I do then?"
"Then you could sit back and enjoy your life."
"What do you think I'm doing now?"
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From "Timeless Simplicity" by John Lane.

5.1 INTRODUCTION

While there never has been a true fishery industry on Bonaire, the island has a long-standing history of fishing. Through the years, several attempts have been made to manage the sector by the island government, the government of the Netherlands Antilles, and post 10/10/10, the Dutch Ministry of Agriculture, Nature and Food Quality. There has been an ongoing awareness of fishing's socio-economic and cultural value as well as the impact that fishing and its related activities have on the natural environment. In order to understand current management struggles — specifically regarding the inclusion of fishers in decision and policy-making — that are present in the fishery sector, it is of importance to know what the sector and its management looks like. Therefore, I answer the following research questions in the current chapter: *Who are the fishers of Bonaire and what does Bonaire's fishery sector look like? How has the sector been managed through time? And how has this affected the role of the fishers in management efforts?* This extensive description reveals why fishers feel excluded from management efforts of the sector.

The current chapter is based on archival and online documents as well as data collected through interviewing key stakeholders of Bonaire's fishery sector and my own field experiences. To gain some insights in the past management efforts and development of the sector, I consulted (online) archival resources of the government of the Netherlands and the public entity of Bonaire, in addition to scholarly reports and articles. While quite a few studies have been conducted on Bonaire's fishery sector, there is still very little historic statistical data available of Bonaire's fishers and the sector (e.g., number of fishers, catch landings, number of boats, and the economic value of the sector). The lack of a systematic record of fishery statistics makes it difficult to gain insights into the changes of the sector over time. Hence, the accuracy of the numerical data presented in

the current chapters is not completely guaranteed. Moreover, because the "historic" data are primarily based on documents written by governmental officials (policy briefs, plans, and evaluations) the information presented should be interpreted with caution, especially when trying to draw conclusions regarding the success (or failure) of management efforts.

Furthermore, it was difficult to retrieve "objective" information on past management efforts, as all stakeholders tend to have unique experiences of these processes and, at times, conflicting interests in how they are recalled, due to their own involvement.[14] Nevertheless, I tried to gain some insights into these processes by means of interviews with key stakeholders who are or have been involved in fishery management efforts on Bonaire. These stakeholders included government officials, marine scientists, (past) marine park managers, marine park rangers, and representatives from other ENGOs on the island. During the interviews with key stakeholders, I focused on several topics, including the importance of Bonaire's fishery sector for the island, views on past, current, and planned management efforts of the sector, and the roles and responsibilities of the various marine resource users regarding its management. Initially it was also my intention to conduct extensive interviews with fishers, but I deviated from this plan for several reasons. First, fishers have been interviewed and consulted by many researchers in the past. I learned that they had become wary about collaborating with researchers as they felt the outcomes of the studies were not to their benefit. Instead, I used data collected from previous researchers to gain some insight into perceptions of fishers rather than bothering them with another long list of questions. Second, I retrieved extensive information from the fishers through my work with them on the fishery cooperative PISKABON, which will be described more in depth in Chapter 6. Moreover, during my fieldwork on Bonaire, I collaborated with Franklin "Boi" Antoin, a well-known local historian. He learned about my work with the fishermen and invited me to join him on a series of interviews with fishers he was conducting himself for a documentary he was working on. This gave me unique unobtrusive access to the fishers, as fishers were usually honored to be interviewed by Franklin and not afraid or suspicious to share their experiences with him.

In the following sections, I will first discuss the historic development of the sector and its cultural and economic value. Next, I also describe the challenges the fishery sector currently faces and how fishers and other stakeholders perceive these challenges. This is followed by a description of management efforts prior to the constitutional reforms and then post constitutional reforms. While I will discuss some significant changes between these two periods, I should emphasize that there is no immediate and clear-cut change after the symbolic date of 10/10/10, because a lot of what is happening today was already being developed in the period leading up to the 2010 reforms. In fact, the institutional

14 That is not so much between individual respondents but more the case between the different types of stakeholders, e.g. the government versus NGOs.

and legal framework of the fishery remained quite similar after the constitutional reforms, as they built on the framework that was already put in place. Nevertheless, the division of time before versus after the 10th of October 2010 does provide an important marker as the symbolic date is used as an easy way to refer to the ways management efforts are perceived by the island community. The description of past and more recent management efforts does hint at the challenges the fishery sector of Bonaire faces in terms of management. It also explains why many stakeholders feel that co-management is necessary to overcome these challenges, which I discuss in the conclusion.

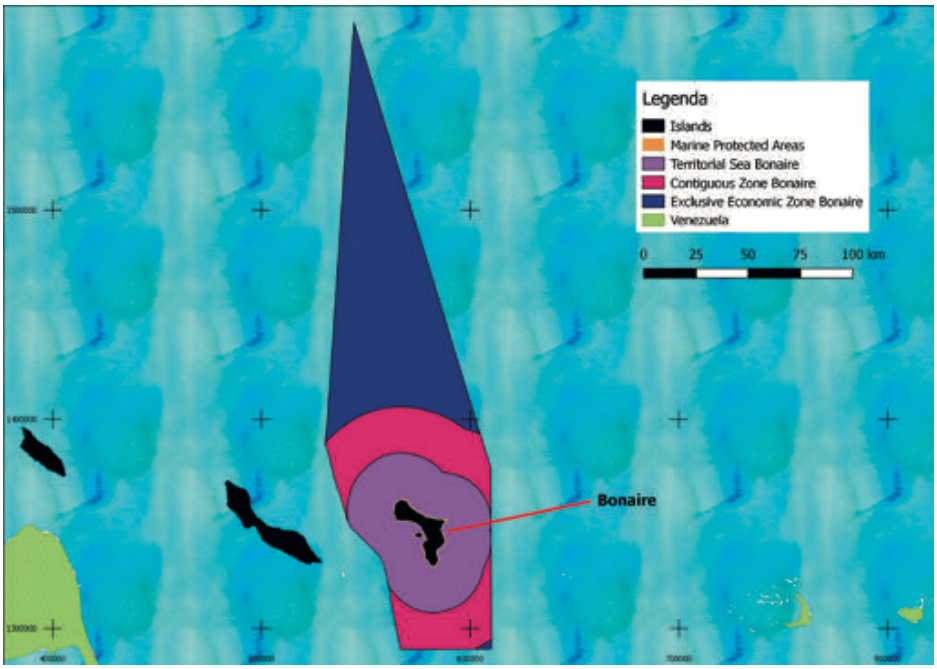


Figure 24. Marine Limits and Boundaries of Bonaire (Credit: Tim van Wagensveld)

Before delving into an historic description of Bonaire's fishery and their management, however, it is important to provide some context on the physical scope of the sector. In Figure 24, the jurisdictions of the water zones of Bonaire are depicted. Most of Bonaire's fishing activities take place within the boundaries of the marine park (i.e., shore based fishing) and the territorial waters (boat based fishing). This image illustrates several important elements that are important for understanding the challenges of fishery management. First, it makes it visual that in contrast to the small size of Bonaire, the government is responsible for a very large area of water that requires management. Thus, a great deal of resources are needed to be able to management it effectively. It also shows how the waters of Bonaire are adjacent to the water zones of Curaçao and Venezuela. This helps to explain the close interaction between Bonaire's fishery and Curaçao and Venezuelan fishers. Lastly, while the boundaries are clearly identified and visible on

this map, these boundaries are not physically visible and are prone to be disregarded by fishers and other resource users. With this in mind, I will now move on to the historical overview of Bonaire's fishery sector.

5.2 BONAIRE'S FISHERY SECTOR AND ITS FISHERS: AN HISTORICAL AND CULTURAL OVERVIEW

I arrived on Bonaire in a hurry; I took an earlier flight from Curaçao to Bonaire when I heard the monthly *Marshe di Kultura* (cultural market) organized by Mangazina di Rei — a cultural center based in the old village of Rincon — was themed around Bonaire's fishers and Bonaire's bond with the ocean. There was going to be a demonstration of traditional boat building as well the preparation of several kinds of locally caught fish. While enjoying samples of the different deep-fried fish, I took the opportunity to talk with some locals about the island's fishery sector and was directed to several well-known fishers who were attending the demonstration.

At the cultural market, it was again emphasized that fishing has always been one of the main ways of making a living on Bonaire. Even today, legacies from the Amerindian period (Haviser, 1991), form part of Bonaire's culinary heritage and connection to the sea. Fishing has provided an important source of food for residents throughout the centuries, but never developed into a true industry for the island (Hartog, 1975; Anon, 1953; Wit, 1951). There have always been several (professional) fishers, and in 1975 about 6% of the working population was employed in fishery or agriculture, often in both (Hartog, 1975). While there are no official numbers, it is estimated that Bonaire currently counts approximately twenty full time fishers and dozens of part-time fishers (Pakus en Wayaka Advies, 2014).

Despite there being little historical literature or statistical data available on the fishery sector of Bonaire, the historic and cultural value of fishers of Bonaire is highly visible on the island. That fishing is one of the oldest professions of Bonaire is common knowledge among the residents. One story shared with me on various occasions by many respondents was about how in the past there were three professions on Bonaire for (lower educated) men: carpenter, mason, or fisher. Fishers are celebrated yearly during the festival of the "Virgin of the Valley" (*La Virgin del Valle*), the patron saint of the fishers and other seafarers which is celebrated on the 8th of September. Each year during the weekend close to the Saint's Day, the fishing community gathers to ask for her blessing. Not only do fishers and their families and friends participate, but also the Coast Guard and governmental officials join in on the celebrations. Another national celebration which honors the fishers is the *Maskarada* (Masquerade) (see Figure 25). This celebration takes place on the first Sunday of the New Year. Respondents either play traditional folk songs or dress up in disguises with their faces hidden behind masks. They wear various

costumes, dance, and act out different folktales drawn from the experience of daily life on Bonaire, in particular stories that have to do with the battle with nature for survival (Haviser, 1991; Antoin, 1998).

Figure 25. Performance of fisher "ShonBoeBoe" during the annual Marquarade celebration on Bonaire. Source: Skyview Bonaire.

Today, Bonaire's (commercial) fishing vessels are divided into two types — big boats or *Boto Grandi*, or small boats, *Boto Chikí* — based on their length and propulsion. The smaller boats are used predominantly for reef fish near the shore of Bonaire using hand lines. Big boats mostly target pelagic fish, caught by trolling several hand lines at once. These vessels are at least 17 ft., have an inboard diesel engine and have a cabinet (*Kabinèt*) and steering hut with a hood that provides some protection from the sun, allowing for longer trips further out to sea. While boat fishing mainly takes place near the shore (<400 m) due to the relatively small size of the craft and the relatively high fuel costs, some big boats venture towards the Aves islands right off the coast of Venezuela (Dilrosun, 2004; de Graaf et al, 2016). Like the fishing vessels, fishing methods used in Bonaire's fishery have remained traditional. Methods used are the hook and (hand)line, beach seines (or *reda*), fish traps (*canasta*), and snorkel fishing with hook and line. The hook and line are most common and are used for both shore and boat-based fishing. Some fishers use beach seines to catch bait and the seasonal *Masbangu* (Little Jack, Selar crumenophthalmus). The fishers themselves make their own traditional fishing gear, in particular the elderly fishers. The knowledge of how to make their gear and how to fish the Bonairean waters is passed down from one generation to the other.

While fishing gears and methods have changed little over time (de Graaf, et al., 2016), what is caught has changed. Certain species are brought in far less often or have disappeared altogether. This shift partially reflects a change in fishing methods which, in turn, demonstrates the need for the preservation of endangered or overfished species. The use of fish traps, for example, used to be a common method, but the use of traps now requires a permit, meaning that only a few fishers at Lac Bay use the traps[15] (Dilrosun, 2004; S. Engel, pers. coms, October 2017). In the past, spearfishing also took place, but this was banned in 1971. Also, sea turtles were a heavily targeted species in the past. Since 1961, the eggs and the nests of sea turtles have been protected on Bonaire and starting in 1991 full protection of the species at all stages of its life was conferred (Willis, Nava, Schut, & Stapelton, 2015). This was also the case for the Queen Conch. Lac Bay was a favorite spot for conch fishing due to the easy access it provided to these prized sea creatures. Conches provided a vital source of income for the fishers and was a staple of local cuisine. Over time, presumably due to increase in demand with the growth of the population and tourism, this shellfish rapidly became overfished. In an attempt to preserve the declining conch population, a moratorium on conch fishing was put in place and an awareness campaign was launched in 2010 (Anon, 2012).

Currently, there are three types of fisheries on Bonaire: commercial fishery; commercial sport fishery; and local, recreational fishery. Commercial fishery is defined as the practice of people catching fish in order to sell their catch. Fishers engaged in this type of fishing do this either full- or part-time and are generally considered to be traditional, local, Bonairian fishers. Most commercial fishers are also (big) boat owners. Fishers who do not own a boat hire a fishing vessel from another fisher with whom they divide their earnings.[16] Most commercial fishers have completed little formal education and fall within the lower social class of Bonairian society (i.e., low-income, little financial literacy). This is particularly the case for full-time commercial fishers. Part-time commercial fishers tend to have a more stable and higher income, mainly because they

15 Lac Bay is a semi-enclosed, ecologically highly valuable, bay and recognized as a RAMSAR site and as an Important Bird Area. It houses three ecosystems: fringing coral reefs; seagrass beds; and mangrove forests, and is home to endangered species such as the Green Turtle and the Queen Conch.

16 Fishers usually go out to sea with a crew of two people. Earnings from the catch and sale of the fish are shared according one of the following four arrangements (Mac Donald, 2019):
-1/3 of the earnings to the boat owner, 1/3 of the earnings to the first fisher, 1/3 of the earnings to the second fisher;
-1/3 of the earnings to the boat owner, 2/3 of the earnings to the fisher (if there is only one fisher who does all the work);
-2/3 of the earnings to the boat owner if the boat owner is also a fisher, 1/3 of the earnings to the first fisher.
-½ of the earnings goes to the boat owner and the remaining half us is equally divided among the fishing crew. This division is less common, but used because it is no longer profitable not to be on board and fish as a boat owner. Before the earnings are divided, the costs of the boat (i.e. fuel, ice) are settled. If no fish are caught, the fishers do not have to pay the boat owner immediately but he/she does keep track of outstanding costs. This means that the costs will be settled the next time the fishers do catch fish. Boat owners accept the risks that no fish might be caught during a trip and give an advance on costs made (e.g. fuel), seeing that not going out to sea means no earnings are made at all.

earn additional income from non-fishery activities. Some commercial fishers also argue that they are forced into part-time fishing because of the higher cost-of-living on Bonaire, combined with the dwindling hauls. Fishers now need to spend more time at sea, which means higher fuel costs, in order to catch enough fish to support their families (Johnson, 2011). Consequently, there are more part-time than full-time fishers. Commercial fishers still play an important role in providing food to the island, as they are the main suppliers of fresh, locally caught fish to the residents (and tourists) of Bonaire.

The second type of fishery on Bonaire is commercial sport fishery (or charter boat fishery) where the primary source of profit is through permitting third parties to fish from one's vessel. With the emergence of tourism, this type of fishing has become more attractive. Commercial sport fishery is one of the few businesses that directly profit from, and contribute to, both the tourism and fishing sector of Bonaire. Commercial sport fishery takes place on large, modern, and fully equipped fishing yachts, moored at one of the privately-owned harbors. While the socio-economic status of fishers within the commercial sport fishery tends to fall in the middle and upper class, there is close collaboration with professional local fishers who are often employed to assist with the commercial fishing activities.

Lastly, there are a lot of people on the island who are recreational fishers meaning people — again, mainly men but also women — who fish solely for personal consumption[17],. Shore-based subsistence fishing has a long history on Bonaire. It requires little investment, no fishing licenses, and is easily accessible to all. Fishers would go to so-called "*banki's*" small areas of smooth lime-stone rock, along the east coast of the island. The small platforms allow for fishing to take place from the otherwise steep and sharp cliffs. It is believed these *"banki's"* date back several decades and even centuries (Abel, 2000; Graaf, et al., 2016). One interviewee shared how shore-based fishing has been a typical, traditional, family pasttime on Bonaire. Families would gather on the shore and at the pier in Kralendijk, the capital of Bonaire, during weekends, throw out a line and enjoy each other's company. One respondent shared how recreational shore-based fishing is no longer a common practice on Bonaire, as there are fewer fish along the shore due to the overfishing of reef fish.

At the end of a day spent at sea, when the fishers arrive back from their trip, the fishers clean both their boats and their catch of the day (Figure 26). Most days they are accompanied by elderly fishers or youngsters who perhaps aspire to join the profession, talk about their catch, and get caught up with the latest happenings on shore. At times, fish is sold directly from the pier, but this is less common. In the past, the sale of fish

17 When considering the recreational fishers, a fourth distinction is sometimes made: their origin or nationality. The influx of migrants, particularly the Chinese and Surinamese, has resulted in the presence of fishers who use different fishing techniques and target different species such as sea urchins. Local/ Bonairean fishers tend to distance themselves from these groups of fishers.

would primarily proceed via informal routes or through the old fish market in Kralendijk, called the Plasa Machi Mimi (Figure 27). Since the last fish market handler died, however, the market has been occupied by Venezuelans who sell fruits and vegetables they have brought in by boat from Venezuela (Leendertse & Verbeek, 1987; Dilrosun, 2004). While most fishers are male, women often play an important role in the sector by the cleaning and selling of fish. Fish traders started to professionalize around 2010. Currently, there are several (semi-)professional commercial fish vendors on the island. Fish traders are often also fishers themselves or else boat owners and have fully equipped areas in which to market their fish in their homes (Dilrosun, 2004). At the moment, there is no centralized market, and the catch is primarily sold to local buyers. Fishers often collaborate with a fixed group of fishers (suppliers) and a set client base (e.g., hotels and restaurants). The export of fish is not formalized or, if it does happen, particularly frequent or large-scale, but some fishers do sell their catch to traders on Curaçao.

Figure 26. Local fisher cleaning his catch by the water after a long day of fishing.

Figure 27. The old fishmarket, Plasa Machi Mimi in Kralendijk, Bonaire.

Bonairians are known not only for their fishing and sailing skills, but also as expert boat builders. While this is no longer a commonly practiced profession on Bonaire, there have been several initiatives to preserve this part of Bonairian culture. The traditional boat building craft was also commemorated at the cultural market I attended. At the market, fishers demonstrated how boats were built from wood underneath large Tamarind trees. Since the arrival of motors, traditional sail-powered fishing vessels fell into disuse due to their high maintenance costs and labor-intensive requirements. However, in 2017 several volunteers and fishers decided to revive the tradition of wooden boats and initiated the restoration of some of these vessels so that a few could take part in the 50th Annual Bonaire Regatta sailing competition as they had in years past. This desire to preserve and showcase the island's cultural heritage and longstanding fishing and boat-building traditions exemplifies the strong bond that Bonairians maintain with the ocean and their pride in this part of their heritage (Teitel, 2018).

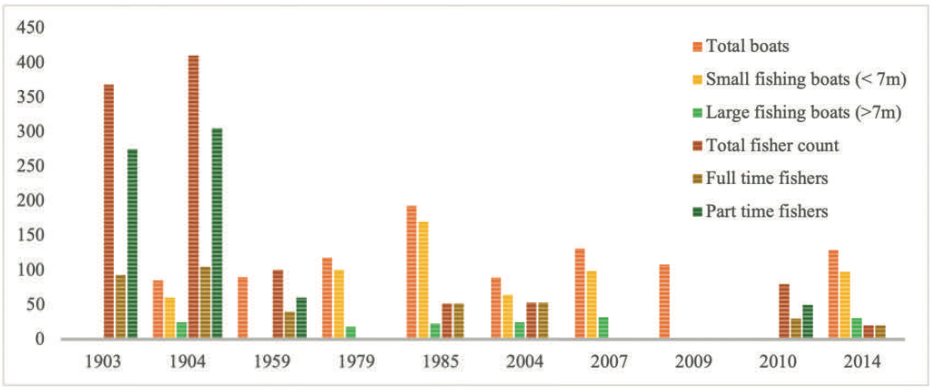
5.2.1 The Size and Economic Relevance of Bonaire's Fishery Sector

There are no accurate historical statistics available on the number of commercial or recreational fishers. Several previous studies and reports attempted to estimate the number of commercial fishers and fishing vessels. Figure 29 presents an historic overview of the available statistics regarding the number of fishers and fishing vessels on Bonaire.

The latest count of fishing vessels recorded a mean of 84 small boats and 26 big boats (de Graaf et al., 2016). However, during interviews, fishers estimated that for commercial fishery there are currently approximately fifteen big boats actively providing employment to an average of two fishers per boat (F. Havedings, pers. coms., December 2017). Commercial sport fishery on Bonaire consists of four to six boats, each employing on average two to three fishers. It must be noted that the numbers I have presented here are mostly estimates or aggregations, and the different reports I am basing my estimate on often use different definitions for the types of fisheries. While some reports state that the number of fishers and boats have remained relatively constant over the years (de Graaf et al., 2016), a general feeling among the (professional) fishing community of Bonaire is that over the years the number of professional or commercial fishers has declined. In contrast, despite the declining (reef) fish stocks, the number of recreational fishers is believed to have increased drastically. Recreational fishers are especially challenging to identify and quantify because of their irregular activities (Dilrosun, 2004; de Graaf et al., 2016), but it is estimated that 15-20% of the local population still engages in recreational fishing and the majority (80%) does it from shore (Laclé, 2012). Overall, the numbers remain inconclusive as to how many fishers are currently active on Bonaire.

Figure 28. Small fishing boats at Lac Bay, Bonaire.

Figure 29. Overview of the number of fishing vessels and fishers on Bonaire (adapted from de Graaf et al, 2016).



Year	Source & description
1903	Zaneveld, 1961 and references therein; all person registered as "seaman" were included under part-time fishers.
1904	Zaneveld, 1961 and references therein; all person registered as "seaman" were included under part-time fishers.
1959	Zaneveld, 1961 and references therein; **no information on boat type
1979	Archive LVV Bonaire
1985	Leendertse & Verbeek, 1987
2004	Dilrosun, 2004
2007	Steneck, Mumby & Arnold, 2007
2009	Beleidsvisie LVV, 2014-2029, and references therein
2010	Jonshon, 2011; Estimate of total professional fishers
2014	Beleidsvisie LVV, 2014-2029; Rough estimate for commercial, full-time fishers
2014	De Graaf et al., 2016; Maximum count of fishing boats

On Bonaire, the catches and market prices are not monitored or regulated which makes it challenging to draw any conclusions about the economic importance of the fishery sector to the island and the income of the fishers. What is known is that throughout the years, the economic importance of the fishery sector has shifted. There were two developments that have resulted in changes to the fishery sector in terms of economic relevance. A first shift took place with the arrival of more modern industries in the region, specifically the oil refineries (Shell/ISLA on Curaçao in 1915, and LAGO on Aruba in 1924). This resulted in a neglect of the fishery sector and created a labor shortage within the profession because younger generations chose more profitable and less labor-intensive professions elsewhere (Zaneveld, 1961; Van Gelderen, 1953). A second shift was the loss of the fishing grounds near the Aves, Los Roques, and Orchilla islands off the coast of Venezuela with the resulting loss of the Venezuelan market. This happened when the Venezuelan government came to an agreement with the government of the Netherlands

Antilles in 1951 to prohibit both catching and selling of fish by foreign fishers (W.I.D., 1953). Not only did these developments affect the number of fishers, but also other professions related to the sector, such as the boat builders, fishing gear craftsmen, and fish handlers. This shift away from fishery as an established profession and economic sector has continued ever since, making fishery, economically, a modest branch of the local economy.

In terms of ecosystems and ecosystem services, defined as services that human beings derive from an ecosystem, fishing is a provisional service (i.e., providing seafood) which can compete with other marine ecosystem services such as cultural services (i.e., recreation, diving, or snorkeling). That is, healthy fish stocks are essential for healthy reefs which, in turn, are crucial for attracting divers and snorkelers to the island. If fishers overexploit fish stocks, this can affect other ecosystem services such as diving and snorkeling. Considering that (dive)tourism is the central economic pillar for Bonaire, there is much debate about the relative financial contribution of fishing compared to other ways the marine ecosystem can be monetized and managed (Lely, et al., 2013; Anon., 2013; Pakus en Wayaka Advies, 2014; Werven, Jepma, & Bakker, 2010). The core of the debate is whether or not the attention and financial investments that the fishery sector currently receives is warranted. Some people feel that given the damage caused by fishery to the valuable marine ecosystem, it would be better to let fishing as an economic or commercial sector die out.

5.2.2 Contemporary Challenges Facing Bonaire's Fisheries and Pressures on the Marine Environment

As I have previously mentioned, catches have not been systematically tracked or monitored on Bonaire. However, there have been several notable changes to the marine environment and stocks of certain species surrounding Bonaire. While the coral reef ecosystem of Bonaire is in better condition than in most places in the Caribbean, it too has degraded substantially due to insufficient management of fishing and coastal development (Jackson, Donovan, Cramer, & Lam, 2014). Despite the argument made by some policy makers that fishing has remained artisanal and is therefore not harmful to the environment per se (*Evaluatierapport Natuurbeleidsplan Bonaire 1999-2004*, 2010), certain targeted species have visibly declined over the years (Sea Turtles, Queen Conch, Caribbean Spiny Lobster, and other species such as the Nassau Grouper and Snappers, Wahoo, Tuna, and Dorado). While it is perhaps more challenging to conclude that the decline of pelagic, seasonal, migrating fish species is due to overfishing by Bonairean fishers, it can be stated with more certainty that the decline of targeted reef species

(Groupers, Snappers) is at least partially due to fishing activities by Bonairean fishers (De Graaf et al., 2016; Debrot, Henkens & Verweij, 2017)[18].

Some fishers tend to be reluctant to admit that certain species are no longer present in large numbers, especially when they believe this acknowledgement will directly affect them. However, one respondent explained that when fishers are approached within a non-threatening context, they are more likely to state that certain fish are not there anymore. She recalled her interaction with a fisher during a meeting regarding the development and implementation of new legislation which would include a list of protected species. She shared the following:

> *There is one fish called [fish name]. It is on the protected species list; you are not allowed to catch it. One [fisherman] argued about why he needed to protect that fish. He scolded and was angry during a meeting. I remained calm and one day passed by his house. They sell fish, in moots with cornmeal. I went to buy some fish and to see what would happen if we talked in a different setting. Anyway, I sat and talked and said: "You know what I want to eat? A [fish name]! Man, that fish is really tasty! Super soft, delicious!" He responded: "You won't get rid of that craving because nobody catches that fish". I asked: "Why not?!" to which he replied, "Do you know how long it has been since I've seen a [fish name]?" I grabbed my beer and clinked with his, thinking yes, now he does admit it!*

In general, most fishers agree that making a living from fishing has become harder due to fewer fish and smaller catches, but there are some, though very few, fishers who will openly state they are (in part) responsible for this decline. According to one respondent this is especially the case for recreational fishers who are not financially dependent on the profession but do place the biggest direct pressure on reef fish stocks because recreational fishers predominantly fish from shore (see also De Graaf et al, 2016).

That fishers agree that fish stocks are declining but deny that this is due to their activities, was also found Johnson and Jackson (2015) who extensively researched Bonaire's fishers' (and divers') perceptions towards (causes of) declining fish stocks, degrading reefs, and support for management of the sector. They found that most fishers believed that they were catching fewer and smaller fish than had previous generations. As causes for these changes, the researchers found that fishers tended to blame large-scale factors, such as climate change, changes in currents, pollution, industrial fishing, and even the

18 It is important to note that while the rapid decline of these species cannot solely be attributed to Bonaire's fisheries, it cannot be denied that most fishing practices ultimately lead to stock depletion if fishing is not managed correctly. More importantly, this issue illustrates several important social and political struggles central to fisheries management and its perceived legitimacy and fairness: the debate about who causes the greatest harm versus who faces the direct negative consequences of management measures; and the interrelationship of local, regional, and global fishing industries for effective management of fish stocks.

will of God. These perceptions, in combination with their long-standing tradition of independence, are reflected in their general lack of support for sector management efforts. One respondent explained the reluctance of fishers to admit that they are responsible for declining fish stocks is because they are poor. Because many of Bonaire's (commercial and subsistence) fishers live in poverty, they need to cover the basics before they can collectively worry about the environment. He shared:

> *It takes intellectual advancement to understand that all other basic needs are easier to fulfil if your environment is in check. The number one element for the problem with the environment and environmental protection, especially [protection of] coral reefs, is poverty. You cannot expect people to understand the power of conservation when they are surviving.*

While this might be true for the poor commercial or subsistence fishers, this argument does not explain why relatively wealthier, recreational, shore-based fishers are also reluctant to admit that they contribute to declining fish stocks. It is likely that recreational fishers, like commercial fishers, are reluctant to do so to avoid restriction on their fishing activities (Johnson & Jackson, 2015).

Through my interviews, I learned that non-fisher stakeholders (marine park officials, scientists, and consultants) also shared the sentiment that fishers are not the primary cause of declining (reef) fish stocks. Some respondents I spoke to argued that the diminishing fish stocks and general degradation of the marine environment is not really the fault of the fishers even though their fishing activities also contributed to these issues. Instead, they argued that pressures such as coastal development, increasing amounts of sunscreen in the waters, wastewater, and/or pollution damaged the ecosystem which, in turn, affects the fish stocks. The lack of consistent monitoring of catches and fish stocks, however, does not mean that fishing is a negligible factor on the ecosystem, nor does it imply that the fishery sector is not in need of managerial attention, especially the fishing that takes place on the reefs (Debrot, Henskens, & Verweij, 2017). This, too, is something some fishers, in particularly the older fishers (Johnson & Jackson, 2015), agree with as can be seen in the following interview excerpt:

> *I had an aunt who was 92 years old at the time I started the fishery issue…Mind you, how long I've been working on this, she's been dead for almost 10 years. And eh, I would visit her once a week. And in that time, I was angry angry angry angry. I would go to her because she was always so calm. I could vent to her. She said: "My child', with a concerned look on her face. She said: "Whats wrong?" I said: "Aunty, this work that needs to be done around here. It's hard, because those people don't want to understand. They don't understand or they understand you but don't want to [they don't want to take any responsibility". And she asked: "What happened?" She said to me: "And they don't want to understand that the fish have become less?". I said: "No". And she said*

something to me that day that just left me thinking "What the heck?! If this woman can reason... This woman ate nothing but fish. I never realized this - I knew her house always smelled of fired fish, but I never paid it any attention. […] As long as I can remember, she would go and fish. She would go out to the street, throw out a line, catch her fish and go home. She told me: "Let's say for sake of ease that I've been fishing since I was 20 years old. Now I am 90 years old. All those years I fished, every day. That is 70 times 365, there was not one day I did not eat fish. How much fish did I alone eat from Bonaire?" She only ate fish from the reef […] she didn't eat fish from Lac. She found that fish tastes like grass. Imagine, just think for a moment, man. I said: "Aunty, it would be better if you would come to one of the meetings [with the fishermen]! She said: No, I am old, I can't talk with those people anymore". She said: "And fish became less? Do you know how difficult it is for me to get some fish nowadays? The fish are small. I need to famish because there is no fish. My freezer used to be full to the brim with fish. Now, open my freezer, and you'll not one fish. And I hope someone will bring fish for me. Obviously, fish has become less now. For sure fish has become less, I don't get any fish! And all the people who used to bring me fish, they are still here".

Johnson & Jackson (2015) also found that fishers do agree that some form of management is required, but that this needs to be developed and implemented with caution considering several visible and important differences between resources users. Namely, financially fishers are generally poorer than, for example, divers who make up an important stakeholder group in the large tourism economy and conservation measures tend to have a direct, negative affect on the income of fishers. For example, their incomes are affected by prohibiting or limiting the catch of certain species. Another difference pointed out by the researchers was the visible racial difference between resources users: fishers tend to be black and Antillean, whereas divers or tourists are white and foreign. Giving the latter "privilege use" of the resources based on the presumption that they contribute more to the economy and cause less damage — the latter not necessarily being the case (Jackson, Donovan, Cramer, & Lam, 2014) — illustrates the legacies of (neo-)colonialism that still exist on the island (Johnson & Jackson, 2015).

Despite its high cultural value and it being one of the traditional professions of Bonaire, the sector has remained small and experienced little technological or economic development throughout the years. Notwithstanding the small size and the negligible economic relevance, the marine environment does face several ecological threats (including overfishing), resulting in smaller and fewer catches and, thereby, affecting the fishery sector. These changes are visible and felt by local fishers. A growing concern of the fishers and the community in general is that Bonaire's fishery is becoming a dying tradition because it is increasingly difficult to make a living from the profession. Moreover, this shift in the sector is affecting one of the poorest groups within Bonairean society who, due to their limited levels of education, feel they have little else to fall back on. Consequently, it seems, fishers are not ready to openly acknowledge that their

local fishing practices over time contributed to these changes as they fear the negative consequences they could face if increasing measures that directly limit their fishing possibilities are implemented.

To get a better understanding of the current dire state Bonaire's fishery and fishers, in the next section, I will describe the management efforts that have been made for the sector. Taking a closer look at Bonaire's fishery sector and the way it is managed reveals how stakeholders involved in such a culturally valuable industry navigate environmental management, in general. My overview focuses on the management history framed by my consideration of the political changes brought about by the constitutional changes of 10/10/10.

5.3 POLICY SHIFTS IN BONAIRE'S FISHERY MANAGEMENT

While working with the fishers, they repeatedly expressed their discontentment with the island government which they believed has neglected them for decades. Considering the fact that the government has provided few facilities and little-to-no infrastructure for the fishers, coupled with the fact that most commercial fishers still live in poverty, this came across as a valid sentiment. However, although government officials admitted that the government had not made many recent investments in the sector, they also stressed that there had been many attempts to develop and manage the sector in the past but that these failed because of the lack of willingness of fishers to collaborate or participate in these efforts. In short, both parties were blaming the other for the current state of Bonaire's fishery sector.

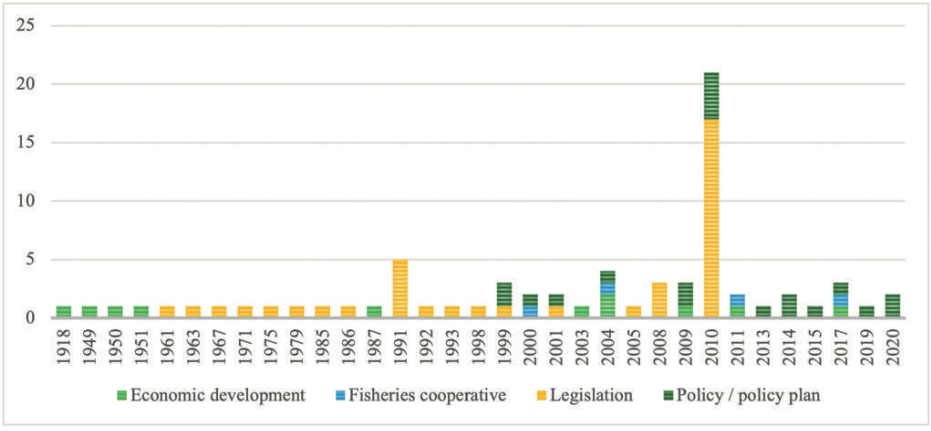


Figure 30. A timeline summarizing the date of the key projects, developments, policy documents, and legislation. The stated dates represent the starting date of the activity. Many activities continued for several years. Appendix H presents an overview of, and greater detail on, these events.

To get a better understanding of what happened, and perhaps to determine "who was right" in this debate, I traced the history of policy shifts regarding the fishery sector on Bonaire prior to 10/10/10 up to the date I finished writing this thesis (2020). In the following section I describe various initiatives made to manage the fishery sector of Bonaire and make a distinction between efforts that took place prior to and the efforts post the constitutional changes in 2010. A timeline summarizing the occurrence of the key projects, developments, policy documents, and legislation is presented in Figure 30.

5.3.1 Pre 10/10/10

The institutional and legislative framework of Bonaire's fishery

From 1954 up until 1991 fishery management was the sole responsibility of the island of Bonaire itself, and not of the Netherlands Antilles, as stipulated in the ERNA (*Eilandenregeling Nederlandse Antillen*, 1954) (Van Buurt, 2001). Legislation required to protect the fish stocks and the marine ecosystem (e.g., prohibiting the use of dynamite) and consequently ensuring the compliance of the sector emerged quite early in this chronology and gradually increased on Bonaire. In 1961, legislation was implemented and enforced for the protection of sea turtles and lobsters, followed by the prohibition of spearfishing in 1971 and the protection of corals in 1975. In 1979, the Bonaire National Marine Park was established (De Graaf et. al., 2016). Aware of the fast-declining conch populations, the government of Bonaire issued a law to protect the conch in 1985 (Anon, 2012)[19]. These developments exemplify how conservation measures that affected Bonaire's fishery gained attention early on.

Fishery as the sole responsibility of the island territory Bonaire changed with the emergence of the UN Law of the Sea (UNCLOS) and other international conventions of which the Netherlands Antilles was a signatory (either as the country of the Netherlands Antilles or through the Kingdom of the Netherlands).[20] The international conventions stipulated that there are clear fishery responsibilities at the national (Netherlands Antilles) level. The prescriptions of the UNCLOS led to the declaration of an Exclusive Fishery Zone (EFZ) and Territorial Sea (TS) of for all Dutch Caribbean islands in 1993. The TS is the marine area around the island up to 12 nautical miles offshore (also called the 12-mile zone) and the EFZ extends up to 200 nautical miles off-shore. This change resulted into the first of many ambiguities in the division of roles and responsibilities between the national government (i.e., country) and the island government (i.e., island territory).

19 However, other sources state this was not until 1991.

20 United Nations Convention on the Law of the Sea (UNCLOS) 1982 defines the rights and responsibilities of nations with respect to their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. It is uncertain to what extent the Convention codifies customary international law. The UNCLOS requires coastal states to conserve and manage living marine resources within their EEZ.

Leading up to the new zoning of the waters, the Fishery Act 1991 of the Netherlands Antilles (*Visserijlandsverordening* 1991) provided some clarity and described the division of roles and responsibilities of the national government of the Netherlands Antilles and that of the island territories regarding fisheries. The government of the Netherlands Antilles was responsible for the development and implementation of legislation and policy at the national level. The island government could develop island level policy and legislation in addition to this legislation. On the national level, fisheries responsibilities were assigned to the Minister of Economic Affairs and the Department of Economic Affairs of the Netherlands Antilles. The Minster of Economic Affairs primarily regulated the fisheries sector on the islands according to the Fishery Act 1991. On the island level, the management of fisheries was the responsibility of the Executive Council of the Island territory Bonaire and the Deputy of LVV and the Department of LVV (*Dienst* LVV) (Van Buurt, 2001). The Fishery Act 1991 also specified the installment of a fishery commission. This commission was a fishery advisory body responsible for following fish stock development and fishery activities within the TS and EFZ and it was also responsible for giving advice to the Minister and the island executive councils on matters pertaining to fisheries. The fishery commission consisted of one representative from all five islands of the Netherlands Antilles. In sum, the pre-10/10/10 fisheries management in the waters of Bonaire was a joint responsibility between the government of the Netherlands Antilles and the island government.

In 2010, the Fishery Act was implemented, and the national nature foundation *Stichting Nationale Parken Bonaire* (STINAPA; Bonaire National Parks Foundation) received the mandate from the island government of Bonaire to manage, monitor, maintain, and enforce the laws and regulations of the newly designated national marine park surrounding the island[21]. In addition, the marine park has several marine reserves in which fishing is completely prohibited. This was stipulated in the Island Ordinance Marine Environment Bonaire A.B 1991 Nr. 8 (establishes the Bonaire Marine Park, provides guidelines for the protection of the island of Klein Bonaire, and regulates the use of the Marine Park by divers and others including fishers).

Thus, the waters surrounding Bonaire in which fishing activities can take place were now legally defined into three areas: The Exclusive Fishery Zone (EFZ); the Territorial Sea (TS); and the Marine Park (MP). Each zone had different and, at times, overlapping sets of legislation, policy, and responsible parties responsible for its management. In terms of enforcement, the Coast Guard of the Netherlands Antilles was responsible, in collaboration with other island authorities (e.g., the police force, customs), for the EFZ and TS and, together with STINAPA, management in the MP.

21 In addition to STINAPA, Sea Turtle Conservation Bonaire (STCB) played a big role in the conservation of the sea turtle on the island. The Bonaire Marine Park encompasses all the waters surrounding Bonaire and Klein Bonaire up to a depth of 60 meters

Further legislation that affected Bonaire's fishery on the island level was developed and implemented. In 2008, the Island Ordinance Nature Management Bonaire A.B. 2008, no. 23 was implemented. It provided additional rules for the establishment of protected natural areas and established integrated legislation in the area of nature conservation and the protection of flora and fauna. Right before the constitutional changes in 2010, two additional legislative documents were implemented; namely, the Island Decree Nature Management Bonaire A.B. 2010, no.15 which designates protected species of animals and plants, including fish species, corals and other marine life, and provides guidelines for management measures; and Island Decree Marine Park Bonaire A.B. 2010, no. 14, which provides guidelines and rules for the use and protection of the Bonaire Marine Park. This decree includes regulations, guidelines, and restrictions on areas well as guidelines and prohibitions on fishing for specific species (i.e., Queen Conch, Lobsters, Sea Turtles) in Bonaire's marine park.

These latter two decrees were implemented in large part due to the persistence of STINAPA. In general, STINAPA was not, and is not, directly concerned with Bonaire's fishery, as most professional commercial fishing takes place outside of the marine park. However, as I already mentioned, there is a lot of recreational or subsistence fishing in the marine park. Therefore, STINAPA pushed for, and invested much effort in, the development of the Island Decree Nature Management Bonaire, A.B. 2008, no. 23 and the Island Decree Marine Park Bonaire, A.B. 2010, no. 14 with the explicit inclusion of fishery guidelines and regulations in these decrees. They did this knowing that most fishing pressure on the coral reefs stems from shore-based (recreational) fishing activities. Considering that all waters surrounding Bonaire within the marine park fall under STINAPA's care, they knew that including specific fishery related stipulations in the decree would give them the legal instruments necessary to manage fishing activities within the marine park. One respondent recalled that the government stressed that the involvement of the fishers in the development and implementation of these decrees was a requirement for approval. STINAPA made a lot of effort to set-up (informational) meetings with the fishers, including organizing evenings with drinks and food for the fishers that were advertised on the radio. However, few fishers would show up. The government would be informed about these meetings and, after several of these sessions, despite the absence of the fishers in the decree drafting process, the government approved the proposed legislation.

Foreseeing the societal issues likely to stem from the constitutional changes in 10/10/10, both governmental policy workers and the NGOs pushed to ensure that the new legislation was implemented before the historic date of October 10th, 2010. They hoped that by having the legislation in place prior to 10/10/10 there would be fewer protests against the legislation. People could not say the legislation was a result of the Dutch government "taking over". Instead, it would be clear that this was locally made decision. Due to the difficulty in including the fishers in this process, the government implemented

the legislation on September 1, 2010, a mere 1.5 months before the symbolic date of 10/10/10. This process is one of the examples I was presented with repeatedly to illustrate that the government does want to include the fishers, in decision-making but that this was a difficult feat to accomplish (Beukenboom, E., pers. com., November 2017.).

Because STINAPA was involved in the implementation and enforcement of island legislation in the marine park, the fishers blamed STINAPA for creating fishing restrictions, even though the government of Bonaire held final responsibility for development of island policy, rules, or regulations. This has negatively affected its reputation within the community. Because STINAPA is the enforcer of certain regulations, most fishers believe that STINAPA is also responsible for the restrictions placed on the use of natural resources.[22] To improve the communication and collaboration between the fishers and STINAPA, STINAPA created a permanent position for a delegated fisher in STINAPA's executive Board. This position, however, has not been successfully filled (Dilrosun, 2004).

While there have been policy plans for nature both at the national level of the Netherlands Antilles (Departement van Volksgezondheid en Milieuhygiëne, 2000) and at the island level of Bonaire (Pakus en Wayaka Advies, 2014; Anon, 2010), a detailed, island-level fisheries plan was never fully developed by the island government. There was a fishery policy plan for Curaçao (Van Buurt, 2001), which, to some extent, integrated the fishery sector of Bonaire. The plan does not specify why Bonaire was included, nor does it state that the measures or recommendations included in the plan should be implemented on Bonaire, as well. This could be due to the fact that the fishery sectors of Curaçao and Bonaire share many similarities, that fishers from Bonaire and Curaçao often fish in each other's waters and target the same species, and lastly that they share their market. The island fishery policy plan for Curaçao also states that a National Fisheries Plan was being prepared for the Netherlands Antilles, but to my knowledge this plan was never completed.

The existing strategic island development plans for Bonaire advocate sustainable growth with respect for nature and culture and also addressed Bonaire's fishery. The Nature Policy Plan for Bonaire for 1999 – 2004, for example, portrays local Bonairean fishery as a traditional, sustainable sector in which overfishing did not take place except for some few species (Queen Conch, sea turtles and *Kiwa [West Indian top snail]).* Intensive industrial fishery outside of Bonaire is stated as being the biggest threat to local fishery and the livelihoods of fishers and to the fish stocks and levels of biodiversity in waters surrounding Bonaire (Anon, 2010). In other words, it appears that the island government has not identified local fishery practices as harmful to the marine environment. The need to develop a fishery management plan is mentioned, however, and the government

22 STINAPA's mandate only includes the national park. There is not enough ranger capacity to monitor the park 24/7 and this limits the amount of control STINAPA has over the park. The areas outside of the national park are patrolled by the Coast Guard.

did make an inventory of Bonaire's fishery in 2004. This inventory does state that some decline in fish stock is apparent, but that it is difficult to draw any concrete conclusions on fish stocks as there is no (long term) data available regarding Bonaire's catch landings (Dilrosun, 2004). This report emphasized the need and the wish of the government for fishers to strengthen their level of organization by means of a fishery cooperative.

This section shows that prior to 10/10/10, there was some legislation in place to manage the fishing taking place in the waters surrounding Bonaire, but that a clear, written vision for the sector seemed to be lacking with the absence of a fishery policy plan. Moreover, it also becomes apparent that the various jurisdictional waters create ambiguities regarding the division of roles and responsibilities in terms of fishery management, legislation and policy development, and enforcement of legislation. Despite the apparent lack of a clear policy, there have been several attempts to develop the fishery sector of Bonaire in the past. I present the most memorable in the section below.

Management & Development Activities

Only a few historical sources are available that provide some insight into the management and development efforts of Bonaire's fishery sector prior to the constitutional changes in 2010. One of the earliest (scientific) sources dates back to 1907 and describes the sector as small and unorganized. The report mentions overfishing of the green sea turtle and states that no measures were taken to manage this (Boeke, 1907). Based on the limited archival data, it can be concluded that there have been several attempts to expand the sector and increase its contribution to the local economy through (controlled) industrialization and professionalization of the sector as well as aquafarming. Over time, it seems, more emphasis was placed on conservation measures to prevent further depletion of fish stocks.

It was not until 1949 when one of the most serious attempts to professionalize the sector commenced, namely the development and execution of a business called Bonaire Vis Industry N.V. (Bonaire Fish Industry Ldt., B.V.I.) begun. The intention was to provide better facilities for the fishers and expand the market through a joint effort by the government of Bonaire and the former Netherlands Antilles. Leendertse & Verbeek (1987) provide a detailed description of the rise and fall of this initiative which came to an end in 1982. The general aim of B.V.I. was expanding the fleet size and improving the quality and availability of the catch through better storage and processing facilities. The funding that was initially required was budgeted for the purchase of a cooler and freezer (*koel- en vrieshuis*), a refrigerated car, and the establishment of a cooperative. The warm climate of the islands and the lack of organization among fishers were identified as priority issues for the development of the sector (Van Gelderen, 1953). After additional research and development this budget grew to an amount of a little over 1.1 million Antillean guilders. This new budget also included the purchase of several fishing vessels and other materials required for centralizing a bigger market and thus

establishing a fishing industry. Boats and cooling facilities were purchased, but due to myriad reasons the project failed. The main reasons were the overestimation of the number of fishers willing to participate, the lack of expert guidance, the purchase and installation of material and boats not suitable for the job and/or at unsuitable locations, delivery and financing delays, and overall mismanagement. Moreover, it was stated that B.V.I. was a government run project, but it was highly dependent on the participation of fishers — a participation which was not forthcoming because the fishers did not have the capacity or ability to function according to the B.V.I. model. Consequently, a fishers' cooperative was never formed (Leendertse & Verbeek, 1987). Exactly one day before the announced inspection by the state auditor in 1982, the entire administration of B.V.I. went up in flames (Leendertse & Verbeek, 1987). An article in the local newspaper, *Extrá*, summarized the developments of B.V.I and concluded that the fire that engulfed the B.V.I. administration was a clear sign of embezzlement and corruption and depicted the shady dealings that went on within B.V.I. (Antoin, 2018). The incineration of the B.V.I. administration is likely one of the reasons why governmental archival data on fishery management efforts is limited.

A few years later, in 1987, new attempts were made for the development of aquaculture or farming of shrimp, Queen Conch, and several other species under the name of a foundation called Marcultura. The project was supported by the federal government of the Netherlands Antilles, the Fisheries Sector Administration of Bonaire (and Curaçao and Aruba), and later also by the Dutch government. One of the first aims was to experiment with the rearing and release of the overfished Queen Conch and after some success, the foundation and aquaculture station expanded in 1991 with the aim of supplying the commercial market with fish (Figure 31). The idea was to create economically and technically feasible aquaculture practices for the three islands (Hensen, 1991; Hensen & Grashof, 1991). Despite many attempts and substantial investments to make the project a success, the financial yield never exceeded the investments made. This was due to a variety of factors, including high maintenance and personnel costs, environmental conditions, logistical problems, and technical intervention coming too late, but also due to lack of cooperation of fishers and poachers. This resulted into the closure of Marcultura in 1994 (Freddi, 1994).

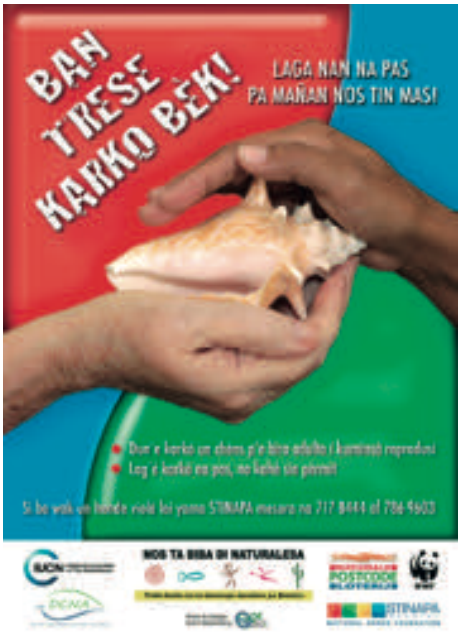


Figure 31. Flyer made for the Conch restoration project. Use of a 'White' hand and 'Black' to indicate collaboration between the different communities of the island. The poster reads: Let's bring back Conch. Let them at peace so we have more tomorrow. Give the Conch a chance to become mature and reproduce. Let the Conch at peace, don't catch them without a permit. In case of witnessing a violation, call STINAPA.

In 2009, attempts were made once more to set-up a fish farm, called Elijah Fish Farm, with the goal of increasing the availability of sustainably raised fish (circa 100 ton per year). Again, substantial (private and governmental) investments (up to 3.7 million Antillean Guilders) were made and, supposedly, the most advanced fish farming technologies would be put in place (Anon, 2009). Once again, the attempt at establishing a fish farm failed, this time due to power failure and a subsequent loss in stock. Moreover, it is possible that the market was too small, after all, to make fish farming a profitable industry. In 2014, the farm was placed for sale at auction for a starting price of 650,000 US dollars, but was never sold (Anon, 2014; Anon, 2017; Pakus en Wayaka Advies, 2014). These failed attempts by the government and the private sector to professionalize and expand the Bonaire's fishery had significant impact on the trust and willingness of both the government and the fishers to continue to invest in these types of activities. Despite its failure, these attempts at fish farming were some of the first to combine exploitation and growth of the local fishery sector with marine conservation by restoring depleted fish stocks (i.e., the Conch).

Besides the failures of B.V.I., Marcultura, and, later, Elija Fish Farm, only marginal investments were made in structural maintenance of the few fishery facilities provided by the government (e.g., placement and repairs on fishing docks). An inventory of

Bonaire's fishery (Dilrosun, 2004) reported that while the island government of Bonaire yearly budgets an amount of ANG 30,000 for maintenance of the government provided facilities, this sum was not spent on the sector due to the unstable financial state of the island government.

Over the years, the first shift in fishery management towards nature conservation became visible. Documents from the local governmental department of Agriculture Livestock and Fishery (*Landbouw, Veeteelt & Visserij, L.V.V.)* reveal that in 2003 and 2004 three Fish Aggregating Devices (F.A.D.; Lokvlotten) were placed in the waters surrounding Bonaire.[23] F.A.D.s were believed to be beneficial for the sector as they can help to reduce the fishing pressure on coral reefs, while simultaneously increasing the catch yield and decreasing fishing expenses such as the fuel costs of fishers. The effectiveness of the F.A.D.s was monitored for a short while by the L.V.V., and they did result in higher catch yield by the fishers. However, due to strong currents and lack of maintenance the F.A.D.s were lost (Dilrosun, 2004; Pakus en Wayaka Advies, 2014). Another notable event was the exchange that took place with fishers from St. Lucia in September 2004 which was initiated by STINAPA and the island government. The exchange centered around topics such as fishery facilities, involvement of fishery in the tourism sector, and the establishment of marine protected areas (again) through the establishment of a fishery cooperative. The fishers, the local ENGOs, and the government all recall this exchange as successful, and it was mentioned by my respondents during various interviews. Some recommendations that were formulated based on the exchange were in line with developments that were already taking place on Bonaire and some actions were followed up concretely. The recommendation to implement and enforce fish reserves, prohibit the use of trap fishing (without a permit), and unregistered fishing nets that did not conform to the permitted mesh size were successfully implemented. Little to no known follow up was given to several other recommendations, including investigating export possibilities of fish to expand the market, the development of an island level fishery plan, and long-term monitoring of fish landings (Dilrosun, 2004; Pakus en Wayaka Advies, 2014).

In 2008, two fish reserves (no fishing allowed) and two dive reserves (no diving or snorkeling allowed) were established by the island government after the repeated requests of STINAPA, whose request was based on the knowledge gained from the exchange that took place with the St. Lucian fishers, as well as subsequent scientific research (Anon, 2010). As I mentioned previously, this measure was broadly supported due to the involvement of fishers and divers in this process and the exchange that took place between the fishers of St. Lucia and Bonaire.

23 F.A.D.s are devices placed in the ocean to attract fish, making fishing less labor intensive and possibly resulting in higher catch yields while reducing expenses such as gasoline. The devices used on Bonaire are a simple construction consisting out of an anchored buoy with a series of strings spliced into the anchoring rope which help to attract fish.

In August of 2010, STINAPA launched a conch restoration project funded by the Dutch Postcode Lottery as a last effort to save and restore the conch population. The Lottery supports charities throughout the Netherlands with some of its earnings. Through awareness campaigns, research, and enforcement the project aimed to stop illegal poaching. The project lasted for a period of three years. Some success was achieved in terms of awareness of conch overfishing and its consequences. However, despite the involvement of fishers, poaching activities are currently still taking place and are difficult to suppress. Moreover, enforcing conch legislation proved to be difficult due to the size and remoteness of the location of Lac Bay (Anon, 2012).

Lastly, there have been efforts to establish a fishery cooperative. Several attempts were made to form a functioning cooperative with the responsibility of coordinating and maintaining infrastructure and fishing facilities, collective purchasing of fishing materials, and providing training to fishers. These projects never came to fruition. Several stakeholders informed me about the attempts to establish the fishery cooperative KOPIBON (*Kooperitiva Piskado Boneiru*/Cooperative Fishermen Bonaire). Even the earliest documents on Bonaire's fishery sector mention the importance of having some sort of fishery cooperative on Bonaire (Belloc, 1950; Zaneveld, 1962; Van Buurt, 1984). The establishment of KOPIBON was (partially) an initiative by the government of Bonaire. It is not completely clear when the creation of KOPIBON started, but archival documents from LVV indicate that the meetings occurred in 2000, 2004 and again in 2011 (LVV archive). Coordinators organized several meetings for the fishers, with different goals such as informing fishers about new legislation, sharing research findings, and motivating the fishers to form a cooperative. The evaluation report, Bonaire Nature Policy Plan dating 1999 -2004 (Anon, 2010) stated that the fishery cooperative KOPIBON had existed for many years but that the level of organization among the fishers was still minimal (LVV archive). Thus, despite the acknowledgement of the cooperative by the government and other relevant stakeholders, there were few visible and lasting changes to improve the conditions for the fishers.

An important conclusion that can be drawn from these developments is that while conservation efforts might still be insufficient to guarantee the sustainability of the sector and prevent further depletion of the fish stocks, efforts for stock conservation and ecosystem preservation seem to be more successful than the attempts made to economically develop the sector. Unsurprisingly, these trends have affected the willingness of fishers to collaborate in later attempts to conserve the marine environment.

5.3.2 Post 10/10/10

Changes in the Institutional and Legislative Framework of Fishery Management

In the current section, the changes that occurred in fishery management after 10/10/10 are discussed. Changes not only occurred in terms of roles and responsibilities, but also the type and amount of effort invested in improving fishery management on the island. The constitutional changes of 10/10/10 further fragmented and complicated the managerial landscape of government agencies locally and at the level of the Kingdom, and how their mandates overlap with other public and private regulating bodies. This has made involvement in environmental management more complex for local fishers. Table 13 provides an overview of the different types of legislation for fishery management applicable to the three water zones of Bonaire, and the responsible institutions and stakeholders in place since 10/10/10 categorized by type of management activity. In this table, it is already clear that the fishers do not (yet) have a structural or prominent role within fishery management.

A first minor difference that needs to be addressed are the three jurisdictional zones in which fishing activities can take place (see Figure 24). While the scope of the areas has remained the same, the Exclusive Fishery Zone (EFZ) of the Dutch Caribbean was declared an Exclusive Economic Zone (EEZ) on 10 June 2010 (Nandan, 1987). As was the case pre-10/10/10, the fisheries legislation and the division of roles and responsibilities of the various stakeholders differ and at times overlap for the three water zones.

Table 13. Overview of marine zones and applicable legislation and legally responsible parties for fishery management on Bonaire.

ZONE	Affected by (inter) national / (sub)regional bodies, conventions, treaties etc.	National & Local legislation	WHO IS RESPONSIBLE FOR FISHERY MANAGEMENT?			
			Legislation development / implementation	Policy / management plan development	Enforcement of legislation / implementation of policy & management	Fisheries research & monitoring
EEZ	CITES SPAW - protocol CMS WECAFC Yarari Sanctuary IHS-19	FABES FDBES Decree on Tasks and Procedures for Fisheries Commission EEZ- management plan	Ministry of LNV FCBES CMBF	Ministry of LNV FCBES CMBF	CMBF Coast Guard KMar KPCN	CBMF
TS	CITES SPAW - protocol CMS WECAFC Yarari Sanctuary IHS-19	FABES FDBES Decree on Tasks and Procedures for Fisheries Commission	Ministry of LNV FCBES Public entity of Bonaire	Ministry of LNV FCBES Public entity of Bonaire	Public entity of Bonaire Coast Guard KMar KPCN	Public entity of Bonaire
MP	CITES SPAW - protocol CMS WECAFC Yarari Sanctuary IHS-19	FABES FDBES Decree on Tasks and Procedures for Fisheries Commission Island resolution Marine park Bonaire	Public entity of Bonaire	Public entity of Bonaire STINAPA	STINAPA Coast Guard Public entity of Bonaire KMar KPCN	Public entity of Bonaire STINAPA

Since 10/10/10, the Ministry of Agriculture, Nature and Food Quality (*Ministerie van Landbouw, Natuur en Voedselkwaliteit*; hereafter referred to as Ministry of LNV) became responsible for the proper management of fisheries in the EEZ around the three islands, and it is responsible for the Territorial Seas (TS), together with the island authorities. This is somewhat similar to the division that existed between the government of the Netherlands Antilles and the island government of Bonaire, the exception being that the government of the Netherlands is only directly responsible for the waters surrounding Bonaire, Sint Eustatius, and Saba, and not for those of the other islands within the Dutch Caribbean. In addition to the Ministry of LNV, there are several other Dutch ministries relevant for, or indirectly concerned with, the fisheries sector of the Caribbean Netherlands, such as: the Ministry of Infrastructure and Water Management (Ministry of I&W); the Ministry of Defense; and the Ministry of Justice and Security. Together with the public entity of Bonaire and local organizations, the Ministry of Infrastructure and Water Management works on matters relevant to fishery such as: safe harbors; secure transport; wastewater purification; both land-and-water management; spatial development plans; maritime disaster management; and inspections. The Ministry of Defense and Ministry of Justice and Security have certain responsibilities that (indirectly) affect the fishery sector in terms of enforcement and control. The new construction requires that the Dutch ministries and the various island governmental departments be properly synchronized with each other. Moreover, the Ministry of LNV is not only responsible for fisheries in the Caribbean Netherlands, but also for nature. Considering that nature has a higher economic value than fisheries, the chances of the fishery sector receiving an equal amount of attention from the Ministry are small. This can have practical implications regarding the (types and amount of) capacity and resources made available to the sector for proper management.

Currently, the public entity of Bonaire (*Openbaar Lichaam Bonaire*) is required to assist with the execution of fishery projects, monitoring of the sector, and the provision and maintenance of facilities. The public entity is also responsible for the implementation and enforcement of fisheries legislation and policy.[24] However, capacity within the island government has been declared as deficient, thus limiting the public entity of Bonaire in fulfilling its responsibilities to and for the fishery sector (Pakus en Wayaka Advies, 2014).

The Ministry of LNV and the public entity of Bonaire have jointly installed two commissions responsible for fishery management. First, there is the Fisheries Commission BES (FCBES), which fulfils a similar role as the Fisheries Commission that existed prior to 10/10/10. The main difference is that the current FCBES, installed by the Ministry of LNV in 2012, is comprised of one representative from Bonaire, one from Saba, one

24 Rules and regulations at the level of the public entities cannot be less stringent than, or in contradiction to, the legislation put in place by the government of the Netherlands. While rules can be more detailed and stricter, under no circumstance can they go against the Principle of Equality (*gelijkheidsbeginsel*: The principle that every citizen should have equal (legal) rights in similar instances).

from Sint Eustatius, and an independent chair. Thus, there are no representatives from Curaçao, Aruba, or Sint Maarten. FCBES is responsible for writing and implementing the national fisheries management plans, advising the Minister on issues pertaining to fisheries such as permits or licenses, and it discusses and proposes legislative changes related to the sector. The second commission was not in existence prior to 10/10/10 and is called the "Dutch Caribbean Committee on Marine Biodiversity and Fisheries" (CMBF). This commission was established to maintain some collaboration between all of the Dutch Caribbean islands for the management of their adjacent waters as had been the approach when the governmental structure was the overarching Netherlands Antilles. This commission is responsible for the management of the marine biodiversity of the EEZ of the Dutch Caribbean. It consists of representatives of all the Dutch Caribbean islands and the Netherlands who signed the EEZ-agreement. Currently Bonaire, Curaçao, Saba, Sint Eustatius, Sint Maarten, and The Netherlands have signed the agreement (Meesters, Slijkerman, de Graaf & Debrot, 2010). The focus of this commission exemplifies the increased attention paid to conservation of the marine environment.

As was the case for the period before 10/10/10, several environmental non-governmental organizations are still partly (and indirectly) concerned with fisheries management on the three islands. STINAPA's governmental mandate to manage and maintain the national parks — including the Bonaire National Marine Park — was continued post 10/10/10. In addition to local ENGOs (STINAPA, STCB and DCNA[25]), there are now also national (Dutch) ENGOs (WWF-NL; NEV[26]) who are more actively involved with fishery management on the island.

The current national fisheries legislation for Bonaire, Saba, and Sint Eustatius is based on the fisheries legislation of the former Netherlands Antilles (Fishery Act 1991) and is stipulated in the Fisheries Act BES, 2010 (*Visserijwet BES*; FABES) and the Fisheries Decree BES, 2010 (*Visserijbesluit BES*; FDBES). The Ministry of LNV primarily regulates the fisheries sector on the three islands according to the FABES and the FDBES. This consequently also affects the scope of their legal responsibility. The FCBES only addresses fishing activities for which permits are required. In general, policymaking and legislation for the TS falls within the islands' jurisdiction and is therefore an island responsibility, and for the EEZ this is national jurisdiction and therefore the responsibility of the national government. It is stipulated by the Fisheries Act BES that fisheries in the TS

25 The Dutch Caribbean Nature Alliance (DCNA) is a regional network consisting of organizations that together have partnered up to promote and support nature conservation on the islands of Aruba, Bonaire, Curaçao, Saba, Sint Eustatius, and Sint Maarten. DCNA's mission is to help and assist with the management of protected areas on the six islands.

26 The Dutch Elasmobranch Society (NEV) brings together scientists, conservationists, and policy makers to gather scientific knowledge, and to promote the interests of elasmobranch fishes (sharks, skates and rays) in Dutch and European waters. The society was founded to identify the persisting gaps in knowledge about Dutch and European elasmobranchs, and to bridge these gaps by conducting their own research, in collaboration with Dutch and international partners (Source: www.elasmobranch.nl).

is a responsibility of the national government. Without a permit, fishing in the TS and EEZ is currently prohibited by law and through the permitting system specific rules and regulations can be installed and enforced.

Even though the national legislation (FABES and FDBES) is based on the fisheries rules and regulations that were in place under the administrative and governmental construction of the former Netherlands Antilles, the fisheries commission (FCBES) identified several significant loopholes which complicated enforcement and for which revisions and adaptions were deemed necessary (See EcoVision, 2017). In 2017, the fisheries regulations were thoroughly evaluated by a consultancy bureau contracted by the Ministry of LNV to identify the gaps and to link up with the regional fishing regulations. This evaluation led to a revision of the national legislation.[27] These developments illustrate that even seemingly minor changes in legislation can have large consequences in practice, further complicating proper management of the fisheries sector. It also illustrates that, while frustrating to practitioners in the field, it takes time for all the stakeholders to adjust before there can be proper implementation of regulations, initiatives, and legislation, particularly if there is a substantial change involved. Island legislation that affects fisheries in the marine park and territorial waters did not change after 10/10/10.

In addition to the legislation at the national (BES) and island level, there are various international conventions and treaties that came into effect for the Caribbean Netherlands after 10/10/10. Adherence to these agreements and participation in these bodies has had consequences for fisheries management in the Caribbean Netherlands in terms of policy, legislation, and enforcement.[28] While most of these conventions were already applicable to the three islands, the Caribbean Netherlands, as special municipalities of the Netherlands, now have a greater obligation to participate in, and cooperate with, global and regional efforts for fisheries management.

27 This evaluation also resulted into the development of a five-year national fisheries management plan, called the Sustainable Fisheries Plan which was implemented in January of 2020.

28 Two types of international instruments exist that affect fisheries. First, there are instruments that are specifically relevant for international nature conservation (e.g. CITES, SPAW Protocol). These strongly affect fishing activities by, for example, prohibiting the catch of certain endangered species. Secondly, there are international and regional fishery bodies (such as WECAFC)_that directly affect fisheries policy at the national and local level. The obligations under global and regional instruments are incorporated in national legislation. The nature of these consequences depends on the nature of an international instrument and the mandate of an international body. By becoming a party to a legally binding instrument (e.g., the UNCLOS), that party is legally bound to the obligations therein. Conversely, by adhering to a non-legally binding instrument (e.g., the FAO Code of Conduct) a State or entity (e.g., the European Union) becomes politically bound to the commitments therein. Bodies established by a non-legally binding instrument cannot have a mandate to impose legally binding obligations on their participants, and can therefore only impose political commitments. Moreover, even bodies established by legally binding instruments do not necessarily have a mandate to impose legally binding obligations on their members. An example in this regard is WECAFC. One of the main reasons for the ongoing WECAFC reorientation process is the desire for WECAFC to have the mandate to impose legally binding obligations on its members (Mac Donald, 2019).

Like the division of enforcement responsibilities pre-10/10/10, these are currently also divided among the national Dutch and local (non-)governmental authorities. The main responsible party for fisheries enforcement remained the Dutch Caribbean Coast Guard (KWCARIB). One of the tasks of the KWCARIB is the enforcement of fisheries legislation at sea. However, considering the gravity of other issues such as drugs and patrolling for illegal migrants, the available capacity for fisheries management is minimal. Therefore, KWCARIB continues to work closely with the STINAPA Marine Park. In addition to the KWCARIB and the STINAPA Marine Park Rangers, the Dutch Caribbean Police Force (KPCN) and the Royal Netherlands Marechaussee (KMar) can also be consulted when deemed necessary[29]. Despite this collaboration between these parties around enforcement activities, there remains a structural lack of resources for fisheries enforcement. Moreover, the vast scope of the waters in which fishing activities take place requires a level of patrolling that is not (financially) feasible for a small island like Bonaire. Furthermore, the importance of fisheries issues is valued substantially less compared to other matters that require the Coast Guard's attention (and that of STINAPA's rangers, KPCN, and KMar). Consequently, the Coast Guard remains highly dependent on collaboration with STINAPA in terms of fisheries management. Just as was the case pre-10/10/10, the negative reputation of STINAPA among the fishers is still present today. This reputational issue is not only evident at the organizational level (i.e., STINAPA having a bad reputation within the community), but also at the individual level, specifically rangers who are employed at STINAPA. Bonaire's marine park rangers have worked for STINAPA for many years and are almost always locals. Here the impact of small-scale of the island of Bonaire also becomes apparent in that everyone knows everyone and that the rangers often have families or friends who also fish. These rangers are responsible for enforcing the laws and regulations. Because this is a delicate task, these rangers are reluctant to enforce rules and regulations, particularly if they feel fishers are not informed about and involved in the development of the rules, if legislation is not clear, or if the legislation is not realistic or practical to enforce (Beek, Debrot, & Graaf, 2012). As one ranger explained to me:

> *We [the rangers] are the ones who need to confront the fishers. We need to take […] "revenge". And if it [legislation] is implemented correctly, I don't care. I don't have problems with them [the fishers] because they will get angry anyway. But I don't have a problem with them getting angry if it's done right. But if it's done wrong, I find it unjust.*

In sum, this overview shows that fisheries management on Bonaire has always been a joint responsibility between various governmental entities and includes the involvement of various NGOs. The involvement of the NGO STINAPA is through a mandate by

29 The KMar performs police tasks in the Dutch Caribbean. They serve the Dutch military personnel on the islands and the personnel of the Curaçaoan and Aruban Militias, and carry out duties at military facilities. Their tasks include the maintenance of (inter)national rule of law in the context of illegal fishing and environmental offences (Mac Donald, 2019).

the government, thus giving them a license to operate. While the division of roles and responsibilities for Bonaire's fisheries sector before 10/10/10 and after 10/10/10 do not seem to differ greatly on paper, in practice, the new division of roles and responsibilities requires a high degree of collaboration, both between the Dutch ministries and the public entity of Bonaire. Furthermore, although the relationship between the ministries and the public entity resembles that of the ministries and the regular Dutch municipalities, there are several significant differences that complicate the division of responsibilities and collaboration between the two governmental institutions. First, the physical and psychological distance between the islands and the Netherlands, in combination with the increased bureaucracy post 10/10/10, complicated the procedures that are required to effectively develop and implement policy. Second, the ministries are dealing with three isolated small islands who differ greatly from each other but who are treated as being one unit (the BES-islands). This means that each island needs to be considered separately, which once more complicates and prolongs the development of adequate management measures. Third, the lack of capacity (both financially and in terms of personnel) that is related to the small, isolated character of the island, resulted in many discussions about who is financially responsible for the execution of fisheries policies. For instance, who needs to pay for the placement and repairs of fishing piers? The Ministry of LNV, the Ministry of I&W or the public entity of Bonaire? Lastly, tensions and distrust between the islands and the Netherlands created in the colonial past have implications for the effective collaboration between the involved parties — government, fishers, ENGOs — and cannot be ignored.

Management and Development Efforts for Bonaire's Fishery Sector post- 10/10/10

10/10/10 was not only a decisive moment in the constitutional structure of the Kingdom of the Netherlands, but in the years leading up to that date there was a growing worldwide (political) awareness of the need for of climate management. This was certainly the case in the Netherlands, and this vision was translated into how the Netherlands perceived and dealt with the Caribbean Netherlands. Bonaire's fisheries sector was, therefore, already affected. The following paragraphs describe the management and development efforts affecting fisheries on Bonaire which took place after 10/10/10. This overview will highlight the practical implications of the reforms on Bonaire's fisheries management and, more importantly, the challenges regarding the involvement of the fishers in these efforts will become clearly visible.

A first notable finding was that even though the Ministry of LNV holds final responsibility for the fisheries sector of the Caribbean Netherlands, the development of a national fisheries policy or management plan remained absent until 2019.[30] The main argument given for the absence of clear policy and management plans was the lack of data. This

30 The first steps towards developing a policy plan were taken in 2019. These steps were requested by FCBES and were based on the recommendations following the evaluation of the fisheries legislation of the Caribbean Netherlands. The plan was to be implemented in 2020.

dearth of data makes it difficult to develop the policies and manage their implementation that would be necessary for the maintenance of sustainable fisheries. The national government adheres to the principle that policy and adequate measures can only be taken and implemented if it is clearly known which measures are required. Accordingly, the Ministry of LNV prioritized the execution of myriad studies to determine the status of the fisheries of Bonaire, Saba, and Sint Eustatius.

Research was conducted to determine: reef and pelagic fish stocks (De Graaf, et al., 2016; Beek, Debrot, & De Graaf, 2012); the status of the coral reefs (Steneck, Arnold, & DeBey, 2011; Steneck, Arnold, Leon, & de Rasher, 2015); the impact of invasive species (Debrot, Van Buurt, & Vermeij, 2011; De Leon, et al., 2013); the cultural and economic value of Bonaire's fisheries and marine ecosystems (Lely, et al., 2013; Schep, Johnson, van Beukering, & Wolfs, 2012) and various other topics. Most of these studies were commissioned and subsidized by the Dutch government. Moreover, with the constitutional changes Dutch research funding (Dutch Organisation for Scientific Research (NWO)) also became directly available for research on the Caribbean Netherlands. This illustrates the closer ties between the islands and the Netherlands, and consequently, the presence and availability of resources from the Dutch government and academic research institutes based in the European Netherlands for the development of policy and resource management plans and the acquisition of scientific knowledge.

Some researchers conducting these studies worked directly with or at least consulted some fishers and tried to inform the fishers about the outcomes of their research. However, many of these studies did not result in positive outcomes for the fishers because they showed that the marine ecosystems around Bonaire were under pressure and these studies defined overfishing (of certain species) as one of main threats to the ecosystem. In 2017, an extensive synopsis of the state of nature in the Caribbean Netherlands concluded that the overall status of fish habitats and fish stocks around Bonaire is dire (Debrot, Henskens, & Verweij, 2017). Findings from one study that created significant uneasiness among the fishers was the *What's Bonaire's Nature Worth* study (Lely, et al., 2013). The study provided insights into the financial and social contribution of Bonaire's natural environment and estimated the total economic value to be around 105 million US dollars per year. In comparison, the reef-related total commercial fisheries were valued at almost $400,000 and the recreational fisheries value was estimated at an economic value of almost $700,000 annually (Schep, Johnson, van Beukering, & Wolfs, 2012). On the one hand, the findings of the study argue that nature conservation is more profitable than investing in fisheries development. On the other hand, the estimates give the impression that fishers do make a substantial income. Several stakeholders and fishers explained that when these results were presented to the fishers, this led to much upheaval and restlessness among the fishers' community, as they feared this might imply they had to pay taxes. Due to the lack of professionalization — most fishers do not keep track of their administration, and many do not even have a back account —the incomes of commercial

fishers are not controlled for taxes. This argument — the fear of paying taxes — was a repeated reason as to why fishers were hesitant to professionalize the sector: they argued that they already make very little income, and the possible deduction of taxes would only further worsen their poverty.

In other cases, researchers would present their findings on the marine environment and fish stocks in settings or in ways that would not reach the fishers or the broader (fishers) community at all. One evening during my first week on Bonaire, I attended a presentation given by a Dutch researcher on the state of the coral reefs. The presentation was held at the Council on International Educational Exchange (CIEE) Bonaire, an American marine research station based on Bonaire. As I glanced through the room I noticed, unsurprised, that the presentation was almost only attended by students from the institute, some biologists who worked at STINAPA, a couple of dive shop owners, and some elderly American or Dutch residents interested in the topic. Although this was a public presentation, the general public of Bonaire was not represented in the attendees. Furthermore, the presentation was full of complex scientific jargon that excluded non-academic audiences and would have probably remained opaque to the fishers had they attended.

On the island governmental level, in addition to these studies, a local policy plan at the level of the public entity of Bonaire that addresses the fisheries sector was developed, called *Beleidsvisie Landbouw Veeteelt en Visserij Bonaire 2014-2029 (*Policy vision Agriculture Livestock and Fisheries Bonaire 2014-2029*)*. This plan formulated a general vision and a series of ambitions and corresponding actions for the three areas of livestock, agriculture, and fisheries. It should be noted that there was substantially less emphasis placed on fisheries in comparison to the development and management of agriculture and livestock. The goal that was formulated for fisheries was to create an economically and ecologically sustainable sector with the objective of improving the fisheries infrastructure. The actions required to achieve these ambitions goals were identified. They were: conducting research on existing fisheries; developing specific fisheries policies and legislation; and developing an implementation plan for sustainable reef and pelagic fisheries. Moreover, in this plan, the lack of capacity within the LVV department and the need to hire a fisheries policy worker to support the work being done by the LVV department was clearly stated. The need for these additional personnel was repeated in several research reports on the fisheries sector of Bonaire, including the first report in 2009 written by Wageningen University for the LVV department, called *Herstructureringsadvies voor de Dienst LVV op Bonaire — Een analyse van de sectoren Landbouw, Veeteelt en Visserij (Advice for Restructuring the LVV Service on Bonaire — An analysis of the Agriculture, Livestock, and Fisheries Sectors).* It was not until 2019 that the first tangible efforts were made towards bringing in this additional support, and a vacancy was advertised.

The lack of priority given to fisheries by the government is not only visible on the island level, but also on the level the government of the Netherlands. Whereas specific fisheries data were lacking, such as fish stocks, there were insights and existing policy plans available regarding the natural environment of Bonaire (and the Dutch Caribbean in general).

In anticipation of the constitutional reforms, baseline studies were subsidized by the Netherlands to determine the state of the natural (marine) environment of the Caribbean Netherlands (Debrot & Bugter, 2010; Debrot, Henkens & Verweij, 2017; Debrot, De Graaf, Henkens, Meesters & Slijkerman, 2011; Debrot, Witte, Scheidat & Lucke, 2011). The insights gained from these studies led to the development of two plans on a national level which also (indirectly) affect the management of fisheries of Bonaire, namely: the EEZ management plan and the Nature Policy Plan Caribbean Netherlands. In anticipation of the constitutional reforms in 2010, an EEZ management plan was developed for the EEZ of the Caribbean part of the Kingdom. The development of the plan was a joint effort between the former Netherlands Antilles, Aruba, and the Netherlands, with the reasoning for this combination being that despite the fragmented character of the Dutch Caribbean, the EEZ should always be integrally and collaboratively managed. The plan stems from the policy plan *Natuurbeleid van de Nederlandse Antillen (*Nature policy on the Netherlands Antilles) and focusses on the safeguarding and the prevention of the decline in biodiversity in the EEZ waters (Meesters, Slijkerman, De Graaf & Debrot, 2010). The nature policy plan was developed by the Ministry, as well, and, like the EEZ management plan, was based on the evaluation of the nature policy plan of the Netherlands Antilles. The policy plan is framed by a perspective that emphasizes the economic importance of nature (from the perspective of eco-system services). This policy plan was designed as an instrument to promote socio-economic and human well-being and encourage the integration of nature conservation in public and socio-economic sectors, ensuring that nature conservation enters the mainstream of society. In this regard, the plan addresses or affects fisheries, as it promotes the development of legislation and management plans regarding marine biodiversity, (internationally) protected marine species and the implementation of marine protected areas (Anon, 2013). Both plans were written by the Dutch research institute IMARES (Institute for Marine Resources & Ecosystem Studies) and financed by the Ministry of LNV. Thus, the government of the Netherlands paid extensive attention to and made the resources available that were required for the development of, policy plans aimed at safeguarding the natural environment and biodiversity of Bonaire's (marine) environment.

Despite the absence of an overarching policy plan for fisheries on a national level and a clear policy and implementation plan for sustainable fisheries at the local level, since 2010 several concrete fisheries management actions were taken by the Ministry of LNV on Bonaire, in addition to the extensive revision of fisheries legislation and the

aforementioned studies. Some of these were conducted in collaboration with the public entity of Bonaire and NGOs[31].

In 2015, for example, the YarariMarine Mammal and Shark Sanctuary was established and a "Save our Sharks campaign" was launched[32]. This proceeded two of the key goals identified in the EEZ management plan, namely, to develop a marine mammal sanctuary and the effective implementation of shark protection (DCNA, 2019; Meesters, Slijkerman, De Graaf & Debrot, 2010). The Yarari sanctuary encompasses all the waters of Bonaire, Saba, and Sint Eustatius. It is intended to provide "a fine place" for marine mammals, sharks, and rays, where they will receive the necessary attention to ensure their protection. While the sanctuary is not legally binding, it is a political commitment from all governments who signed the Yarari sanctuary declaration. In 2019, the Ministry of LNV created the International Shark Strategy (*Internationale Haaien Strategie 2019*, IHS-19), in which the waters of the Caribbean Netherlands were included. The IHS-19 formulates a series of policy goals and actions aimed to better manage and restore the shark and ray populations within national and international waters, including the waters of the Caribbean Netherlands. Both the Yarari sanctuary and the IHS-19 were established and implemented per the request of the Dutch Elasmobranch Institute (NEV) (Anon, 2019).

A second action was the extensive communication campaign focused on nature conservation and environmental management set up within the public entity called *Nos ta Biba di Naturalesa* ("We live from nature").[33] The campaign promotes the sustainable use of the natural environment on Bonaire. The campaign also explains how the economy of Bonaire is primarily dependent on the natural environment, as it is a tourist island, serving tourists from all over the globe who visit Bonaire for its natural environment. Communication is managed through a website, Facebook page, and television programs. The campaign also communicates the measures and policies that have been or are now being taken to manage the environment, and update residents on the latest developments in this area.

Attention was also paid to educating and professionalizing the fishers with the aim of stimulating closer collaboration with fishers in fisheries management efforts, to stimulate more sustainable fishing behavior, and include them in the registration catch landings (for example by means of using sustainable fishing gear reducing the chance of bycatch). On several occasions, financing was made available to send fishers to a regional fisheries conference and new attempts were made to establish a fisheries cooperative.

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31 It should be noted that actions were, of course, also taken on Saba and Sint Eustatius. On Saba, for example, the Saba Bank Management Unit was installed and on Sint Eustatius a Data Monitoring Officer was hired to improve research and monitoring of catch landings. The Ministry of LNV is required to divide its resources and attention over all three islands.

32 "Yarari" is a Taíno Indian word, meaning "a fine place".

33 [32] www.bibadinaturalesa.com

Again, despite these efforts, fishers remained hesitant to switch to more sustainable fishing techniques and failed to successfully professionalize themselves. Consequently, structural inclusion of the fishers and their support in management efforts remained a big challenge. In a final attempt to include the fishers in the management procedures, WWF-NL funded the reestablishment of a fisheries cooperative (PISKABON), in which I, as mentioned in the Introduction, ended up playing a major role. This endeavor will be discussed in more detail in Chapter 6.

5.3.3 From Simple Exploitation to Complex Conservation?

The description of Bonaire's management efforts in the previous sections reveal three important findings. First, these descriptions illustrate that, contrary to the dominant argument made by the fishers that the government neglected the sector, there have, in fact, been several attempts to expand the sector and invest in its development. However, there seems to be a detrimental mismatch between the wishes and capabilities of the fishers on the one hand, and the vision of the government and the complex levels of bureaucracy and professionalization required to realize these projects on the other hand. Moreover, it also becomes clear that non-fisher stakeholders with an interest in marine resources tend to be more capable than fishers to follow the increasingly complex bureaucratic guidelines and thus are better able to achieve their goals.

Second, the analysis on past and current management efforts reveals how over time the vision of the government for the sector has shifted from exploitation and economic growth towards more sustainable and conservation-focused measures. This shift took place long before 10/10/10, which is in line with a growing global awareness on the detrimental effects of overfishing. Another much heard argument is that with the constitutional changes of 10/10/10 and, with them, the dominant presence of the government of the Netherlands, the state of the fishers has significantly worsened because the primary focus of the government is now to implement measures that protect the environment. However, the description of management of the sector prior to the constitutional reforms reveals that, in fact, this focus was already part of the vision and policies of the island government long before 10/10/10. Moreover, while increasing attention is paid to conservation measures, economic opportunities are not entirely dismissed by the government of the Netherlands: the leading objective is sustainable development, but fish are still considered an important and accessible source of food and income for the poorer communities. Furthermore, the transition after 10/10/10 has increased the available resources and capacity available for fisheries management and, therefore, has sped up the pace at which certain developments are taking place.

Lastly, it becomes apparent that the current formal structure and division of roles and responsibilities strongly builds on the structure that existed prior to 10/10/10. As I explained in the previous chapters, in the Caribbean every social and cultural trait and therefore also the way the environment is interacted with is shaped by the island's

colonial history. As I noted in earlier chapters, not only are the dominant players in the arena of nature conservation in the Caribbean Netherlands politically and historically determined; it is also affected by the extreme small scale of the islands and the fact that the constitutional reforms led to the reproduction of colonial inequality and resentment of perceived "re-colonization". The Caribbean Netherlands went from being colonies, to becoming part of the Netherlands Antilles as an autonomous country within the Kingdom, to now once again losing autonomy as they are yet again strongly integrated in the Netherlands because of their status as special municipalities. While the governance structure of the Caribbean Netherlands always fell under the "regime" of another country, the constitutional changes of 10/10/10 further fragmented and complicated the managerial landscape of government agencies locally and at the level of the Kingdom. It also shows how their mandates overlap with other public and private regulating bodies. This has made involvement in fisheries (or environmental) management more complex for local fishers. In sum, the current section provides insights into the success and failures of these past and more recent fisheries management efforts, which help to explain current perceptions of fishers and their (un-)willingness to engage in new projects. There is a similar attitude on the part of the government, who are also frustrated with the situation of fishers and the situation of Bonaire's fishery sector.

5.4 DISCUSSION

Notwithstanding the small size and the insignificant economic value, the marine environment does face several ecological threats (including overfishing), resulting in smaller and fewer catches and thus affecting the fishery sector. These changes are visible and felt by local fishers. There is a growing concern voiced by the fishers and the community in general that Bonaire's fishery is a dying part of the culture because it is becoming increasingly difficult to make a living from fishing. Moreover, this decline is affecting one of the poorest groups within Bonairean society who, due to their limited levels of education, feel they have little to fall back on. While the number of professional fishers seems to be decreasing, the number of recreational fishers is increasing, as are the number of resource users with somewhat conflicting interests in the marine environment (e.g., divers, snorkelers, coastal developers). Consequently, it seems as though the fishers are reluctant to openly acknowledge that their local fishing practices contributed to the declining fish stocks as they fear the implementation of measures that would directly limit their fishing freedom.

This chapter described the many developments that have taken place in the fishery sector of Bonaire over time. It is difficult to determine the extent to which past efforts to develop or manage the sector have failed or succeeded. However, the general impression within the fishery community is that more efforts have been made to introduce protective environmental measures (such as legislation, regulation and prohibition of fishing gears,

implementation of restricted fishing zones, species moratoriums, etc.) than attempts to economically develop or stimulate the sector. Furthermore, the failure of past attempts in terms of the economic development of the sector has had a strong effect on the faith of stakeholders, who doubt whether new attempts will be more successful. This negatively impacts their willingness to participate in new management and/or development initiatives. Moreover, where policy documents and research prior to 10/10/10 tended to emphasize the healthy state of the coral reefs and marine ecosystems of Bonaire, more and more evidence has been found that even though the coral reefs of Bonaire might be among the most pristine and healthiest in the world, they too are experiencing a steady decline. Thus, there seems to be a growing trend to approach fisheries management from a resource conservation perspective and less from a solely economic growth perspective. Even though this shift took place long before the constitutional reforms, it does contribute to the overall sentiment among fishers that the government neglects the fishers and the fisheries sector.

This shift from economic growth to nature conservation was also visible in the rhetoric of stakeholders I interviewed to gain insight into the efforts made to manage the fisheries sector. Talking with the various stakeholders revealed that there are many differences in the perceptions they have about fisheries and how the sector should be managed. How stakeholders perceive Bonaire's fishery, their relationship with the sector, and how they view the sector in relation to other sectors on Bonaire affect their views on measures to be taken in terms of fisheries management and development. I noticed that most stakeholders consistently made a distinction between the terms "management" and "development" when talking about the sector. While the two terms greatly overlap, and are generally used interchangeably, they have an unmistakably different connotation in relation to the fisheries sector among stakeholders in Bonaire's fishery sector. The term *management* was used when referring to measures taken by (semi) private organizations, government, institutions, and individuals towards sustainability, environmental protection, and/or the prevention of or reversing of resource exploitation. *Development*, in contrast, was used when talking about investments made by (semi) private organizations, government, institutions, and/or individuals to promote growth, increase economic profit, and improve working conditions (i.e., efficiency, safety, quality). Thus, it seemed that management had a more restrictive connotation and refers to actions taken in direct favor of the natural environment, while development implies expansion, which gives a sense of freedom or opportunity and benefits in direct favor of the fishers (i.e., more fish caught, more income). I came across a clear example in the minutes of the Fisheries Commission BES in which the development of a national fisheries management plan was being discussed. One of the members of the commission emphasized that it was important not to call the policy document a "management plan", but rather a "sustainable fisheries plan". He argued that the use of the word "management" could scare off fishers in the process of the development and lead to less support among the fishers for the plan.

It is also important to state that the past failures to expand the fishery sector are likely to be a strong argument for the government to steer clear of making similar investments and with it, large losses, as has happened in the past. Moreover, these past failures also negatively affected the levels of trust the fishers tended to have in the state.

The analysis of past and present management efforts of Bonaire's fisheries further revealed that the current managerial structure of fishery on Bonaire shares many similarities with the structure prior to 10/10/10. In fact, despite the sentiment that exists among the general community and some fishery stakeholders, the current post-10/10/10 fisheries legislation is largely or even entirely based on pre-10/10/10 legislation. One of the biggest differences between the two timeframes and governmental management of the fisheries sector seems to lie in the availability of capacity and resources with the increased presence of the Dutch government. In addition, it became clear that these resources are seemingly only available for issues or projects for which the national government of the Netherlands feels direct responsibility or when they are fully in line with the visions of the different ministries.

While legislation is in place, a clear vision for Bonaire's (and Saba's and Sint Eustatius') fisheries sectors is still absent. Not only can this be ascribed to the lack of statistical data on the sector, but it is also due to the fact that on a national level, from the perspective of the Ministry of LNV, the fisheries sectors of Bonaire, Sint Eustatius, and Saba differ greatly from each other. This implies that the sector of each island has different needs, possibilities, and challenges which need to be adequately addressed. The sector's minor importance to Bonaire's economy compared to other sectors was reflected in the minimal way fisheries are included in Bonaire's L.V.V. policy plan (Pakus en Wayaka Advies, 2014).

We can conclude that despite the increased availability of resources that could be invested in fisheries, up until now, most funding from the national government of the Netherlands was spent on the execution of scientific studies to get a better view on the state of Bonaire's marine environment and its fisheries. While these are of importance for the development of sound policy and management measures, these studies and their outcomes made fishers increasingly distrustful towards researchers. They had been more willing to collaborate at first, but after learning about the implications the findings of these studies might have on their sense of freedom and the recommendations for changes in fishing techniques, they were less willing to participate in management efforts or research over time.

I also experienced this resentment towards researchers during my fieldwork. I was introduced to a fisher during the first weeks of my fieldwork, and I carefully asked him if he would be willing to talk to me about his experience as a professional fisher of Bonaire. During that first meeting, he agreed that I could give him a phone call to set up a meeting. When I approached him again about a month after our first meeting

to ask if we could set up a date, he became quite hostile and refused to talk to me. He kept saying that he would never talk with researchers because they just come up with rules and ruin everything for the fishers. Of course, his second reaction might also have stemmed from the fact that the second time I called him he was with friends and family to which he might have something to prove. Nevertheless, his response to my request for a talk the second time around does reflect the sensitivities surrounding fishers and their participation in or collaborations with scientists (and ENGOs).

A final important finding is the lack of structural inclusion of the fishers in management and development efforts. This does not mean that attempts were not made to include the fishers, but the developments I have discussed do illustrate that these attempts were only marginally successful, if at all. There have been several attempts to include the fishers in management efforts. As I already mentioned, several of these efforts focused on the establishment of a fisheries cooperative, but other measures to include the fishers in management procedures have been taken as well. The executive Board member position of STINAPA was not successfully filled — the reasons for this being unclear. Other times when fishers were approached and included in management efforts. They repeatedly used the argument that that they (as an individual) were not able to speak for all fishers as a reason to decline to serve or involve themselves.

Moreover, besides the "formal" institutions responsible for fisheries management, there are increasingly numerous stakeholders with an interest in, or a degree of responsibility for, the marine area of Bonaire and who are therefore also concerned with the actions taken to manage fishing activities. These stakeholders include, for example: the diving industry; fish distributors such as hotels, restaurants, and supermarkets; other marine related NGOs such as Reef Renewal Bonaire (RRB) and Sea Turtle Conservation Bonaire (STCB); and other tourism nature-related service providers such as The Mangrove Info Center, who provide kayak tours through Bonaire's mangrove forests. The success garnered from the establishment of the marine sanctuary, which was strongly lobbied for by the NEV, exemplified the large impact Dutch ENGOs can have on the islands, particularly because they are able to navigate the spaces of Dutch bureaucracy. In Chapter 6 the impact of Dutch NGOs and their resources will become evident once more as I describe how WWF-NL hired me to establish a fisheries cooperative on Bonaire.

What can be concluded from the description of the fisheries sector of Bonaire and its management and development over time, is that Bonaire's fisheries face much of the challenges which have been argued could best be addressed by co-management. Literature and practice have shown that small scale fisheries on small islands almost demands co-management due to the limited infrastructure, capacity, and resources available, as I will discuss at greater length and in more detail in Chapter 6. This is even more the case for low-value fisheries as the financial return of effective management cannot be covered by the sector. Consequently, management officials often have little

incentive to make the adequate investments effective management requires. Studies have argued and shown that co-management can bridge the gap caused by the shortcomings of management efforts by the government in these cases (Pomeroy & Williams, 1994; Trimble & Berkes, 2015).

However, based on the description of past management efforts, it seems that some form co-management of fisheries has in fact existed for many years on Bonaire. Here I refer to the finding that multiple parties have been responsible to some degree for the management of Bonaire's fisheries. Prior to the constitutional reforms in 2010 the main stakeholders were the government of the Netherlands Antilles, the island government of Bonaire, and the local NGOs. Currently, there are several other stakeholders involved with fisheries management. The biggest new stakeholder is the government of the Netherlands. While the current formal structure and division of roles and responsibilities strongly build on the structures that existed prior to 10/10/10, the constitutional changes further fragmented and complicated the managerial landscape of government agencies locally and at the level of the Kingdom. Consequently, the need for co-management has intensified since 10/10/10 because the government of the Netherlands now holds the final responsibility over the fisheries of the three islands. The sector is now facing the reality of a distant powerful authority with relatively little knowledge about local fisheries, its needs, requirements, and struggles. Moreover, the current institutional structure requires collaboration between national government ministries. Considering the low levels of education and professionalization of the fishers, this has made involvement in fisheries (or environmental) management more complex for local fishers.

Considering the fact that a limited amount of co-management with several stakeholders was already taking place, but the fishers seemed to be the structurally neglected party within management efforts, a specific form of co-management was repeatedly proposed as a solution by government officials, ENGOs, researchers, and even the fishers themselves, namely co-management through a fisheries cooperative. Moreover, it was argued that the management efforts that were initiated by or that did successfully include fishers throughout the process have been the most successful, for example, the abolition of spearfishing and the installment of the marine reserves based on the exchange with fishers from St. Lucia. In the next chapter, I will describe how my involvement contributed to the establishment a (semi)successful fisheries cooperative on Bonaire. While I argue that organizing the fishers greatly aids formal institutions in structurally involving fishers in management efforts, simply having a fishery cooperative within the current managerial structure is far from sufficient to ensure the creation of equal and effective inclusion of fishers in efforts towards environmental preservation.