Saving sharks…

…through a fishermen's agreement

Participatory Action Research

Save our Sharks Project

Community Component

July/August 2016

Drs. MA Madelon Eelderink
October 2016

7 Senses
Today it's an idea. Tomorrow it's reality.

SAVE OUR SHARKS

"Sharks' presence in the ocean has provided a framework for the populations below them, including vital plankton, which takes up more CO2 than anything else on earth. CO2 is the global warming gas, plankton converts it to oxygen, providing 70% of the oxygen we breathe on land. Without sharks to prey on them, plankton feeders below sharks could grow out of control, consuming the plankton that we depend on for survival. The ocean is the most important ecosystem, regulating climate and feeding much on the planet.

Life on earth depends on life in the ocean. I finally realize it is not about saving sharks, it's about saving ourselves." [from: Sharkwater, 2015]

FOREWORD & ACKNOWLEDGMENTS

The first days after coming back in a quite individualistic Utrecht, after 7 weeks of Saba, the people here in the Netherlands looked a bit weird at me. It took me some time to unchain the brain connections in my head that said: *"each time somebody passes, wave*" and *"say hi to everyone"*. So each time somebody passed me on the street, my hand rose automatically. In a crowded city like Utrecht, I can tell you those are a lot of waves. And a lot of red cheeks too.

One of the first things Kai taught me when I arrived on Saba was to wave at everybody, whether you know them or not. Because that's what Sabans do. It was easy to adapt to that and I loved it! The second thing he taught me was to drive his car. I'm not the best driver, but I managed to get that good ol' friend all the way from El Momo Cottages to Saba Conservation Foundation at Fort Bay, without any damage (although I got lost once, that must be unique on a small island like Saba).

Good choice though Kai let me hitch hike the rest of my time on Saba. No really, I mean it! This was the best way to get to know people on the island. I hitch hiked to Paris once, but Saba is totally different. E-ve-ry-body lets you in their car! And you always get where you need to be. People were so friendly and helpful! The snowballing method of selecting participants was all set. Everybody knew somebody I "really should interview". Maybe that's why I ended up with 56 participants instead of the intended 20?! Anyway, I'm a memory collector and Saba has given me typically those memories that will be in my mind until the day I die.

I would like to thank all the participants of the action research and all other people that have contributed in any kind of way, by advising me or by giving me information, showing me around on the beautiful island or chatting with me about its culture, it's history and the like.

I have always wanted to learn more about nature, the marine ecosystem and fisheries. "I quote from an email from 2008: *Geachte heer de Castro, Via de site oneworld.org kwam ik de cursus Natural Resources and Environmental Management in Latin America tegen. Het lijkt mij een zeer interessante cursus, omdat door mijn afstudeer onderzoek in Guatemala (voor de master International Public Health, Amsterdam) dit vakgebied mijn interesse heeft gewekt en ik ook een baan wil gaan zoeken op dit gebied."* Fabio is an expert in fisheries management in Brazil and I remember my first conversation with him, asking him how he got to the position he is in now, being assistant professor in this field.

The course turned out to be full, but Fabio de Castro became my guiding teacher at the advanced master *Latin American Studies*, where I further explored action research methods while learning all about nature & environmental management in Latin America. Even until today we work together; recently our scientific article about my research in Bolivia got

accepted in the journal 'Development in Practice' and Fabio has been a great advisor so far in my work for the Save Our Sharks project. Thanks Fabio!

During this study I never got to learn though about sharks and the marine ecosystem though; something that of course is a bit weird when you enter the Save Our *Sharks* project! *"You are working for this project, knowing NOTHING about sharks?!"* I would have never ended up in this project without Ron van der Veer, who approached me via LinkedIn and introduced me to Tadzio Bervoets as a potential action researcher for this project. In turn, I owe thanks to Tadzio Bervoets and Kai Wulf for their trust in me and allowing me to conduct this action research.

Special thanks I owe to Michele Johnson for taking me on his boat and showing me his work. Sorry for falling asleep on the way back; those sea sickness pills killed me… Vito Charles, thanks for your mental support on the ground and connecting me to your colleagues of the Island Council and the Island Secretary Tim Muller, and to all other people I needed to speak to. Tim, thank you for allowing me to stay in such beautiful house in Windwardside and being such a welcoming neighbor. Last, I would like to thank my dear colleagues: Evert Jan van Hasselt for his mental support and strategic advice, Sophie van den Bergh for transcribing interviews and Kim van de Geest for her help during the analysis phase of the research.

Such a great time on Saba, meeting so many nice people on just one island.
So many people to thank.

Thank you all for your support!

Madelon

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EXECUTIVE SUMMARY

Background. For the Save our Sharks project of the Dutch Caribbean Nature Alliance, 7Senses conducted Participatory Action Research on Saba for 7 weeks in July/August 2016, focusing on the fisheries component of the project.

Problem statement. As Apex predators of the marine ecosystem, sharks are essential for its balance, variety and health (DCNA 2015). Also Redfish are essential components of the marine ecosystem as important predators; the influence they have on their food sources can even modify the structure of the environment they live in (NIWA 2015). On Saba Island, multiple stakeholders claim that the Redfish population is declining at an alarming rate. Especially fishermen are concerned as for most of them, it is their main source of income. As it turns out, Redfish and sharks depend on each other for their existence. It is in the interest of multiple stakeholders, among which DCNA, SCF and fishermen, to recover the Redfish population.

Objective. To discover, develop and implement together with local stakeholders a joint construct of plans for the protection of sharks in Saba territorial waters, which fits each stakeholder's needs and goals and which they can execute actively and sustainably. As such, we aim to tackle shark extinction from multiple angles.

Research questions. Main research question: what joint construct of plans can be co-created, implemented and executed by different involved stakeholders, for the direct and/or indirect protection of sharks in Saba territorial waters? Sub questions: **1)** What is each stakeholder's perspective profile with regards to marine ecosystem related subjects? 2) In what circumstances and under what conditions can local stakeholders cooperate best in shark conservation? 3) What activities can be implemented that would help reaching stakeholders' individual goals while contributing to shark conservation?

Methodology. PAR was executed using the theoretical framework of Argumentative Policy Analysis. Within this framework, the following methodology has been chosen for Saba. Individual, semi-structured interviews and focus group discussions were conducted (N=56) to elucidate each stakeholders' perspective on the marine ecosystem. Fishermen filled in seasonal diagrams to indicate their fish and/or lobster catch each month of the year (Annex 2). Additional meetings were organized to discuss ideal circumstances for shark conservation -in line with personal needs and goals- and to co-create a joint construct of plans. Structured and unstructured observation was done during interviews and meetings as well as in daily life. A questionnaire (Annex 3) was used to determine priorities and to set conditions for multi-stakeholder cooperation. A simulation game was conducted with SCF to identify and test scenarios to further enhance a healthy marine ecosystem. Other methods such as informal conversations and in-context immersion were applied to further increase understanding of the local context of Saba. The outcome of this action research was presented to the Island Council and Lt. Governor Jonathan Johnson.

Results. The outcome is a fishermen's agreement on 'seasoning for Redfish & establishing a fishermen's organization'. Circumstances in which local stakeholders cooperate best in shark conservation are A) Having established a fishermen's organization, B) Running a seasoning system for the Redfish C) Applying additional measures to increase the Redfish population, D) Arranging alternative income during closed seasons. Conditions under which these ideal circumstances can be created include advice and legal assistance by government and/or experts (A), Community-up creation of the legal framework of the seasoning system (B),
setting a trap limit after the closed season, allowing longlines, arrange patrolling and releasing live-caught sharks (B), arranging FADs for Mahi Mahi, government support (D) and more.

Other outcomes include three scenarios, identified and (partially) tested in a simulation game by SCF, for further enhancing the health of the marine ecosystem: 1) designating three new Marine Protected Areas based on biodiversity, in order to improve sustainable use of the Marine Park 2) addressing the landslide issue to prevent soil from damaging the coral and 3) banning plastic bags and Styrofoam -to prevent them from ending up in the ocean and cause damage to marine life- and/or including this in the current garbage recycling system of the government.

Conclusion. PAR has led to a community based solution that fits the needs of the local stakeholders in its best possible way. As such, the objective of this action research has been achieved. However, additional activities need to be realized in order to enhance the implementation of the closed season system for the Redfish, starting in April 2017. Moreover, although the action research on itself may have raised awareness of the importance of sharks among stakeholders, the actual benefit for the sharks will start when the closed season for Redfish starts. Last, SCF's scenarios for a healthy marine ecosystem will be included in SCF's strategic planning, although it is yet unclear when and how the scenarios will be realized. Executing the seasoning system *and* the scenarios planned by SCF will lead to tackling shark extinction from multiple angles in its most productive form for Saba.

Recommendations include -but are not limited to- 1) Make sure the identified conditions for the seasoning system are put in place, so that fishermen feel well supported in the execution of the seasoning system. 2) Include fishermen in all other procedures that have direct or indirect influence on the livelihoods of fishermen, especially procedures such as law development and arranging the experiment for lionfish traps. 3) Arrange proper law enforcement for the seasoning system and 4) establish in close cooperation with fishermen a fishermen organization.

INTRODUCTION. WHAT IS PAR, AND WHERE ARE WE STANDING?

> *"Worldwide over 100 million sharks are killed every year as a result of fishing and shark finning activities. Sharks are being driven to the brink of extinction by our ignorance and greed. Working with fishermen, scientists and local communities, we will put an end to the slaughter of sharks in the Dutch Caribbean."* [Dutch Caribbean Nature Alliance, Special Project Save our Sharks]

Amongst people working on the Save our Sharks project, the importance of shark conservation is crystal clear. Wicked problems such as the conservation of sharks as a common pool resource, where multiple stakeholders are involved, can be quite challenging to solve. The tragedy of the commons, conflicting interests and ignorance are just few of the factors contributing to this complexity. The Dutch Caribbean Nature Alliance addresses this wicked problem through the Save our Sharks project. Within this project, 7Senses has been asked to focus on the community component of the project, working with stakeholders such as fishermen and SCF to protect sharks.

In April 2016, 7Senses conducted a preliminary research to define local stakeholder's needs and to determine the focus of the action research, conducted in July and August 2016 for 7 weeks. During the preliminary work it became clear that the primary concern of the local people –fishermen in particular, were not the sharks but the Redfish population. Like sharks, Redfish are important predators within the marine ecosystem. The influence they have on their food sources can even modify the structure of the environment they live in (NIWA 2016).

So, in July and August, Participatory Action Research was performed on Saba. Primary focus was the marine ecosystem in its broadest sense –rather than sharks only– to give respondents the freedom to talk about their most pressing concerns. The main aim of Participatory Action Research is not to deliver a scientifically sound report. Rather, the primary aim is to trigger action within the community with regards to the addressed issue. PAR reports are therefore more of a byproduct rather than the main product, describing the process of (PAR) activities and change in the community rather than e.g. confirming or refuting a hypothesis.

In PAR, the research results are given back to the respondents straight after its analysis while still at location, in order to give them the opportunity to reflect on the results, to get to know other stakeholder's perspectives and to build upon all respondents' proposed solutions. As such, a collectively supported solution can be created by local people that fits their needs and the socio-cultural context of the issue and the area.

This report is the product of an action research on Saba among stakeholders such as fishermen, dive school operators and Saba Conservation Foundation (SCF)[1] in order to

1 In this report only the abbreviation 'SCF' will be used.

facilitate –among local stakeholders– the co-creation of a joint construct of plans for the protection of sharks in Saba territorial waters, which fits each stakeholder's needs and goals and which they can execute actively and sustainably. As such, we aim to tackle shark extinction from multiple angles. To make sure stakeholders feel ownership over their solutions, it is important that: 1) they are co-created by themselves and 2) there are clear intrinsic motivations for the execution of those solutions (therefore, also indirect solutions for shark conservation are taken into account).

How to read this report

This document is outlined as follows. First, a research design is presented, including the research objective, research questions and a conceptual framework. The research strategy describes more in-depth the use of Participatory Action Research, but also ethical considerations, ways of communication and practical matters. Research methodology and planning gives a more detailed description of the work performed. In the results section, answers to the sub questions and main research question are presented. The conclusion & discussion section will reveal whether the research objective has been achieved. The reflection section contains a critical view on the work performed on Saba. Last, recommendations are given for the steps ahead. The annexes provide extra material to support the report.

This report has been written in such way that by reading the summary, introduction, conclusion and recommendations, the reader should have a clear view on the matter. Any other details should be easily found by checking the content list. For anonymity reasons, all respondents are mentioned using pseudonyms; only for practical matters and after approval of the respondent, real names have been mentioned. Those names are underscored.

RESEARCH DESIGN. WHAT'S THERE TO ACTION-RESEARCH?

This chapter presents the problem statement, research objective, the conceptual framework, research questions, research strategy and methodology.

PROBLEM STATEMENT

From the first stage of the action research conducted in April/May 2016 among fishermen, dive school operators and SCF agents, 3 core issues have been identified:

1. **Fishing & fish population**: stakeholders claim that fish stocks are declining, mostly Redfish.
2. **Shark population**: where SCF is putting efforts into preventing extinction of shark species, fishermen do not seem to worry about the shark population. When disobeying the law, people 'get away with it'.
3. **Communication & relations**: statements from interviews indicate distrust between SCF, fishermen and the government as well as among fishermen. Proper cooperation (e.g. for shark conservation or lawmaking) is lacking.

These are issues as perceived by local stakeholders within the range of the marine ecosystem, related to their quality of life and/or goals[2]. According to the respondents, these issues directly and/or indirectly influence (the success of) shark conservation.

As Apex predators of the marine ecosystem, sharks are essential for its balance, variety and health (DCNA 2015). Also Redfish are essential components of the marine ecosystem as important predators; the influence they have on their food sources can even modify the structure of the environment they live in (NIWA 2015). As stated above, on Saba Island, multiple stakeholders claim that the Redfish population is declining at an alarming rate. Especially fishermen are concerned as for most of them, it is their main source of income. As it turns out, Redfish and sharks depend on each other for their existence. It is in the interest of multiple stakeholders, among which DCNA, SCF and fishermen, to recover the Redfish population.

RESEARCH OBJECTIVE

To discover, develop and implement together with local stakeholders a joint construct of plans for the protection of sharks in Saba territorial waters, which fits each stakeholder's needs and goals and which they can execute actively and sustainably. As such, we aim to tackle shark extinction from multiple angles.

[2] These core issues are the result of 10 individual unstructured interviews with the different stakeholders in April 2016. Interviews were semi-structured in order to give participants as much freedom as possible to talk about the subjects they wanted to talk about within this range of the marine ecosystem. As such, a first inventory of intrinsic motivations and core values could be determined. For more information, see the report 'towards a multi-stakeholder action plan to Save the Sharks, results from Saba'.

CONCEPTUAL FRAMEWORK

Figure 1 shows a rough scheme of the concepts of this action research, visualizing the road to reaching the research objective.

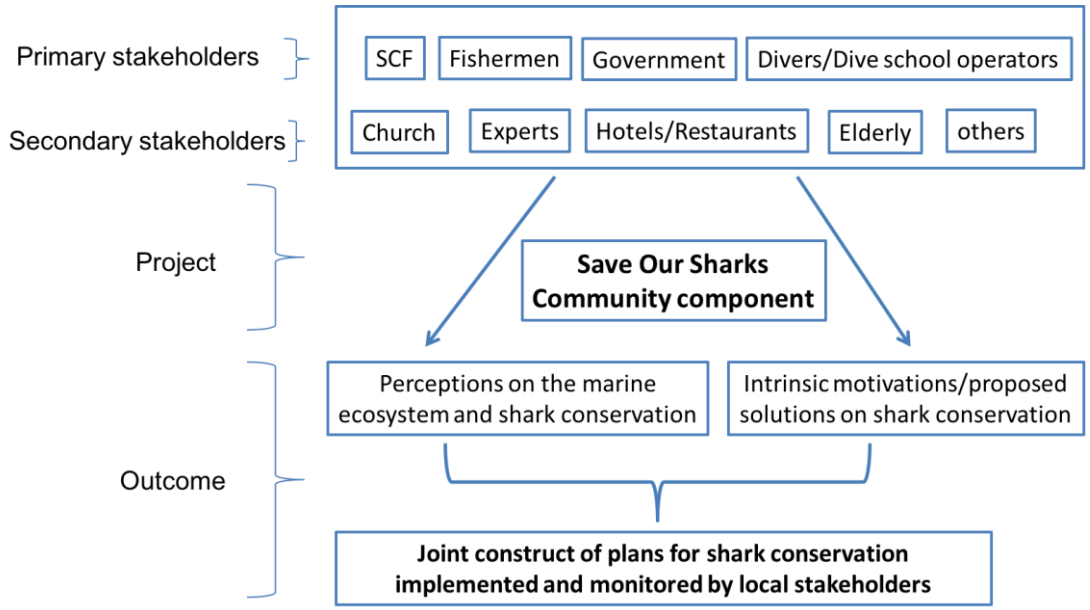

FIGURE 1. CONCEPTUAL FRAMEWORK OF THE ACTION RESEARCH ON SABA.

To start with, we are dealing with primary and secondary stakeholders. Primary stakeholders are the actors who are considered most closely connected to the Save our Sharks project. Secondary stakeholders are actors who are suggested by other stakeholders to be included in the project. Secondary stakeholders may be important key informants or actors who may have solutions that could also directly or indirectly benefit the project.

The stakeholders will all give their input to the community component of the Save our Sharks project by sharing their perceptions on the marine ecosystem[3] and shark conservation[4] and by sharing their intrinsic motivations and solutions to direct or indirect shark conservation measures. This will provide the setting stage in which all stakeholders can work individually or synergistically on shark conservation, from their own perspective and intrinsic motivation. The outcome will be a joint construct of plans for shark conservation implemented and monitored by local stakeholders. The ones implementing and

[3] For the purpose of this action research, the marine ecosystem is understood to be all flora and fauna living below sea level, the ecological interactions between them and the quality of the water they live in. A healthy marine ecosystem is, according to locals, 'a well-balanced, diverse ocean' [e.g. D.O.3].

[4] For the purpose of this action research, shark conservation is understood to be the total set of activities, executed or to be executed by different stakeholders, to 1) prevent sharks from dying and extinction, 2) to improve the shark population -as direct measures- and 3) to improve the sharks' living environment such as improving coral and increasing fish stocks -as indirect measures.

monitoring the joint construct of plans is to be determined during the action research process.

RESEARCH QUESTIONS

Main research question: what joint construct of plans can be co-created, implemented and executed by different involved stakeholders, for the direct and/or indirect protection of sharks in Saba territorial waters?

Sub questions:

1. What is each stakeholder's perspective profile with regards to marine ecosystem related subjects?
    a. What are their problem definitions?
    b. What kind of solutions to those problems do they propose?
    c. With what background theories do they support their perspectives?
    d. What are their fundamental beliefs, their normative preferences and intrinsic motivations with regards to the marine ecosystem related subject(s)?
2. In what circumstances and under what conditions can local stakeholders cooperate best in shark conservation?
3. What activities can be implemented that would help reaching stakeholders' individual goals while contributing to shark conservation?

The answers to the sub questions together answer the main research question.

RESEARCH STRATEGY

Throughout a period of 7 weeks, Participatory Action Research (PAR) was conducted on Saba. PAR is a systematic approach to investigation that enables people to find solutions to problems they confront in their everyday life. PAR means inclusion of all groups affected, inclusion of all relevant issues (social, economic, cultural, political), ensuring cooperation with other groups, agencies and organizations and ensuring that all relevant groups benefit from activities (Stringer, 2014). In the context of the Save our Sharks project, PAR will be a very useful strategy to co-create a joint construct of plans with multiple stakeholders to boost protection efforts for sharks. As the PAR strategy is flexible towards the social context of the research field, research methods and actors may change in each different research context as well as over time. In this case of PAR on Saba for example, it turned out that a simulation game was not a suitable research method for the fishermen for anonymity reasons and was substituted by a questionnaire.

To approach research participants, important gatekeepers were Luke Hassel (for fishermen), Vito Charles (for the government), Kai Wulf (for the dive schools and Saba Conservation Foundation). Other stakeholders were approached via informal talks and *'snowballing'*, a process, as described by Stringer (2014), in which the researcher is forwarded to new respondents by advise of other respondents.

WORKING IN A TEAM

Considering the context of Saba, it was suggested to conduct this research in a team of two action researchers: Madelon Eelderink and local stakeholder Luke Spencer Hassell, part-time fisherman on Saba. Luke was trained in action research by Madelon and conducted two interviews. In addition, Luke acted as a consultant with regards to approaching fishermen, demeanor and research methodology.

RESEARCH ETHICS AND WORK STYLE

Establishing a role

In action research, as opposed to traditional scientific research, researchers do not favor the status quo, yet they favor change as it is the primary goal of action research to activate the community to tackle a shared social issue. As such, we are not merely collectors and processors of data; based on our findings we facilitate a process in which stakeholders comfortably co-create a joint construct of plans that suit their individual goals as well as a higher -often shared- goal, in this case it is the higher goal of shark protection. As such, our role is primarily that of facilitators of change and secondarily that of data collectors and authors.

Stringer emphasizes in his book 'Action Research' that in many situations, associations with authority may be a marked hindrance [by respondents], especially if people perceive that the researcher is there to judge, control, or interfere in their affairs (Stringer, 2014:81). During the preliminary research this was confirmed in real life: respondents such as fishermen acted 'allergic' towards European experts who "pose their advice on to them". Therefore, I emphasized my position as an external, impartial researcher, without expert knowledge about the marine ecosystem, sharks and fisheries. I introduced myself as follows to stakeholders:

> *"I'm doing action research on how the marine ecosystem could be of best benefit to different people on the island, and the other way around, how the marine ecosystem could benefit from people on the island. So I'm here to collect opinions from people like fishermen, dive school operators, local organizations, the government, inhabitants of the island… I put all those opinions together to see where there is common ground, where we can work together to develop and realize a plan that benefits all of you. I don't know anything about fisheries or the marine ecosystem, so I hope you can explain here and there when I don't understand."*

Needless to say, not all respondents are familiar with the term (Participatory) Action Research. 7Senses explained the term to respondents as follows:

> *"Participatory Action Research is a form of research in which you don't only collect data, but also directly give back the results to the respondents, like you, so that you get to know about all people's opinions and ideas, and you get the opportunity to share your opinion again. That's how we together build a plan that suits your needs and wishes. That plan consists of activities that you can execute for yourself and activities that you execute in cooperation with other stakeholders, so that all of you can reach your goals, such as improving income, improving wellbeing, improving sea life et cetera."*

PREVENTING SOCIAL DESIRABILITY BIAS

One of the major challenges in research is that respondents give socially desirable answers. 7Senses applied the following measures to reduce the likeability of social desirability bias:

- Showing neutrality. At all times I was neutral and non-partial in this research. This was shown in the equal approach of all different stakeholders.
- Dressing decent. I wore skin covering clothes that do not fit tight to the body. Jewelry, excessive make-up and other eye catching attributes were left out.
- Keeping facial expressions neutral. Facial expressions range up to the non-verbal expression of active listening and understanding, but never judgmental or disrespectful expressions, no matter what answers were given.

METHODOLOGY. THE PROCESS OF CREATING THE FISHERMEN'S AGREEMENT

For this action research, in line with the theory of argumentative policy analysis (APA), several different research methods were combined, leading to the final main product of this action research: the fishermen's agreement on 'seasoning for the Redfish & establishing a fishermen's organization'. Figure 2 shows the research method applied and their respective outcomes. Not presented in this figure is the simulation game as conducted with the Saba Conservation Foundation, as part of their strategic planning.

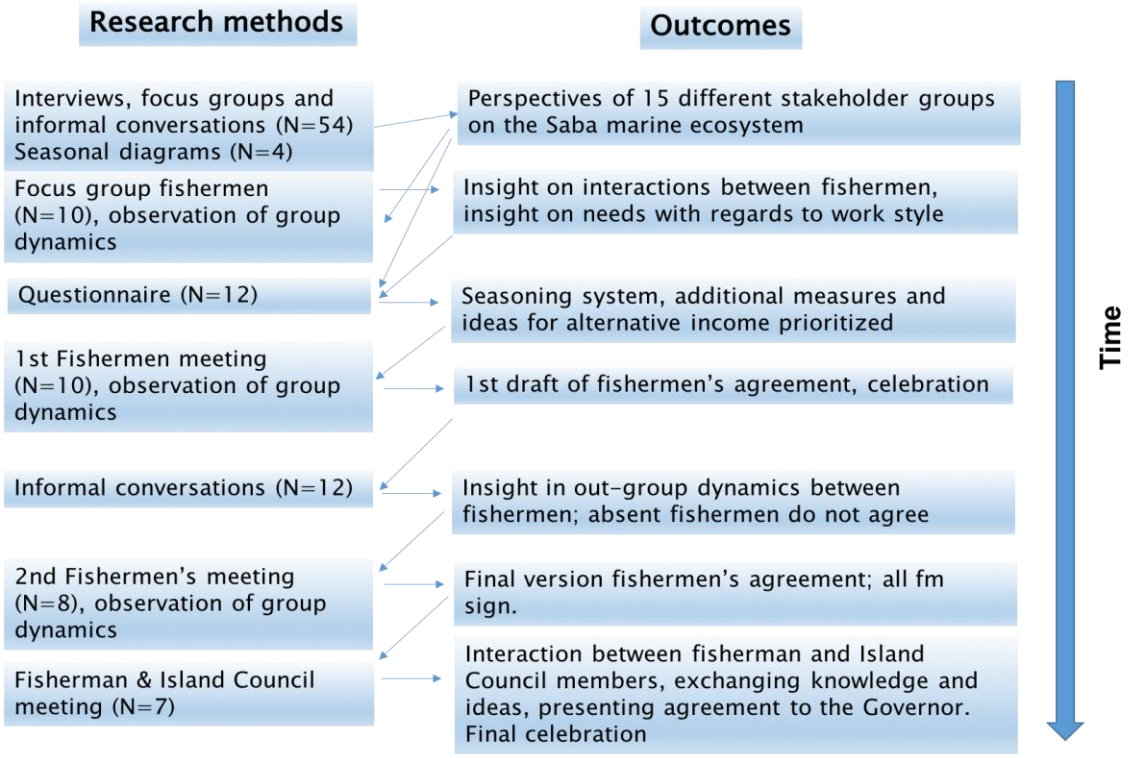

FIGURE 2. THE PROCESS OF THE ACTION RESEARCH OVER TIME

During a church mass, the researcher introduced herself and explained her research to the community. A press release was written to inform more people on Saba about the research. Research started with semi-structured interviews (Image 1) and focus groups with respondents from 15 different stakeholder groups (N=56). The focus groups were conducted with the Island Council members (N=4) and dive instructors (N=4), of which some also had been interviewed personally. Aim of the interviews and focus groups was to get an idea of the perspectives of local stakeholders on the marine ecosystem and sharks. Respondents were asked to share their views on the marine ecosystem as a whole[5], what they think is going well and what challenges they face. Interviews were very open to give respondents full freedom to talk about what they considered important. In that way, genuine intrinsic motivations could be identified. Licensed fishermen filled in seasonal diagrams to indicate how much fish and/or lobster they catch each month of the year (Annex 2)[6]

[5] In consultation with DCNA, it has been decided to pull these questions marine ecosystem-broad -as opposed to only shark related topics in order to give participants full freedom to talk about topics that are closest to them.

[6] Results are not presented in this report but can be purchased from 7Senses upon request.

IMAGE 1. INTERVIEWING A FISHERMAN

Results were analyzed using APA's interpretative framework of 'problem definitions', 'proposed solutions', 'judgment of proposed solutions' 'background theories' and 'normative preferences'. Interview transcript snippets of all interviews and first focus groups were subdivided into these categories, using Google Sheets[7]. Analysis was done using the theory of Argumentative Policy Analysis (Grin et al, 1997, 1998), conducting thematic content analysis and framework analysis (Green & Thorogood, 2014). By this time, in consultation with Kai Wulf, it became evident the best direction would be to focus on a fishermen's agreement on seasoning for the Red fish –and agreeing on establishing a fishermen's organization. A first focus group (Image 2) was conducted (N=10), in which first results from interviews were presented; aim was to prioritize the proposed solutions. However, it was proposed by fishermen to conduct a questionnaire instead, for anonymity reasons.

The questionnaire (Annex 3) was a collection of all outcomes from the individual interviews with the fishermen and options for prioritization of proposed solutions in the categories of A: Seasoning systems, B: Additional measures and C: Alternative Income. Per proposed solution, three options were provided: 'very important', 'important' or 'not important'. Analysis was done by simply counting the scores: 3 points for 'very important', 2 for 'important' or 1 for 'not important'. In addition, a section was dedicated to the fishermen's organization, to verify fishermen's preferences.

[7] Due to time restrictions, only the first set of interviews and focus groups were analysed at location, sufficient to present its results to the stakeholders; the rest of the data was further analysed after returning to the Netherlands.

IMAGE 2. FOCUS GROUP DISCUSSION WITH FISHERMEN.

In a fishermen's meeting the results of this questionnaire were presented in an excel sheet on a beamer. At the start of this meeting, fishermen were asked what they would like to achieve in this meeting, to make sure expectations were clear. Fishermen stated they would like to come to an agreement on seasoning for the Redfish, so that became the focus of the meeting, resulting in the first draft of the fishermen's agreement.

From informal conversations with fishermen who did not attend the meeting, it became evident that they did not agree with the outcome. Therefore, a second meeting was arranged to overlook the draft agreement and adapt where necessary based on the new input. This led to the final fishermen's agreement that is presented in Annex 4. Observations during the meeting gave insight in interactions between fishermen and group dynamics, peer support and others.

Last, in week 7 of the action research, a final general meeting was held with the Island Council members (N=3), the Griffier (N=1), the Island Governor (N=1) and a fisherman (N=1). All results from the action research so far were presented. Island Council members consulted the fisherman on several subjects regarding fishing, seasoning, (plans for) establishing a fishermen's organization and the like. Wishes, goals and concerns from the part of the fishermen were shared, leading to action points from the side of the government.

Demographic profiles of the fishermen have been constructed (see Annex 1) but presenting them in this report would violate the fishermen's anonymity as it will be clear which boat fishes where and with how many traps. Therefore, demographic data can only be obtained upon request and after approval of the fishermen.

A simulation game was conducted with SCF to identify and test scenarios for further enhancing a healthy marine ecosystem. Other methods such as informal conversations and in-context immersion were applied to further increase understanding of the local context of Saba.

RESULTS. REDFISH DECLINES CALL FOR A SEASONING SYSTEM

In this section, research questions will be answered while guiding you through the process of co-creating the final product of the action research.

The **main research question of this action research is:**

What joint construct of plans can be co-created, implemented and executed by different involved stakeholders, for the direct and/or indirect protection of sharks in Saba territorial waters?

Analysis of the semi-structured interviews, focus groups, the questionnaire and the simulation game have led to results that provide an answer to the following research sub questions:

1. What is each stakeholder's perspective profile with regards to marine ecosystem related subjects?
    a. What are their problem definitions?
    b. What kind of solutions to those problems do they propose?
    c. With what background theories do they support their perspectives?
    d. What are their fundamental beliefs, their normative preferences and intrinsic motivations with regards to the marine ecosystem related subject(s)?
2. In what circumstances and under what conditions can local stakeholders cooperate best in shark conservation?
3. What activities can be implemented that would help reaching stakeholders' individual goals while contributing to shark conservation?

In this section, each of these sub questions will be answered, followed by the answer to the main research question.

1. WHAT IS EACH STAKEHOLDER'S PERSPECTIVE PROFILE WITH REGARDS TO MARINE ECOSYSTEM RELATED SUBJECTS?

a. What are their problem definitions?
b. What kind of solutions to those problems do they propose?
c. With what background theories do they support their perspectives?
d. What are their fundamental beliefs, their normative preferences and intrinsic motivations with regards to the marine ecosystem related subject(s)?

The semi-structured interviews and the first focus groups gave insight in the interpretative frames of each stakeholder. Through this, 11 topics could be identified, as presented in Table 1. One comment represents one line of interpretation, representing at least two categories of the interpretative framework.[8]

TABLE 1. NUMBER OF COMMENTS MADE ON EACH TOPIC DURING INDIVIDUAL INTERVIEWS AND FOCUS GROUPS, N=56

Topic	# comments
Sharks	55
Reefs	7
Goats	3
Fisheries	81
Communication & relations	29
Nature & environment, marine ecosystem	23
Bureaucracy/law/politics	19
Finances/income/business	7
Tourism	4
(un)healthy nutrition	5
Other	9

Each of the sub questions will be answered, focusing on the main topic of this action research: 'Fisheries (81). Also other results will be given, mainly regarding the topic of Sharks (55). Within these topics, only the main addressed issue is addressed in this report.[9]

[8] categories of an interpretative framework represent: 'problem definitions', 'proposed solutions', 'background theories' and 'normative preferences'. For the Saba context, one category has been added: 'judgment of proposed solutions' to enrich data on people's attitude towards proposed solutions, whether they be their proposed solutions or other's. In the Google Sheet also the category 'suggestions for research' and 'remarks' have been added, to be able to take along people's wishes and ideas to adapt the action research to the local circumstances and to add important remarks respectively.

[9] For more results, I refer to the Google Sheets provided with this report: 'database Save our Sharks project Saba' and 'interpretative frames per topic'.

PERSPECTIVE PROFILES WITHIN FISHERIES

This section outlines respondents' perspectives with regards to the topic 'fisheries' in terms of problem definitions, background theories, normative preferences and proposed solutions.

PROBLEM DEFINITIONS

All but two stakeholder groups –a farmer and a police officer[10]– talked about fisheries. Most prominent result within this topic was that all stakeholders directly or indirectly talked about overfishing and/or declines of certain fish types, mainly the Redfish (Image 3), as their problem definition. Fisherman Harry:

> *"Sometimes fish is low, especially Red Fish. We can say we have a good catch when we have 200 kilos of fish. But even with the full moon we don't get that much, we have like 150 kilos. A couple of years back we had much more. I think it is because of overfishing."* [S.F.8]

And fisherman Willem:

> *"10 years ago we used to catch up to 500-600 kilos [of Red Fish]".* [S.F.5]

Also in the restaurants they notice the decline of the Redfish. Joris:

> *"In my work as a cook I see the Snapper becoming smaller and smaller. The cause is overfishing I suppose."* [S.HR.3]

IMAGE 3. A CHEF COOK HOLDING A REDFISH.

[10] Please note that the talk with the police officer was an informal conversation rather than a full interview.

BACKGROUND THEORIES

Despite the visible fact that fishermen catch less Redfish in their pots, also another phenomenon shows the decline. SCF staff member Zoey discovered the day before our interview that fishermen catch certain filefish more when Redfish is doing bad. Zoey:

> *"Fishermen complain a lot about the bad catch of the Redfish. That it's becoming worse and worse. I found out yesterday… I saw already twice fishermen who caught certain filefish as bycatch […] They didn't know what kind it was but what they said was: "if Red Snapper is doing bad, we see these [filefish] more." That is interesting information, I want to dive into that."* [S.O.7]

One of the main causes of the Redfish decline is overfishing and illegal fishing. 14 year old youngster Donald, who has been helping fishermen since he was 3 years old, explains:

> *"They* [Red Snapper] *are endangered because of commercial fishing and overfishing using pots and FADs. Red snappers don't migrate, so fishermen catch them all year, thats why they get extinct."* [S.Y.1]

Despite the clear statements of people on the ground, scientific research on this topic remains vague. Expert Milan:

> *"We know what they* [fishermen] *catch but we don't know how much fish there is out there. Their survival has never been researched. They lay millions of eggs and there remain only few. And: how often does a fish spawn per year? How many years is a fish pubescent?"* [S.E.2]

Research conducted by Martin de Graaf could provide more insight in this. However, fishermen are hesitant, as they fear for the consequences of its outcome. Richard:

> *"I'm worried about the research of Martin de Graaf. He can advise the government to make laws that we don't agree with. If we get laws pushed down our throat we will do all in our effort to break the laws. It's like a game."* [S.F.14]

As such, fishermen prefer to be consulted for and included in the development of new laws and regulations.

NORMATIVE PREFERENCES & INTRINSIC MOTIVATIONS

All stakeholders have indicated in direct or indirect ways the urge to protect the marine ecosystem. From a tourism perspective [e.g. tourism office director], an ecological perspective [e.g. SCF, divers], a religious perspective [e.g. church representative, elderly] to an economic perspective [e.g. fishermen]. From this starting point, different stakeholders can work together to fulfill their own needs while taking care of the marine ecosystem, as such contributing to shark conservation. For example, for economic reasons, i.e. a better Redfish catch in the future, fishermen are intrinsically motivated to work together to revive the Redfish population.

PROPOSED SOLUTIONS

Proposed solutions for this problem of declining Redfish is most prominently seasoning for the Redfish, where laws and regulations should be put in place to make it work. Although all stakeholders agree that seasoning for the Redfish would be a good solution, opinions on *how* to season differed, ranging from seasoning for 4 months or only part of the Saba Bank to seasoning for 2 or 3 years, closing down the entire Bank for Redfish traps.

Also additional measures have been proposed by different stakeholders, mainly fishermen, to accelerate the increment of the Redfish population, as well as ideas for alternative income during the closed season for Redfish. The seasonal options and additional measures that have been mentioned at least twice by the fishermen during individual interviews have been collected in a questionnaire. Results from the questionnaires (N=12), shown in Table 2, indicate that fishermen prioritized closing the entire Saba Bank for 4 months (score=20) as the best seasoning option. Prioritized additional measures to increase the Redfish population include patrolling for illegal fishing (score=29), throwing back sharks back alive after being caught (score=32), arrange duty free fuel (score=31), establish a fishermen organization (score=35), and use bigger mesh sizes (28). Highest prioritized alternative income includes FAD's for Mahi Mahi (score=30), turn red fish traps into lobster traps (score=22) and apply to government for compensation (score=24).

During the fishermen's meeting, these solutions were presented, further discussed and adapted (Image 4). For example, fishermen agreed that although 4 months was most highly prioritized, seasoning for 6 months would relatively deliver more results as the increase of Redfish population will be cumulative. Under the condition that they could reflect on the way forward after the first season, they agreed to sign for 6 months of seasoning.

IMAGE 4. MEETING WITH FISHERMEN.

TABLE 2. OUTCOMES OF THE FISHIERIES QUESTIONNAIRE ON SEASONING FOR REDFISH, ADDITIONAL MEASURES AND ALTERNATIVE INCOME. HIGHEST SCORING ITEMS ARE IN BOLD[11]. TOTAL SCORES ARE A PRODUCT OF THE SCORES (FOR SECTION A AND B) 'VERY IMPORTANT' (3 POINTS), 'IMPORTANT' (2 POINTS) OR 'NOT IMPORTANT' (1 POINT) AND (FOR SECTION C) 'VERY COMFORTABLE' (3 POINTS), 'COMFORTABLE' (2 POINTS) OR 'UNCOMFORTABLE' (1 POINT)

Questionnaire Fisheries Saba, part 1: Seasoning		
	Item/fm	**Total/result**
A. Seasoning for Red Fish	Close the entire bank 6 months per year, indefinately	15
	Close the entire bank 1 year	11
	Close the e**ntire bank 4 months**	**20**
	Close the entire western area 2 years	14
	Experiment closing different sizes of areas	16
	Should vertical longlines be allowed?	10 yes, 2 no
	How many vertical longlines should be allowed?	3,4
B. Additional measures to increase Red Fish population	**Patrolling for illegal fishing**	**29**
	Set a trap limit for Redfish traps	25
	Get a device to stop nurse sharks from getting in	20
	Protect the ecosystem	15
	Use biodegradable doors	24
	Throw sharks back alive after being caught	**32**
	Sign an agreement on number of longlines	16
	Our licences will be renewed soon. Put rules on new licences	17
	We pay tax on fuel. Arrange duty free fuel	**31**
	Establish a fishermen organisation	**35**
	Use bigger mesh sizes	**28**
	Apply coral farms & artificial reefs	23
	If a trap limit would be set, how many?	20 to 30
C. Alternative income	**FAD's for Mahi Mahi**	**30**
	Turn red fish traps into lobster traps	**22**
	Rent my boat for transport cargo/people	13
	Take the loss	15
	Giving tours to tourists	12
	Fish other fish + trainer & gear	13
	Apply to government for compensation	**24**

These results will be further discussed in the next section, where sub question 2 will be answered. Other solutions proposed by locals are presented in Table 3.

[11] The item "set trap limit, then seasoning is not necessary" has been removed as during a meeting it turned out fishermen misinterpreted that question.

TABLE 3. OTHER SOLUTIONS FOR FISHERIES MENTIONED DURING INTERVIEWS AND FOCUS GROUPS

Solution	Proposed by	Tackling
Certification for sustainable fishing & saving sharks	Government, lobster wholesaler, experts	Unsustainable fishing
Alternate fish menus in restaurants	Hotel/restaurant representative	Overfishing of one species
we're willing to do what we need to do [help where necessary]	Dive school operator	Lack of cooperation
Regular fishermen meetings, being organized	Fishermen	Top-down imposed laws to fishermen
Apply coral farms & artificial reefs, use e.g. old cars	Fishermen, SCF	'dead' [sandy] areas on Saba Bank, lack of corals for fish
Protect the (marine) ecosystem	All	Imbalance of the ecosystem
Educate the fishermen about sharks	SCF	Fishermen seeing sharks as a nuisance
Fish market on Saturdays in Windwardside	Medical student	people without transport cannot buy fish.
There should be someone on deck (of foreign boats) to watch for buoys	Fishermen	Boats ruining fishermen's traps
More research on lobsters. Where do the eggs go?	Fishermen	Lack of knowledge on lobsters
Under-water camera, attached on the mooring. Then a motion sensor that can capture the boat. The sensor sends a message to the camera to take the picture, so the fisherman gets caught in the act	Youngster	[illegal fishing in dive spots]
Tackle: greed, selfishness, stubbornness and laziness.	Youngster	Fishermen steal each others' traps. Fishermen put traps all in one line so that others can't fish there.

2. IN WHAT CIRCUMSTANCES AND UNDER WHAT CONDITIONS CAN LOCAL STAKEHOLDERS COOPERATE BEST IN SHARK CONSERVATION?

From the first data collection period in April 2016, it became clear that the conditions under which stakeholders such as fishermen would cooperate for direct shark conservation measures would be unrealistically high. In addition, some SCF staff members naturally pulled the scope broader than sharks only. Jonathan:

> *"I think if we take care of the foundation of the food chain, eventually the rest will do whatever it has to do, so I think increasing the population* [of sharks] *isn't really the right way to approach it. I think the way to approach it is to mitigate or stop any damage that we've done to the bottom of the food chain."* [S.O.1]

Therefore, it was agreed upon with DCNA to change the scope of the research from *shark* broad to *marine ecosystem* broad. Within this scope, there was much more space for stakeholders to share their needs and come with solutions to improve the marine ecosystem as a whole, which according to them would benefit the sharks as well as themselves personally.

ESTABLISHING THE RIGHT CIRCUMSTANCES FOR INDIRECT SHARK CONSERVATION

In order to determine the right circumstances for fishermen to increase the Redfish population as a way to increase their income for the future and realize sustainable fishing and a better living environment for sharks, a questionnaire was set up in which results – solutions- from the first interviews and focus group could be prioritized. During the first fishermen's meeting, the results of the questionnaire were presented. Fishermen's aim of these meetings was to come to an agreement on the best way to increase the Redfish population. Based on their input, the following ideal circumstances for cooperation for shark conservation could be identified:

A. Having established a fishermen's organization
B. Running a seasoning system for the Redfish
C. Applying additional measures to increase the Redfish population
D. Arranging alternative income during closed seasons

These circumstances, according to fishermen, would increase the Redfish population and in turn provide a better living environment for sharks. For each of the above circumstances, the proposed conditions under which different stakeholders can work together to create the

above circumstances are presented[12]. In addition, at the end of each of the following four sections, it is described 'what's in it for sharks'.

A. HAVING ESTABLISHED A FISHERMEN'S ORGANIZATION

All fishermen indicate that a fishermen organization is very important for several different reasons. Main reason is to be able to have more say in the development of new laws and to prevent a top down approach from The Hague. Fisherman's wife Carla:

> *"They* [fishermen] *have to stop talking and take action. Like putting something together like a fishermen association. It* [efforts of PAR] *should continue. We have to be free to say what we need to say. We need to have an organisation before the Netherlands comes up with rules. Without an organisation we are going to get screwed. At least between now and 3 months we need to have a fishermen's organisation. The seasoning is coming from the Netherlands. I don't know when, but its coming. If fishermen do it themselves they will have more power, because they can show succes and they can show 'we don't need the rules to be posed on us'."* [S.Fw.1]

Fisherman Roland:

> *"I think it would be good to have a fishermen association. Now they* [government] *think they can make decisions for us, but with a fishermen association we have more saying. We can apply for funding, we would be more organized."* [S.F.3]

According to the stakeholders, under the following conditions the fishermen's organization can be accomplished.

Support from Saba Conservation Foundation

Fishermen indicated they would appreciate help from Saba Conservation Foundation in setting up the fishermen's organization, such as having regular meetings with Jens Odinga. He can coordinate the development of the fishermen's organization as part of his task as the Saba Bank Park Officer. His first efforts have already been made, by organizing meetings, external communication and being involved in the development of the questionnaire. Results of the questionnaire are presented in Table 4.

General advice

During the focus group discussion with the fishermen, Jens Odinga[13] (SCF) mentioned the fishermen can get support from CNFO (Caribbean Network of Fishermen Organizations) through their coordinator Mitchel (Mitch) Lay, a commercial fisherman from Antigua. He is

[12] Please note that the conditions presented are a result of the input given by respondents from Saba. In case a condition cannot be realized or stakeholders who were not included in this research do not agree, a review in a multi-stakeholder meeting would be required.

[13] Please note that real names are underscored.

willing to come to Saba, during his regular trips to Sint Maarten, to inform the Saban fishermen on his experiences with Fisheries Associations (Minutes meeting 14-08-16).

Legal assistance

The local government could provide legal assistance. Island Council Member Koen:

> *"Gerard de Jong could help them* [fishermen] *with legalities. He is in the government cabinet legal aid. The government is a support mechanism. We do facilitating rather than funding."*

As soon as the ideas for the fishermen's organization are clear (goal, roles et cetera), Jens could contact Gerard to discuss legal matters -such as the legal form of the organization (an association, b.v., NGO or other), further (legal) procedures in establishing the fishermen's organization and the like.

Having a clear common goal and clear expectations

8 out of 12 fishermen chose at least one of the following goals for the fishermen organization:

a) To form a united front to work with large companies and government.
b) To give them a collective voice so their common interests can be taken into account.
c) That they can purchase cheaper and that large investment scan also be shared.
d) Facilitate information sharing.
e) Build fisher capacity for improving livelihoods, advocacy and representation.
f) Bring fisher knowledge, experience and skills into the governance mix.

Democratically choosing the board members

Board members of the fishermen's organization should be chosen democratically and preferably anonymously. Fishermen feel the chairman of the fishermen organization should be or have been an active fisherman on the Saba Bank for at least 3 years - the mean of the total outcome of question 3a of the questionnaire, see Table 4. 5 Years was mentioned most frequently though. The chairman should be re-elected every 2 years, although this is a mean of only 6 answers; the rest was not indicated (ni). Other criteria include 1) experience in dealing with political matters and knowledge of the Dutch language, 2) Possess excellent communication skills and 3) does not necessarily have to be a fisherman, can be an outsider sharing a common interest. As shown in Table 4, only two out of 12 fishermen have indicated whom they think could be the chairman, secretary and treasurer respectively. Also other criteria they find important were not indicated, which basically shows the need for more information and support on this part. Presumably in a later stage of the development of the fishermen organization an anonymous democratic election would be more fruitful.

The outcomes of the questionnaire have not been properly discussed with the fishermen yet. In a next fishermen meeting these outcomes could be further elaborated upon.

TABLE 4. OUTCOMES OF PART 2 OF THE FISHERMEN'S QUESTIONNAIRE, ON ESTABLISHING A FISHERMEN'S ORGANISATION. THE NUMBERS IN THE LEFT COLUMN CORRESPOND WITH THE QUESTIONS IN THE QUESTIONNAIRE (ANNEX4). NUMBERS IN THE TOP ROW CORRESPOND WITH THE NUMBERS OF EACH RESPONDENT (WRITTEN DOWN ON THE QUESTIONNAIRES)[14] QUESTION 1 AND 2 ARE YES (1) AND NO (0) QUESTIONS, 3A AND 3B ARE NUMBER QUESTIONS, 3C–G ARE OPEN QUESTIONS (1=ANSWERED, NI= NOT INDICATED), QUESTION 4 ARE NAME QUESTIONS AND 5 AND 6 ARE OPEN QUESTIONS.

Questionnaire Fisheries Saba, Part 2: the fishermen's organisation												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	1b,c,e	1a	1	ni	1	1b	1a,b,d,e,f	1a,b,d,e,f	1a,b,d,e,f	1a,b,d,f	1a-f	1
2	1	1	1	1	1 +c	1	1	1	1	1+c	1	ni
3a	5	0	2	ni	5	0	5	5	5	ni	5	ni
3b	1	2	1	ni	5	2	ni	ni	ni	ni	2	ni
3c	ni	1	1	ni	ni	ni	ni	ni	ni	1	ni	ni
3d	ni	ni	ni	ni	ni	ni	ni	ni	ni	1	ni	ni
3e	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni
3f	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni
3g	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni	ni
4a	ni	ni	ni	ni	Hemy	Julian	ni	ni	ni	ni	Nicky	ni
4b	ni	ni	ni	ni	ni	Ryan	ni	ni	ni	ni	Michele	ni
4c	ni	ni	ni	ni	ni	Michele	ni	ni	ni	ni	Bradley	ni
5	1	1	ni	ni	1	1	1	1	1	1	1	ni
6	1	1	ni	ni	1	1	1	1	1	1	1	ni

WHAT'S IN IT FOR THE SHARKS?

Although the fishermen's organization is highlighted as one of the most important steps ahead, the exact effect on the shark population would need some further research. Based on the outcomes of this research, the main motivation for fishermen is to have more say. From interviews, informal conversations and meetings it became clear that while locals claim there is greed among them, the marine ecosystem is highly valued by the fishermen. Moreover, solutions as certification would be a lot easier to implement. Iroek, the government, experts and SCF have indicated certification is a good idea for Saba. Island Council member Justin:

> *"Certification could be a solution to save sharks and create awareness. It would make it more interesting for fishermen because it is more expensive so they would earn more. And the restaurants can put on their menu: 'no sharks were harmed in creating this dish'!"* [S.G.2]

Lobster wholesaler Kennith is interested in setting up a company:

> *"I would really like to set up a company and think together with the fishermen of a way to get MSC-certification, so that there will be sustainable fishing. I think it is doable* [for fm], *because they get more value for their product. Better to catch less but get a better price for it."* [S.W.1]

[14] The completed questionnaires can be viewed upon request at Saba Conservation Foundation.

According to this, saving sharks through certification would also mean more awareness, restaurants could show they only deliver certified fish and a better income for fishermen. However, none of the fishermen have mentioned this subject. A reason could be that fishermen have not been provided enough information about it yet. Providing the right information to the fishermen in order to make a well informed decision as well as establishing a fishermen's organization would be the first steps in this. SCF, the government, Kennith[15] and the fishermen could work together to realize this.

Now that the fishermen's agreement for seasoning for the Redfish is there, the way the fishermen treat the Redfish population may get close to complying to the rules of certification for sustainable fishing, such as MFC. Another idea could be to set up certification from scratch. The latter was perceived best option (by experts) as MFC is very expensive and making one from scratch means adapting the certification to the local situation, which makes it a lot easier.

B. Running a seasoning system for the Redfish

According to stakeholders, under the following conditions, the seasoning system for the Redfish will succeed.

Community-up[16] development of the seasoning system

Different stakeholders such as SCF, fishermen and the local government indicate that the seasoning system should be developed by the fishermen themselves. This primary condition has been achieved during the action research process in July and August 2016. The system is developed based on the best of the fishermen's knowledge and experience on the Saba Bank, carefully weighing the balance between the variables 'sufficient income to sustain their families' and 'allowing the Redfish to recover sustainably'. The fishermen's agreement, signed by all licensed fishermen as well as co-fishermen is presented in Annex 4. The closed season for Redfish will take place from April 2017 to October 2017, after which fishermen will test the results and discuss further procedures based on its outcome. In case seasoning has not delivered enough results and a more rigorous approach is needed to increase the Redfish population, extra support such as financial compensation from the government would be required.

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[15] Kennith is a pseudonym. In case he needs to be contacted for cooperation, 7Senses will provide his contact details after his approval.

[16] Community-up is a term 7Senses uses as an alternative for bottom-up, to take away the hierarchical tone of the word. Community-up development means the co-creation of something new, in cooperation with *all* different stakeholders, including 'the bottom' (traditionally referring to ordinary people) and the 'top' (traditionally referring to the government and/or management).

Community-up creation of the punishment and/or reward system and legal framework for seasoning for Redfish

Laws and regulations, including its law enforcement, should be developed in close cooperation with the fishermen and should be kept as simple as possible. The main stakeholders in this matter -SCF, fishermen and the local government- all argue that this is an important condition.

SCF staff member Kevin:

> *That [seasoning] is of course an accepted fisheries management system. They have it all over the Caribbean. [...] And maybe something similar can work here, too… […] the best would be self-policing and self-enforcement.* [S.O.3]

Fishermen argue that they would become rebellious if they are not included in law development. Noel:

> *If they* [the government] *would push laws down our throat* [i.e. develop laws without consulting the fishermen first]*, the fishermen would make noise. The government would get a lot of phone calls and threats. [...] You know I would drive to the administration building and ask: who is going to feed me? I give you one week to come with a solution to feed my family! […] Then we would try to figure out how to beat the system. Start using your head! Breaking the laws, you know, this is how normal people become criminals. Because they don't know how to survive anymore."* [S.F.4]

Also at the government they favor not to implement more legislation. Koen:

> *"It has to be so good for the stakeholder that you don't get a blow-back from the community: "It's you doing this again, you implementing more legislation." I think, like you said … The intention is that they cope with their own ways to protect sharks, stabilise the marine ecosystem. It really is their solutions. That they don't come back and say: "You're creating more legislation, you've created more …" This top-down approach. It has to be a bottom-up approach, so you really have to focus on that."* [S.G.4]

During meetings, the main rules have been set for seasoning, though how as to enforce these rules is the next priority. A fishermen organization plays a very important role as it serves as the base from which reward- and punishment systems can take place. Fleur:

> *"Basically handhaving* [i.e. maintainance] *consists of 3 parts: a reward system, self regulation and repression. The reward system can be arranged by the fishermen's organization with or without cooperation from the local government. It means the fishermen who stick to the rules get some kind of advantage. Self regulation happens entirely among the fishermen. So they can develop a punishment for the fishermen who do not stick to the rules, such as a fine to be paid to the fishermen's organization, from which they can buy for example new gear. If that system is not enough, the local government comes in with what we call 'repression', which is a punishment from the government."* [S.G.7]

So, in cooperation with SCF (represented by Kai Wulf) and the local government the system for law enforcement for seasoning should ideally be developed after establishing the fishermen organization and before the start of the closed season which is April 1st 2017.

Law enforcement is not easy to set up for international waters. Expert Pim shares his alternative ideas:

> *The easiest law enforcement is just a seasonal closure with a starting data and an end date. Then you can just control on land. Then you don't need patrol on the Saba Bank which is 2200 square kilometers, which costs boat maintenance, the boat itself, man power, fuel, all those things. Then you can just see on the dock, when fishermen arrive, if they have a certain fish type on their boat, and execute law enforcement right there.* [S.E.1]

WHAT'S IN IT FOR THE SHARKS?

It has been confirmed by several different stakeholders, among which fishermen, dive school operators, dive instructors, SCF and experts, that an increase in the Redfish population would benefit the shark population. Dive instructor Donna:

> *"We would like to see more big sharks like bull sharks, whale sharks, tiger sharks, hammer heads et cetera. For that we need to make sure they get more nutrition. There are red snappers, conch, jacks etcetera which they eat. So if we make sure that there is enough snapper, conch, jacks, there should be more and bigger sharks as there is more food."* [S.D.6 in a focus group discussion]

So, Donna is referring to snapper, a Redfish type, as food for the sharks. Fisherman Roland confirms that this benefits the sharks:

> *"Sharks would increase in size and population if the red snapper population increases."*

Also NIWA, the National Institute of Water and Atmospheric Research (2016) emphasizes the importance of Redfish not only for sharks but for the marine ecosystem as a whole, in turn indirectly benefitting the Sharks:

> *"Redfish are important predators within the marine ecosystem. The influence they have on their food sources can even modify the structure of the environment they live in. This has been demonstrated in marine reserves where the recovery of snapper and other predators resulted in an increase in kelp forests after these predators reduced populations of kelp-eating urchins."* (NIWA 2016)

These statements emphasize the importance of seasoning for Redfish as a way to indirectly save sharks by improving the environment they live in and making sure there is enough food.

C. Applying additional measures to increase the Redfish population

During the fishermen meetings, fishermen have agreed that upon the following conditions they can cooperate to further enhance the growth of the Redfish population.

Set a trap limit

All licensed fishermen keep a trap limit of 25 Red Fish traps from the 1st of October 2017 until the next agreed upon closed season. With this, also another issue is addressed, Benjamin:

> *"Let me tell you something real honestly. There is people on the island without a license but they let the fishermen put and pull their pots! There is one boat pulling traps for 6 people! So this is why we have so many traps out on the Bank. Believe me, there are many many traps out there! So that's a cause of the overfishing and the fish and lobster is declining more and more. Craig is the only one who understands it. If they don't put a limit for each fisherman there will not be enough for the future. So we need to set a trap limit of 300 lobster traps and 25 fish traps."* [S.F.13]

Allow vertical longlines

All licensed fishermen are allowed a maximum of 4 vertical longlines for Red Fish per fishing boat during closed season for Red Fish. Fishermen Roland:

> *"I would like to season the bank for Red Snapper for half a year, closing the whole Bank. We can use longlines instead, and always allow that. For longlines you use a different area, that is deeper. The Redfish would still be able to recover because that area is left alone. With the longlines we fish a lot less Redfish."* [S.F.3]

Releasing sharks

All licensed fishermen will not catch sharks intentionally and agreed to throw unintentionally caught sharks back alive -when using traps, longlines and FADs and/or other methods- as they keep the marine ecosystem healthy. Fisherman Lenny:

> *"I talk to the sharks, become friends with the sharks. You have to throw them back, unless they are almost dead. They [sharks] keep the reef and the rest of the marine ecosystem healthy."* [S.F.2]

Bigger mesh sizes

All licensed fishermen will use 2x2-inch square mesh wire instead of 1,5 inch, for at least the doors of the Red Fish traps. Fisherman Willem:

> *"We need to make the meshes bigger so that the small fish can escape. Therefore we need to buy bigger wire. The Marine Park tried this once, they cut the wire so that it had bigger holes. It worked, but not perfectly. It didn't pass the law yet. It also depends on the quality of the wire."* [S.F.5]

Patrolling for illegal fishing

For patrolling, the main concern was: who is going to do it? From interviews became clear that there is at least one SCF staff member trained to be *buitengewoon agent van politie*, however he never got the acknowledgement from the government so never could execute law enforcement. Fanny de Swarte from the government's public entity was positively surprised to hear this and wanted to know more about this, as it saves the government money on having to train somebody. Opinions on whether SCF should execute law enforcement are widely dispersed, so this needs some further exploration. Kai Wulf and Fanny will discuss this together.

During the first fishermen meeting, fisherman Cas proposed to take the *buitengewoon agent van politie* on his boat for patrolling; it would save the government a boat and fuel if the patroller would come on the boat with them. This could be further discussed with the public entity of Saba.

WHAT'S IN IT FOR THE SHARKS?

Additional measures as described above are intended to accelerate the population growth of the Redfish population. Like indicated in section A (page 25), increasing the Redfish population is going to be beneficial for the sharks. Accelerating the population growth could accelerate the recovery of shark species, although this needs to be confirmed by experts in this field.

D. ARRANGING ALTERNATIVE INCOME AND COMPENSATION DURING CLOSED SEASONS

Results on alternative incomes remained a bit vague. There was no golden idea that all fishermen felt comfortable with. However, the following were prioritized through the questionnaire.

FAD's for Mahi Mahi

Far highest outcome though from the questionnaire was the idea of setting up FAD's for Mahi Mahi, meaning that fishermen felt most comfortable with this alternative (score=30, see Table 2). Fishermen agreed that FADs could help them financially during the period of seasoning. During the final meeting with the Island Council, fisherman Nicholas Johnson explained how a FAD is being set up and what is required to be able to set it up. It was proposed to the Island Council and Island secretary to get support from the government in setting up the FADs. Although there is some hesitance from Greenpeace about FADs (Greenpeace 2009), local fishermen claim the FADs are so small that they wouldn't do harm.

Apply to government for compensation

Second highest score on the questionnaire's results was to apply for compensation to the government. However, some fishermen were skeptical and doubted the feasibility of applying for compensation. The fishermen concluded that it is more realistic to get support from the government in the form of setting up the FADs, supplying fishermen with tags to identify traps and arranging duty free fuel.

Turn red fish traps into lobster traps

Red fish traps can be turned into lobster traps (as shown in Image 5), which would give fishermen some extra income from the lobster catch. According to the fishermen, this should do no harm to the lobster population as it is only a few more traps per fisherman.

IMAGE 5. FISHERMEN ON THE SABA BANK PULLING LOBSTER TRAPS

Tags

During the fishermen meetings there was also spoken about tags, to put on the fish traps after seasoning, so that traps can be identified and illegal fishing/ exceeding the trap limit can more easily be detected. Fishermen would like to apply to the government to supply the fishermen with these tags after the closed season.

Lion fish traps

Although only one respondent mentioned this idea, putting specially designed lion fish traps has potential to become an efficient alternative income for the fishermen during seasoning. In an interview, dive instructor Jesse talks about shooting lion fish, which is not enough to eradicate this disruptive species. Jesse:

> *"…I mean, the only way* [to keep lion fish under control] *is to catch them* [lion fish]*. There are specially designed traps now, which will catch lion fish. It's just been introduced and it has an electronic sensor on it. So it scans the fish at the gate and if it has the patterns that lion fish*

have, it opens up the doors. If it scans the fish and it doesn't have the patterns, it doesn't open. […] Another benefit of the trap is that they can go much deeper than we can. You can drop the trap to three hundred meters and take them out. It's done by a company called Frapper. They're definitely testing it now. I don't know when it's gonna become official." [S.D.2]

Saba Bank (2016) posted a website on the 5th of September 2016 on Facebook, emphasizing the need for a solution for the lionfish: *"If lionfish on the Saba Bank are to be controlled something like this will be needed.* ***Or a lionfish trap*** *…."*, referring to a so called 'lion fish killing robot'[17]. In a phone call with The Frapper, it became evident that Saba could be a potential experiment ground for the new lion fish traps. Fishermen would receive lion fish traps (Image 6) during the closed season for Redfish, to catch the fish and sell it on the market as an alternative income, while collecting data for The Frapper's experiment. According to locals there is a market for lionfish, although this has not been explored in detail due to time constraints. Also the opinions of fishermen are not yet fully clear, so this needs to be investigated first.

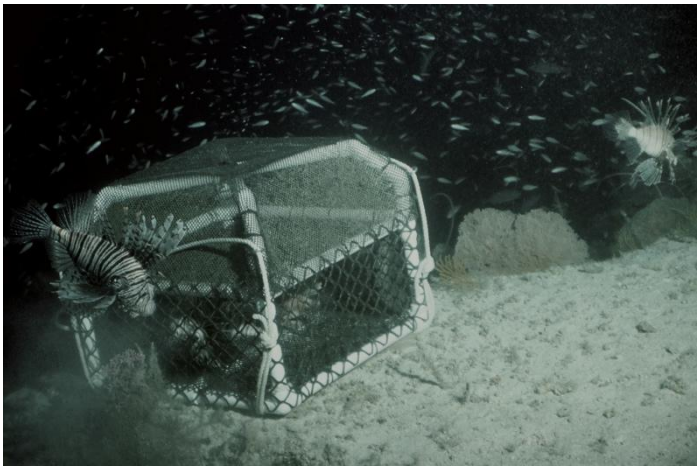

IMAGE 6. THE FRAPPER'S LION FISH TRAP.
SOURCE: WWW.FACEBOOK.COM/THEFRAPPER/

WHAT'S IN IT FOR THE SHARKS?

Having an alternative income for fishermen as an ideal circumstance on itself has no direct link to the shark population. However, some ideas for alternative income do have a direct relation, such as boat rental for shark expeditions and shark tagging activities. Also the option of the lionfish experiment is expected to have a positive influence on the shark population: in case the lionfish traps are indeed successful on the Saba Bank, one of the disturbing factors for the marine ecosystem –i.e. lionfish- will be taken out, leading to a healthier marine ecosystem which is in turn beneficial for the sharks. Additional research would be necessary to be able to confirm this.

[17] The website they are referring to is http://newatlas.com/interview-lionfish-killing-robot/45101/.

3. WHAT ACTIVITIES CAN BE IMPLEMENTED THAT WOULD HELP REACHING STAKEHOLDERS' INDIVIDUAL GOALS WHILE CONTRIBUTING TO SHARK CONSERVATION?

This chapter discusses what activities need to be executed, what the intrinsic motivations of stakeholders are for executing the activities and what the roles and responsibilities ideally would be, based on outcomes from the action research.

ACTIVITIES

Based on the answers of question 1 and 2, the following activities need to be executed to improve the living conditions for sharks. Presented in table 5.

TABLE 5. ACTIVITIES TO BE EXECUTED BY LOCAL STAKEHOLDERS FOR SHARK CONSERVATION THROUGH FISHERIES. NAMES IN THIS TABLE ARE REAL NAMES (I.E. NO PSEUDONYMS)

Activity	Description	Roles/involved stakeholders	Done
Reach agreement on seasoning system among all fishermen, suitable within the EEZ legal framework (as declared by Paul Hoetjes)	Done through Participatory Action Research, see Annex 4	Madelon Eelderink Fishermen Government Experts SCF, Jens Odinga	✓
Establish a fishermen's organization	a. Determine fishermen's goals and expectations, organize meetings; b. Invite e.g. Mitchel Lay to give advice from his experience in Antigua; c. Get legal advice from e.g. Gerard de Jong on establishing the organization in the right legal form; d. Go to the institutions for the actual establishment of the fishermen organization	SCF, Jens Odinga[18] Fishermen Mitchel Lay (advice) Gerard de Jong (advice) Government	
Develop a reward and/or punishment system for the seasoning system for the Redfish, for all articles on the agreement (Annex 4)	a. during/after the establishment of the fishermen organization, organize meetings to determine what rules fishermen would agree to. The government can support in the reward system.	SCF, Jens Odinga Fishermen Government	
Arrange patrolling	In cooperation with the government, coast guard	SCF, Kai Wulf	

[18] Given Jens' busy schedule, it has been agreed that his role will primarily be that of a facilitator rather than the executor of the activities.

	and other stakeholders, arrange patrolling for illegal fishing (i.e. breaking the rules of the fishermen's agreement and/or EEZ regulations), for foreign as well as local boats. To arrange this, a legal framework is required. Some fishermen have proposed to use an AIS system for this.	Experts Fishermen Government, public entity Coast Guard Saba harbor office	
Arrange duty free fuel	During the first fishermen meeting, fishermen stated that when they show they are organized and have developed a seasoning system amongst themselves, it is more likely that the government is willing to contribute by leaving out taxes for fuel (they currently pay tax while according to them and the local government that should not be paid). The government is currently looking into that. SCF could check its status and perform required actions.	SCF, Jens Odinga Fishermen Government	
Set up FADS for Mahi Mahi	Fishermen and experts will determine how FADs may best be established, the government is requested to provide support in this.	Fishermen Government	
Arrange tags for fish traps	After closed season, the traps will have a tag in order to be able to identify the traps and check if the traplimit is being respected. The government is requested to provide support in this.	Fishermen Government	
Start lion fish experiment	Bob Hickerson (the Frapper) as well as Tadzio Bervoets are enthusiastic about the idea of experimenting with lionfish traps, for fishermen this could serve as alternative income. Fishermen need to be consulted first whether they will be willing to join the experiment. Jens, Tadzio and Bob are connected to further develop this project.	Fishermen DCNA, Tadzio Bervoets The Frapper, Bob Hickerson SCF, Jens Odinga	
Discuss certification options with fishermen	It is yet unclear how fishermen feel about certification. After establishing the fishermen's organization, this can be discussed and further acted upon.	Fishermen Government	
Test the outcomes of the first closed season and adapt the agreement where necessary	After the closed season, from October 1st 2017, fishermen will go out to fish for Redfish, to test the catch. Based upon this outcome, further procedures will be determined.	Fishermen SCF, Jens Odinga	

INTRINSIC MOTIVATIONS

All activities mentioned in Table 5 are based on intrinsic motivations of the involved stakeholders, based on their input during interviews and focus groups. Through Participatory

Action Research, stakeholders had the opportunity to share their concerns and come up with solutions that fit their needs and normative preferences. Through the fishermen's agreement, fishermen have shown their true intention and commitment to season for the Redfish based on these needs and normative preferences.

Through observations during meetings, focus groups and other research activities it became clear that motivations for the above activities are high among the stakeholders. According to the theory of Planned Behavior (see Figure 1), intention for a certain behavior – in this case, the execution of the activities listed in Table 5- is a product of attitude towards the behavior, subjective injunctive norm, subjective descriptive norm and perceived behavioral control. Intention and perceived behavioral control in turn determine behavior (Leeuw, de 2015). In line with this theory, in order to actually start seasoning for Redfish in April 2017 -as well as to execute the other activities of Table 5- it is therefore important that stakeholders keep feeling control over its execution.

This can be achieved through arranging regular meetings among the fishermen and making sure there is enough support in terms of advice, a solid legal system, realistic options for alternative income and where possible hands on support. However, a regular claim from meeting-facilitators is that fishermen do not show up. Fisherman Benjamin:

> *"…That is also a reason why I don't join the meetings anymore. I feel that my opinion doesn't count anyway."*

It is therefore important to always make sure the intention of meetings is to make sure fishermen's opinions are taken into account.

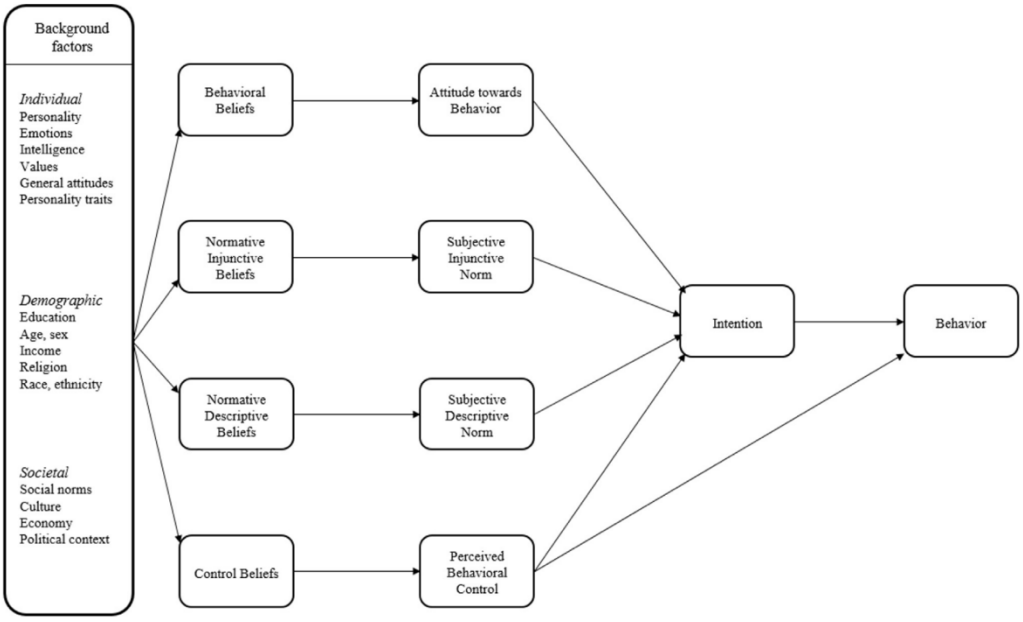

FIGURE 3. THEORY OF PLANNED BEHAVIOR. SOURCE: DE LEEUW ET AL (2015).

ROLES & RESPONSIBILITIES

Since the main stakeholder for this project for the Redfish are the fishermen, they can be seen as the actual executors of the project. With this, they have a major responsibility for its success. However, without the support of other stakeholders, executing the project activities will be quite of a challenge. Therefore, in consultation with other stakeholders, roles and responsibilities have been identified and presented in Table 6.

TABLE 6. ROLES AND RESPONSIBILITIES FOR THE SEASONING FOR REDFISH PROJECT. NAMES IN THIS TABLE ARE REAL NAMES (I.E. NO PSEUDONYMS).

Stakeholder	Role	Responsibility	Contact person[19]
Fishermen	Executors of the project	Achieve the goal of the project: an increase of the Redfish population	Nicholas Johnson
SCF	Impartial facilitator	Documenting activities, facilitating execution of activities through organizing regular meetings, bringing fishermen in contact with experts and other relevant actors and keeping other stakeholders such as DCNA posted on the progress.	Jens Odinga
Government	Facilitator	Providing legal advice, providing support where possible.	Vito Charles
DCNA	Impartial facilitator	Receiving updates, oversee the project, providing advice, providing support where possible (e.g. for lion fish experiment), report to sponsors.	Tadzio Bervoets
The Frapper	Coordinator of lionfish experiment	To be determined with DCNA. Role of The Frapper can only be determined and put in place after approval of the fishermen and SCF.	Bob Hickerson

[19] If required, contact details can be provided upon request by SCF.

IMAGE 7. FISHERMEN, MADELON AND JENS HOLDING THE FISHERMEN'S AGREEMENTS

MORE OUTCOMES

TOPIC 'SHARKS'

The dataset collected during fieldwork is very rich and is subdivided into different categories of topics. After the topic 'fisheries', the topic 'sharks' is the most discussed topic with 55 comments made by 13 different stakeholder groups[20]. Main outcome of this topic is that stakeholders claim there is a lot of fear for and misunderstanding of sharks and that the sharks have 'a bad name'. Main cause is the media. Island Council member Karl:

> *"…most of our people are exposed to North American TV. And that many times brings about the news reports on the East Coast and then the South Coast, about the shark attacks and the beaches being closed, so people only see or understand the danger, but not in the bigger picture."* [S.G.4]

Moreover, 73 year old retired fishermen Robert who used to kill sharks claimed he did that for the protection of the people on the island and for more fish:

[20] Of course, these numbers may be biased due to the fact that the action researcher was on Saba for the Save our Sharks project. Despite stating that the subject of the interviews was 'the marine ecosystem' and 'life under water', people may have automatically started talking about sharks.

"I used to fish for Red snapper, lobster, Grouper... When a shark would come we would kill it before it would eat all our fish. I killed over 1000 sharks! It felt good because we were protecting people from the sharks. And the less sharks in the ocean, the more fish we caught."

Proposed solutions by locals generally come down to awareness raising campaigns for Sabans. From informal conversations with kids it became clear that the Save our Sharks education- and outreach programs for kids are paying off, resulting in statements as 'sharks keep the reef healthy' and 'sharks need to be protected', claiming that they learned that from SoS programs in school. Government official Bob agrees on the positive effect of child education on sharks:

"If a father fishermen comes home and says "I killed 5 sharks", the child will say "dad you are not supposed to do that". That's how you get there." [S.G.1]

However, some elderly people have not understood the purpose on shark campaigns on Saba. 82 year old Iris:

"I saw people walking around with shark T-shirts. They say they are protecting sharks, but I never understood why." [S.El.1]

Most stakeholders claim that the biggest damage to sharks is done by the bigger commercial vessels –coming from e.g. Venezuela. However, also in Saba waters there is much to gain. For example, sharks may die due to fishing activities. Bogan:

"They [nurse sharks] can get through the smallest holes. They don't feel anything, they just push themselves through. They are tough, even if you stab them with big machetes they survive. I have seen a lot of sharks with scars. When you put your knife in the gills they die fast."

According to expert Pieter there seem to be relatively simple solutions to this issue:

"…For example one fisherman, Ryan, uses a thicker wire […]. If you give each fishermen each year one unit of wire –and wire of that theckness costs 45 Dollars, then the problem is actually solved. Ryan said today during the meeting that since he uses that wire, he has not one more reason to kill sharks anymore." [S.E.1]

TABLE 7. OTHER SOLUTIONS FOR DIRECT OR INDIRECT SHARK CONSERVATION, PROPOSED BY STAKEHOLDERS

Solution	Proposed by	Tackling
Education and awareness raising programs	Government, youngster SCF Dive instructors & dive school operators	Fear and misunderstanding of sharks
Snorklers pay 3 dollars per time, divers pay 4 dollars. Why not one more optional dollar for the Marine Park? Also the ones who do Padi Aware could donate some extra.	Dive instructors	[Lack of financial means to protect sharks]
Increase the laws	Dive instructors SCF	People (like recreational fishermen) getting away with catching sharks.
New zoning system Marine Park based on biodiversity hot spots	SCF	Former system outdated; not enough based on biodiversity.
Certification	Government, Experts, SCF	Sharks are not well enough protected
Have [the right] management in place. Get into a more formal partnership with others, like fishermen, the Saba Bank marine sanctuary – marine mammal sanctuary and the Dominican partners, improve communication.	SCF	Need for better cooperation between different stakeholders to save sharks.
Use thicker wire (for fishermen)	Expert	Fishermen see sharks as a nuisance as they ruin their traps.
Educate the fishermen about sharks	SCF	Fishermen seeing sharks as a nuisance

THE RELATION BETWEEN SHARKS AND… GOATS

Although only three comments were made about goats as the primary problem, the subject was touched 18 times in conversations as an underlying issue for other problems, even though the subject was the marine ecosystem. Therefore, it is also important to look into this issue. In a simulation game (Image 8, 9 and 10) with Saba Conservation Foundation, while presenting results of interviews and developing scenario's for enhancing a healthy marine ecosystem, an interesting link came to the light. Sharks need coral reefs for their livelihoods. Coral reefs are threatened by -excluding global warming and other global issues- landslides as large amounts of debris enter the water and cover the coral reefs. The landslides are caused by heavy rainfall, taking the debris from dumpsites (for soil and rocks, sometimes including garbage) down the hill into the ocean.

To address the issue with the landslides, two options have been proposed: 1) finding new dump sites that are not susceptible to cause landslides during rainfall and 2) planting trees to fortify the soil and prevent landslides. Both solutions have their challenges. For example, for option 1 the challenge is to motivate people to dump in a different place than they are used to for years. For option two, goats may form a threat as they tend to consume the young trees[21]; fences are costly. Using garbage to protect trees is not accepted by the government; an alternative could be using pallets and letting school children paint them. Although the strength of this link between sharks and goats is to be questioned, the above results implies that for marine health, also terrestrial activities are important.

During the simulation game with the Saba Conservation Foundation, three scenarios have been identified and (partially) tested: 1) designating three new Marine Protected Areas based on biodiversity, in order to improve sustainable use of the Marine Park 2) addressing the landslide issue to prevent soil from damaging the coral and 3) banning plastic bags and Styrofoam (to prevent them from ending up in the ocean and cause damage to marine life) and/or including this in the current garbage recycling system of the government. It is up to the SCF to make decisions based upon these developed scenario's and include them in SCF's new strategic planning.

[21] It has been advised by farmer Timo to plant Plant bamboo trees. Trailing bamboo is very invasive so that holds the ground very well. It [the dump site] is an empty site so its not going to go in anybodies yards. Normal trees will not hold enough.

IMAGE 8. SIMULATION GAME WITH SCF STAFF.

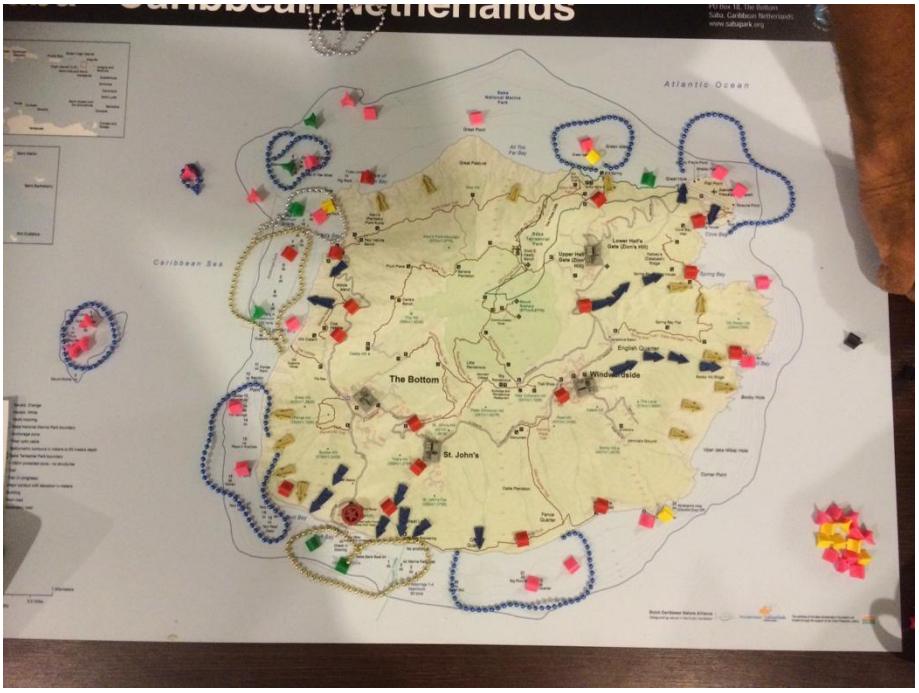

IMAGE 9. IDENTIFYING THE IDEAL NEW ZONING SYSTEM FOR THE MARINE PARK.

IMAGE 10. LEGEND INDICATING WHAT EACH PIECE REPRESENTS

OTHER STAKEHOLDERS WHO SPECIFICALLY OFFERED TO HELP

In a religious Saba, church can play an important role in creating awareness. Especially considering the fact that there still is a lot of fear for sharks on the island, the –for most people- comfortable atmosphere of a church could be suitable for awareness – and education campaigns. Father Simon offers his help:

> *"we could play a role if we have brochures to give out, if somebody wants to give a talk, that could be done through the church organisation. They call the people together. We also have community centres organising a lecture. Come over!"*

Terry Cunningham, specialized in organic agriculture, has offered providing advice regarding landslides, agriculture and the like. Terry:

> *"if SCF wants advice from me they can always call me."*

Their contact information will be provided by 7Senses upon request.

ANSWERING THE MAIN RESEARCH QUESTION. WHAT'S THE PLAN?

Summarizing and putting the answers of the three sub questions together, an answer to the main research question can be provided. The main research question of this action research is: *what joint construct of plans can be co-created, implemented and executed by different involved stakeholders, for the direct and/or indirect protection of sharks in Saba territorial waters?*

Through the process of Participatory Action Research (PAR), a joint construct of plans has been constructed based on the problem definitions, proposed solutions, background theories and normative preferences of the local stakeholders. The outcome –the joint construct of plans– is a co-created fishermen's agreement on 'seasoning for Redfish & establishing a fishermen's organization' (Annex 4).

Other outcomes include three scenarios for further enhancing the health of the marine ecosystem: 1) designating three new Marine Protected Areas based on biodiversity, in order to improve sustainable use of the Marine Park 2) addressing the landslide issue to prevent soil from damaging the coral and 3) banning plastic bags and Styrofoam (to prevent them from ending up in the ocean and cause damage to marine life) and/or including this in the current garbage recycling system of the government. Furthermore, interesting insights in causal relations and the community perspective on sharks and the marine ecosystem as a whole have been identified, such as the link between sharks and goats.

The fishermen's agreement has been presented by Nicholas Johnson and Madelon Eelderink to the Island Council and Island Governor Jonathan Johnson, after which Nicholas officially handed over the fishermen agreement to the Lt. Governor (Image 11).

IMAGE 11. LEFT: MEETING WITH THE ISLAND COUNCIL, GRIFFIER AND ISLAND GOVERNOR. FLTR NICHOLAS JOHNSON, AKILAH LEVENSTONE, VITO CHARLES, ISLAND GOVERNOR JONATHAN JOHNSON, MONIQUE WILSON, CARL BUNCAMPER. RIGHT: FISHERMAN NICHOLAS JOHNSON HANDS OVER THE FISHERMEN'S AGREEMENT TO THE ISLAND GOVERNOR.

CONCLUSION AND DISCUSSION. OBJECTIVE ACHIEVED?

This Participatory Action Research on Saba for community component of the Save Our Sharks project started with a research objective:

> *To discover, develop and implement together with local stakeholders a joint construct of plans for the protection of sharks in Saba territorial waters, which fits each stakeholder's needs and goals and which they can execute actively and sustainably. As such, we aim to tackle shark extinction from multiple angles.*

In 7 weeks of fieldwork on Saba, the main outcome is a fishermen's agreement on 'seasoning for the Redfish & establishing a fishermen's organization' (Annex 4), which has been co-created among the fishermen with input from other stakeholders such as experts, the local government and SCF. In the following ideal circumstances, stakeholders can work together to achieve their goal of increasing the Redfish population and enhancing a healthy marine ecosystem: A) Having established a fishermen's organization, B) Running a seasoning system for the Redfish C) Applying additional measures to increase the Redfish population, D) Arranging alternative income during closed seasons. Conditions under which these ideal circumstances can be realized include advice and legal assistance by government and/or experts (A), Community-up creation of the legal framework of the seasoning system (B), setting a trap limit after the closed season, allowing longlines, arrange patrolling and releasing live-caught sharks (B), arranging FADs for Mahi Mahi, government support (D) and more, as presented in the results section.

Fishermen have agreed to start the closed season for Redfish by April 2017, for 6 months. Additional measures have been added to the agreement to further accelerate the increase of the population. After the closed season, results will be assessed and further procedures will be determined based upon these results.

In addition to the fishermen's agreement as an outcome of this action research, the Saba Conservation Foundation tested scenario's for 1) re-zoning the Marine Park based on terms of biodiversity and 2) tackling terrestrial environmental issues, preventing landslides and -plastic and Styrofoam- garbage from ending up in the ocean. Both the seasoning system for the Redfish and the terrestrial plans is expected by stakeholders to re-balance the marine ecosystem in such way that it benefits the sharks in terms of population as well as wellbeing since their living environment will be improved.

As such, the objective has been achieved. However, this is just the start of it. Although the action research on itself may have raised awareness of the importance of sharks among stakeholders, the actual benefit for the sharks will start when the closed season for Redfish starts, in April 2017. It is up to the SCF to make decisions based upon these developed scenario's and include them in SCF's new strategic planning. Executing the seasoning system *and* the activities planned by SCF will lead to tackling shark extinction from multiple angles.

REFLECTION ON THE ACTION RESEARCH PROCESS

The objective of this action research has been achieved and local stakeholders have indicated to be satisfied with the outcome. Like in all researches, there are also some limitations to describe.

In order to increase mutual understanding of each other's perspectives among different stakeholders, in-context immersion (i.e. stakeholders join each other in their daily activities) and a multi-stakeholder meeting was planned. Due to some local stakeholders' resistance to getting together and lack of interest in each other's jobs it was not possible to organize in-context immersion and the final the multi-stakeholder meeting as intended. However, for context immersion I went fishing with a fisherman and brought a chef cook with me, which was fruitful as the chef cook was asking a lot of questions, showing genuine interest -although we had to return after 20 minutes due to a failing GPS system. I also went fishing alone with a fisherman and his colleague once, which increased my understanding; however the main aim was to increase understanding between the different *local* stakeholders.

With regards to the multi-stakeholder meeting, I managed to bring a fisherman to the Island Council meeting, which increased the understanding of the Island Council members with regards to fishing. Whether it has increased the understanding of the fisherman with regards to the government remains unclear. Saba Conservation Foundation (S.O.4) preferred not to have a multi-stakeholders due to time limitations.

Some Interviews were conducted in Dutch, giving a mixture of Dutch and English data. This has not been translated. In consultation with DCNA, in next action researches, interviews can be conducted in English so it all stays in one language.

Due to time constraints, only for the fishermen an 'action part' could be attached, leaving the Saba Conservation Foundation with scenarios that have not been properly tested and activated. However, I have full trust in SCF that staff can further elaborate upon the identified scenarios.

Time limitations also led to a 'thin' application of the research results to the theory of planned behavior, so no proper conclusions can be drawn towards the likelihood of action on the seasoning system. It would be interesting to have more research on this, to draw lessons for future work on other islands. Also comparing the outcomes with more literature such as the work by Ostrom on the tragedy of the commons or theories on program management would have given an added value.

RECOMMENDATIONS. TIPS FOR THE ROAD AHEAD

The final product of this action research, the fishermen's agreement has been well adopted by the local stakeholders, among which fishermen, SCF and the government. However, the seasoning system starts in April 2017 and there are some pressing challenges to be addressed. In order to maximize the actual realization of the agreed upon seasoning system, recommendations for DCNA, SCF and other involved stakeholders are presented in this chapter.

1. **Support.** Make sure the conditions for the seasoning system as presented in the results section are put in place, so that fishermen feel well supported in the execution of the seasoning system.
2. **Inclusion.** Include fishermen in all other procedures that have direct or indirect influence on the livelihoods of fishermen, especially procedures such as law development and arranging the experiment for lionfish traps.
3. **Optimize success factors.** Important factors for project success include 1) sense of urgency among stakeholders, 2) feeling ownership and control over the project, 3) proper communication between stakeholders, 4) mutual trust among stakeholders, 5) feeling supported. Concerning 1, as almost all stakeholders have expressed worries about the Redfish population, the sense of urgency is high. Concerning 2, action research has considerably contributed to a sense of ownership among fishermen as they have created the seasoning system themselves. Factors 3, 4 and 5 need to be established between the stakeholders, starting with transparency and open communication, which in turn increases trust and feelings of being supported.
4. **Arrange meetings.** Arrange regular meetings among the fishermen. Especially in this delicate period, regular meetings are necessary to keep the positive attitude during the creation of the seasoning system and to remind each other of what is to come.
5. **Establish fishermen organization**. High priority on the list of activities is the establishment of a fishermen's organization. Also here it is important to have regular meetings and assure progress and flow in the development of the organization. Set clear action points to achieve this.
6. **Arrange self-regulation.** Develop together with the fishermen a self-regulation system –punishment for fishermen who do not comply. This system can be strengthened by adding a reward system for fishermen who obey the rules for a certain period. Set clear action points to achieve this.
7. **Arrange law enforcement.** Arrange patrolling. Another high priority is to make sure proper law enforcement is being put in place. In case the above self-regulation system appears to be insufficient, repression from the government can take over. Therefore, a proper legal system needs to be developed.

ABOUT THE AUTHOR

Drs. MA Madelon Eelderink

Madelon performed the action research described in this document. She is founder of 7Senses and 7Senses Foundation. She holds a Masters' degree in International Public Health (VU University Amsterdam) and an Advanced Masters' degree in Latin America Studies (CEDLA Amsterdam), focusing on environmental issues. She is specialized in Participatory Action Research and uses this methodology in many different settings all around the world, such as poverty related issues, public health, primary education and for this project, marine ecosystems and sharks. Madelon has (action) research experience in Guatemala, Bolivia, Cameroon, Uganda, the Caribbean and the Netherlands. She guided over 100 action researchers worldwide and conducts action research projects herself. Via 7Senses she offers an action research program for students and post-graduates -called the 7Senses Challenge- where she guides multidisciplinary research teams during their fieldwork (trainings, workshops, intervision meetings and personal guidance). To scale up, she founded the 7Senses Action Research Academy, offering post-graduates the opportunity to start a career in guiding new 7Senses Challenges.

Contact Madelon Eelderink:
Email: madelon@7sens.es
Phone: +31(0)6 39 89 50 95
Websites: www.7sens.es and www.7sensesfoundation.org.
Twitter: twitter.com/7Sens_es
Facebook: www.7sens.es/fb
Linkedin: www.linkedin.com/madeloneelderink

LITERATURE [22]

Bervoets, T. (2010). *St Maarten Nature Foundation Lionfish Response Plan.* Nature Foundation, St Maarten, affiliate of Dutch Caribbean Nature Alliance, Bonaire.

Dutch Caribbean Nature Alliance (2015), Special Project Save our Sharks.

Eelderink, M. & Verster, J.C. (2010). *Development of a community-specific health promotion plan to improve children's health in rural Guatemala.* International Journal of Disability and Human Development *9*(1):35-46.

Eelderink, M., Vervoort, J., Snel, D. and De Castro, F. (2016). *Harnessing the plurality of actor frames in social-ecological systems: the case of ecological sanitation in Bolivia.* Development in Practice [to be published].

Green J. & Thorogood, N. (2014). Qualitative methods for health research. 3rd Edition. Sage publications, London.

Grin J, van de Graaf H, Hoppe R. (1997). Technology assessment through interaction: a guide. Working document W57. Rathenau Inst, SDU, Den Haag.

Grin J, van de Graaf H, Hoppe R, Pelinx A. (1998). Bouwstenen voor argumentatieve beleidsanalyse. Elsevier, Den Haag.

Hoogendijk, C. (2015). Appreciative Inquiries of the 3.0 kind. How do we connect, share and co-create for tomorrow's human wholeness? Society 3.0 Foundation, Utrecht.

Leeuw, A. De., Valois, P., Ajzen, I., Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology* 42: 128-138.

Moerkerken (2015). Hoe ik verander. Anders interveniëren in organisaties en maatschappelijke vraagstukken. Vakmedianet, Deventer.

Moret-Hartman M, van der Wilt G. (2007). *Health technology assessment and ill-structured problems: a case study concerning the drug mebeverine.* International Journal of Technology Assessment in Health Care *23*:(3)16-23.

NIWA (2016). Snapper: Adult. Retrieved from http://bit.ly/2ezFrGn. Last visited: 21-10-16.

Salas, S., Chuenpagdee, R., Sejo, J.C., and Charles, A. (2007). *Challenges in the assessment and management of small-scale fisheries in Latin America and the Caribbean.* Fisheries Research *87* : 5-16. Doi:10.1016/j.fishres.2007.06.015

Shamseya (2016). *HTA in brief.* Shamseya for innovative Community Healthcare Solutions. Retrieved on 30-5-16 from http://2.shamseya.org/2016/03/07/631/.

Sharkwater productions (2015). Sharkwater. Official full feature documentary. Retrieved on 31-5-16 from https://www.youtube.com/watch?v=1pXN2F4EPb8&feature=youtu.be.

Sumaila, U.R., Guénette, S. Alder, J. and Chuenpagdee, R. (2000). *Addressing ecosystem effects of fishing using marine protected areas.* ICES Journal of Marine Science (2000) *57*(3):752-760.

Stringer, E.T. (2014). Action Research. SAGE publications, London.

[22] This list contains references to which is referred in this document and/or former documents for Save our Sharks.

Williams, E., McConney, P., Kinch, A. (2002). *Participatory process for involving fisherfolk in Barbados Fisheries Management Planning.* GCFI: 53. http://bit.ly/2eXC69g

Minutes

Odinga, J. (2016). Meeting minutes. Fishermen meeting dd 26-7-16.

Odinga, J. and Eelderink, M. (2016). Fishermen meeting dd 14-8-16.

Eelderink, M. (2016). Fishermen meeting dd 17-8-16 (first draft fishermen's agreement)

Eelderink, M. (2016). Fishermen meeting dd 20-8-16 (final fishermen's agreement)

Facebook

Saba Conservation Foundation (2016). www.facebook.com/sabapark/. Last visited 20-10-16.

Save our Sharks (2016). www.facebook.com/SaveOurSharksNL. Last visited 20-10-16.

Saba Bank (2016). www.facebook.com/sababank. Last visited 20-10-16.

St Maarten Nature Foundation (2016). https://www.facebook.com/St-Maarten-Nature-Foundation-123780190980663. Last visited 20-10-16.

The Frapper (2016). www.facebook.com/thefrapper/. Last visited 20-10-16.

Documents

Renard, Y. (2016). *SCF strategic planning outline.* Saba Conservation Foundation.

Renard, Y. (2016). *Drafting of the strategic plan for the Saba Conservation Foundation*. Saba Conservation Foundation.

Renard, Y. (2016). *Institutional strengthening of the Saba Conservation Foundation (SCF). Final report on the provision of consulting and facilitation services.*

Websites

New Atlas (2016). *Interview: How to build a lionfish-killing robot.* http://newatlas.com/interview-lionfish-killing-robot/45101/. Last visited 20-10-16.

The Frapper (2016). http://thefrapper.com/. Last visited 20-10-16.

Public Entity Saba (2016). *The official website of the government of Saba.* **http://www.sabagovernment.com/.** Last visited 20-10-16.

Dutch Caribbean Nature Alliance (2016). www.dcna.nl. Last visited 11-10-16.

Saba Conservation Foundation (2016). www.sabapark.org. Last visited 11-10-16.

Youtube

Greenpeace (2009). *The truth about FADs.* https://www.youtube.com/watch?v=VVbp7PijR6Y. Last visited October 23rd 2016.

Revolution movie (2015). *Sharkwater.* (official full feature documentary) https://www.youtube.com/watch?v=1pXN2F4EPb8. Last visited October 23rd 2016.

ANNEX 1 DEMOGRAPHIC DATA OF RESPONDENTS

Pseudonym	Seks	Code	Stakeholder group	Age cat.
Anna	female	S.G.5	government representatives	30-40
Abraham	male	S.F.11	fishermen	20-30
Sem	male	S.F.7	fishermen	30-40
Barry	male	S.HR.2	hotel/restaurant representatives	60-70
Bob	male	S.G.1	government representatives	40-50
Benjamin	male	S.F.13	fishermen	60-70
Boris	male	S.F.12	fishermen	20-30
Chantal	female	S.DO.3	dive school operators	40-50
Cas	male	S.F.6	fishermen	30-40
Eric	male	S.G.6	government representatives	40-50
Fleur	female	S.G.7	government representatives	30-40
Samuel	male	S.C.1	church representatives	60-70
Susan	female	S.O.2	SCF staff	50-60
Gerard	male	S.T.1	Tourism industry	50-60
Harry	male	S.F.8	fishermen	60-70
Iris	female	S.El.1	elderly	70-80
Kennith	male	S.W.1	lobster wholesaler	40-50
Jesse	male	S.DI.2	dive instructors	20-30
Joop	male	S.O.4	sCF staff	60-70
Jonathan	male	S.O.1	SCF staff	20-30
Julia	female	S.E.4	experts	50-60
Zoey	male	S.O.7	SCF staff	30-40
Josje	female	S.DI.1	dive instructors	40-50
Joris	male	S.HR.3	hotel/restaurant representatives	30-40
Jeffrey	male	S.DO.1	dive school operators	50-60
Richard	male	S.F.14	fishermen	20-30
Kevin	male	S.O.3	SCF staff	40-50
Koen	male	S.G.4	government representatives	50-60
Caspar	male	S.F.10	fishermen	20-30
Luca	male	S.M.1	medical students	20-30
Lars	male	S.O.5	SCF staff	30-40
Carla	female	S.FW.1	fisherman's wife	30-40
Liam	female	S.O.6	SCF staff	20-30
Laila	female	S.El.2	elderly	80-90
Lorenzo	male	S.HR.1	hotel/restaurant representatives	40-50
Lenny	male	S.F.2	fishermen	20-30
Lotte	female	S.DO.2	dive school operators	40-50
Milan	male	S.E.2	experts	40-50

Mark	male	S.F.9	fishermen	40-50
Rose	female	S.DI.3	dive instructors	20-30
Donna	female	S.DI.4	dive instructors	20-30
Gerry	male	S.DI.5	dive instructors	20-30
Ricky	male	S.DI.6	dive instructors	20-30
Robert	male	S.El.3	elderly	30-40
Noel	male	S.F.4	fishermen	40-50
Pablo	male	S.E.3	experts	60-70
Pim	male	S.E.1	experts	40-50
Piet	male	S.P.1	police officer	50-60
Peter	male	S.F.1	fishermen	40-50
Ralph	male	S.G.8	government representatives	50-60
Roland	male	S.F.3	fishermen	20-30
Timo	male	S.Fr.1	farmers	50-60
Tom	male	S.G.3	government representatives	50-60
Justin	male	S.G.2	government representatives	30-40
Willem	male	S.F.5	fishermen	30-40
Donald	male	S.Y.3	youngsters	10-20

ANNEX 2 SEASONAL

DIAGRAM

ANNEX 3 QUESTIONNAIRE

Dear fisherman,

First of all, thank you for your input so far, during an interview, during the meeting last Sunday and/or otherwise. It has given me insight in your needs, wishes and concerns. Based on your input and advice, I have made this questionnaire. For the Save our Sharks project of the Dutch Caribbean Nature Alliance, my task is to represent the needs and wishes of the local people of Saba, among which fishermen. Based on this, my goal is to help you put solutions that all fishermen can agree upon into action.

One of the outcomes of the interviews and meetings is that all attending fishermen have talked about seasoning as a means to sustainably increase the population of the Red Fish. Also the fishermen's organisation is a subject that has been brought up frequently.

The goal of this questionnaire is to find out what ideas you collectively find most important, realistic and suitable with regards to your livelihood as a fisherman and as the head of your family.

Please note that the options given below *only* come from fishermen, there is no input from Madelon, Jens or any other stakeholder. As such we can make sure that you as fishermen can create something unique together based on only your needs and wishes. Jens and Madelon are only facilitators in this process.

Please fill in the questions below and hand it in to Jens or Madelon, or bring it to the Saba Conservation Foundation **before Wednesday the 17th of August, 12.00 o'clock.** If you can't make it, please let us know.

Thank you in advance!

Jens and Madelon

Seasoning for Red Fish

Questionnaire

This questionnaire consists of three parts:

A. Seasoning measures for Red Fish
B. Additional measures to increase Red Fish population
C. Alternatives for income

A. Seasoning measures for Red Fish

1. Below, you will find the styles of seasoning for Red Fish that fishermen have proposed during the individual interviews. Please indicate for each seasoning idea if you find it very important, important or not important. Please think of the balance between your personal life/income and allowing the Red Fish to increase in population as fast and sustainable as possible.

Seasoning measure for Red Fish	**Level of importance**
Close the bank for 6 months per year, indefinitely	○ Very important ○ Important ○ Not important ○ I don't know
Close the whole bank for 1 year	○ Very important ○ Important ○ Not important ○ I don't know
Close the whole bank for 4 months during spawning season (to be determined when)	○ Very important ○ Important ○ Not important ○ I don't know

Close the whole western area for 2 years	○ Very important ○ Important ○ Not important ○ I don't know
Experiment with closing different sizes of areas before official seasoning	○ Very important ○ Important ○ Not important ○ I don't know
Set a trap limit of max 300 or 350 lobster traps and max 20 or 25 Red Fish traps; this makes seasoning for both lobsters and Red Fish unnecessary	○ Very important ○ Important ○ Not important ○ I don't know
I would like to use a different seasoning measure, namely……. …….. …….. ……..	

2. Do you think using vertical longlines during seasoning for Red Fish should be allowed?
    - Yes
    - No

3. If yes, how many longlines should every fishermen ideally be allowed to use, considering the balance between 'income' and 'allowing the Red Fish to recover'? (you can skip this question if you filled in 'no' at question 2.)
    - 1 or 2 vertical longlines
    - 3 or 4 vertical longlines
    - 5 or 6 vertical longlines
    - More than 6 vertical longlines

Room for comments on section A (seasoning measures for Red Fish):

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B. Additional measures to increase Red Fish population

4. Some fishermen indicated that during or after seasoning, additional measures should be applied to keep the increased Red Fish stock at a sustainably high level for the future. Please indicate per measure if you find it a very important measure, an important measure or not an important measure.

Additional measures to seasoning	**Level of importance**
Patrolling for illegal fishing	○ Very important ○ Important ○ Not important ○ I don't know
Setting a trap limit	○ Very important ○ Important ○ Not important ○ I don't know

	○ I already use this measure
Getting a device to stop nurse sharks from getting in traps	○ Very important ○ Important ○ Not important ○ I don't know ○ I already use this measure
Protect the ecosystem, check safety procedures and improve them If considered important, explain your ideas on how to protect the ecosystem ……	○ Very important ○ Important ○ Not important ○ I don't know
Use biodegradable doors	○ Very important ○ Important ○ Not important ○ I don't know ○ I already use this measure
Throw sharks back alive after getting caught, as they keep the marine ecosystem healthy	○ Very important ○ Important ○ Not important ○ I don't know ○ I already use this measure
Sign an agreement on the number of longlines	○ Very important ○ Important ○ Not important ○ I don't know
Our licences are about to be renewed. Put the rules made for Red Fish in the new licenses	○ Very important ○ Important ○ Not important ○ I don't know

Arrange duty free fuel	○ Very important ○ Important ○ Not important ○ I don't know
Setting up a fisherman committee or organisation	○ Very important ○ Important ○ Not important ○ I don't know
Bigger mesh sizes so that undersized fish can get out	○ Very important ○ Important ○ Not important ○ I don't know ○ I already use this measure
Place coral farms and/or artificial reefs to attract more fish	○ Very important ○ Important ○ Not important ○ I don't know

5. If a trap limit will be set for the Red Fish, how many traps would be the best, considering 'income' and 'leaving enough room for Red Fish to multiply'?
   - Less than 10 traps per fishing boat
   - 10-20 traps per fishing boat
   - 20-30 traps per fishing boat
   - More than 30 traps, namely……

Room for comments on section B (additional measures to seasoning)

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…….

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…….

C. Alternative forms of income

Fishermen have shared their opinions and ideas on alternative forms of income to cover up the loss of income during seasoning. Please indicate per idea if you feel very comfortable with the idea, comfortable with the idea or not comfortable with the idea.

Additional measures to seasoning	**Level of comfort**
FAD's for Mahi Mahi	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know
Turn the Red Fish traps into lobster traps	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know
Renting my boat or using it for transport of cargo and/ or people	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know
I will take the loss, my income from lobster should suffice	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know

Giving tours to tourists; work together with other stakeholders to get more tourists to the island	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know
Fish for other fish like conch, get an external trainer to educate us and get the right gear for conch (like special traps)	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know
Apply to the government to compensate for the loss of income	○ Very comfortable ○ Comfortable ○ Uncomfortable ○ I don't know
I have a different idea, namely…… …… …… ……	

The fishermen's organisation Questionnaire

During interviews and meetings, also the fishermen's organisation was frequently spoken about. In this questionnaire, we aim to find out how you feel about (being part of) a fishermen's organisation for Saba and what your needs, wishes, concerns and ideas are in that regard. Please take some time to answer the questions below.

1. Do you think small-scale fishworkers (men and women) need organisations to ensure a secure future?

   - No,because.....

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   - Yes (please indicate for what reasons; multiple reasons are possible):
     a) To form a united front to work with large companies and government.
     b) To give them a collective voice so their common interests can be taken into account.
     c) That they can purchase cheaper and that large investment scan also be shared.
     d) Facilitate information sharing
     e) Build fisher capacity for improving livelihoods, advocacy and representation
     f) Bring fisher knowledge, experience and skills into the governance mix
     g) Other……

2. Is a fishermen's organisation going to be beneficial to you as a fisherman personally?
   a. Yes, because……

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b. No, because……

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c. I don't know yet, I need more information first

If indicated 'no' to question 2, you may skip the rest of this questionnaire.

In selecting a committee for the fishermen's organization, representatives should be elected (unanimously). Representatives should probably include a *Chairman* (main point of contact, organizer and facilitator of meetings), *Secretary* (minute/note keeper, records and follows up on action points) and *Treasurer* (basic book-keeper and places money to best advantage for fishermen's organization).

3. In selecting a *Chairman* (to start with), what criteria should he/she fulfill?
    a. He/she should be or have been an active fishermen on the Saba Bank for at least …… years (fill in)
    b. He/she should be re-elected every ……. Years (fill in)
    c. Other…….

d. ……..

e. ……..

f. ……..

g. ……..

4. If you would like to suggest a Chairman for a fishermen's organization, who do you think should be the:

   a. Chairman: (name)……

   b. Secretary: (name)……

   c. Treasurer: (name)……

5. What do you expect from a good fishermen's organisation?

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6. What should be the goal of the fisherman's organisation?

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Thank you very much for filling in this questionnaire! If handed in before Wednesday the 17th of August at noon, we can take along your input in our meeting at 16.00 o'clock at Deep End. If you cannot find Jens or Madelon, please hand it in at the Saba Conservation Foundation office at Fort Bay.

Again, thanks and hope to see you Wednesday at the meeting!

Jens and Madelon

ANNEX 4 THE FISHERMEN'S AGREEMENT

Fishermen's agreement

on seasoning for Red Fish and establishing a fishermen's organization

Saba, August 20th 2016

In order to sustain Red Fish species on Saba and contribute to a healthier marine ecosystem, **on the fishermen meeting of August 20th 2016, Saban fishermen have agreed upon the following:**

1. To establish a **fishermen's organisation** –starting its development in August 2016– aiming to be officially formed before the end of 2016.
2. To establish a **closed season for Red Fish** for 6 months for the entire Saba Bank from the 1st of April 2017 until the 30st of September 2017, after which leaving room for reflection and adaptation of the seasoning system for the next years based on the results of the seasoning system of 2017.
3. To set a **trap limit** of 25 Red Fish traps from the 1st of October 2017 until the next agreed upon closed season.
4. To allow a **maximum of 4 vertical longlines** for Red Fish per fishing boat during closed season for Red Fish.
5. **To not intentionally catch sharks and to throw unintentionally caught sharks back alive** –when using traps, longlines and FADs and/or other methods– as they keep the marine ecosystem healthy.
6. To use **bigger mesh sizes**: all fishermen will use 2 inch square mesh wire for at least the doors of the Red Fish traps.
7. To, in cooperation with the government and the coast guard, arrange **patrolling** for illegal fishing, meaning breaking the above mentioned rules, for foreign as well as local boats.

1

Fishermen's agreement

Signatures

Hubert Hendrik Hassell

Dozlyn Pouchie

Nicholas Johnson

Julian Hassell

Augustino Hassell

Ivan Hansell

Craig Hassell

Michelle Bekkevar

Kenji Hassell

Joshua Holm

Bryan Hassell

Edward Walter Hynds

Aaron Soares

Travis Johnson

Bradley Johnson

Randall Teagens

ANNEX 5 HOW TO USE THE DATABASE

The dataset collected during the fieldwork is very abundant. For mainly just one topic –Fisheries–, this entire report has been written. The dataset may be useful for other executors of the Save our Sharks project to check community perspectives on sharks and shark conservation activities, as well as for students and other researchers doing fieldwork on Saba.

The database has several tabs. The dataset is a Google Sheet so can only be accessed via a link, purchased upon request to 7Senses. On the horizontal axis you find the categories of argumentative policy analysis: problem definitions, proposed solutions, judgement of proposed solutions, background theories and normative preferences. Each row represents a line of interpretation of a stakeholder. One stakeholder may have many lines of interpretations on several topics. In addition, suggestions for research and remarks have been added as columns. Next to the 'topic' column you find the 'interpretation researcher' column, which basically is the interpretation of a line of interpretation in just a few words. Next to that column you find the codes of each stakeholder. S. stands for Saba, the middle letter stands for the stakeholder group and the last number is the number of the respondent within that stakeholder group. Each column has a filter system, so that it is easy to filter per topic or per stakeholder. On the vertical axis you find the topics. Enjoy your analysis! In case of any questions, please don't hesitate to contact me. For contact details see 'about the author'.