



APRIL 2021

COMMUNITY ENGAGEMENT WITH DATA

A practitioners guide and
toolkit for using data in
community based marine
management

blue ventures
beyond conservation

www.blueventures.org

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Recommended citation: Blue Ventures (2021). Community engagement with data: a practitioners guide and toolkit for using data in community based marine management

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About Blue Ventures

Blue Ventures has learnt how to develop locally led approaches to marine conservation that benefit people and nature alike. We were founded on the simple idea of putting communities at the heart of conservation. By listening and responding to basic human needs, we design our models to catalyse and sustain

marine conservation, unlocking the potential of coastal communities to manage their resources. We work in places where the ocean is vital to local cultures and economies, and are committed to advancing the rights of small-scale fishers throughout the coastal tropics.



1. OVERVIEW

Of the role of data in community-based adaptive management

Many people around the world depend on fisheries or other ecosystem products and services for their livelihoods and food sources. Efforts to manage these resources sustainably rely on having good data on their condition and abundance. However, one of the biggest challenges facing communities working to rebuild their small-scale fisheries is that these essential data are often not available. This means the resources often cannot be properly valued and taken into consideration in management decisions. Through training and support, Blue Ventures enables communities to collect, access, and use data to inform decisions to conduct sustainable and equitable fisheries management.

Data sharing and reflection are part of an adaptive and participatory approach to natural resource management (Box 1). Meetings during which data are presented and discussed with the community¹, here called “data feedback sessions”, can serve as a platform for communities to engage in the management process and express their thoughts, experiences, and concerns.

Not all resource users or community members are active in resource management and data collection activities, and individuals' level of participation in these activities will vary. The purpose (and unique benefit) of community data feedback sessions is to provide a participation opportunity to community members who don't often participate in other ways.

Data shared and discussed during feedback sessions can support communities to:

- learn about natural resource management approaches and implementation
- initiate discussions on resource user equity, representation, and resource use
- assess whether a resource is sustainably used or in decline
- monitor the effects of management interventions
- revise management measures as a part of the adaptive management cycle (see Box 1)
- advocate for support of community-based decision-making and action.



¹ In this toolkit, the “community” includes community members beyond those involved in “community data” and “community management” activities. We acknowledge that not all resource users or community members are active in the management and data activities, and that individuals' level of participation in these activities will vary. The purpose (and unique benefit) of community data feedback sessions is to provide a participation opportunity to community members who don't often participate in other ways.

Box 1 – The adaptive management cycle

An adaptive management approach is an iterative process involving management, monitoring, evaluation, and learning. It is most suited to situations where the outcomes of planned management actions can be predicted based on existing knowledge, but are not entirely certain, which is common in natural resource management. The adaptive management cycle involves:

- developing plans for management actions and plans for monitoring and evaluating the effects of the actions,
- implementing the management actions, collecting data to monitor changes, and analysing the data,
- sharing and reflecting on the analysed results,
- repeating the cycle, beginning with revising the management action plan based on the results and reflection (Figure 1).

Adaptive management is most effective when supported through broad participation, including resource users, management authorities, commercial operators and often supporting agencies such as non-governmental organisations. “Community-based” adaptive management emphasizes the roles of resource users and their communities as participants, decision-makers, and leaders in the adaptive management process. If management has yet to be implemented or participation is low, conducting only the monitoring components of the cycle can provide baseline data on the resource, resource use, and other factors relevant for management. The baseline results can then be shared and reflected upon to initiate discussions on management planning.

An example of the adaptive management cycle in practice comes from Velondriake, a locally managed marine area (LMMA) in southwest Madagascar. Community members collected and then presented ecological data from no-take zones (where fishing is prohibited) within the managed area. Through sharing and reflecting on the data as well as the experiences and observations of fishers and the data collectors, the Velondriake Association (the governing body managing the area) decided to expand the areas prohibited to fishing. Community members also proposed improved plans for designing and setting markers to delineate the no-take zones. The full story behind this example can be found in this blog post: <https://blog.blueventures.org/en/science-and-tradition-expanding-velondriakes-no-take-zones-through-community-led-action/>



Figure 1. The adaptive management cycle. The 'Share & reflect' step is highlighted since it is the focus of this toolkit. It is an essential step leading to using the data to plan or revise management actions.

1.1. About this toolkit

In this toolkit, we lay out a participatory approach for community engagement with data. While the tools and methods are based on our experience in coastal settings, they can be used by organisations and individuals working with communities and resources in marine, terrestrial, and/or freshwater settings.

This toolkit offers best practices, examples, and lessons learned on how to make the process of data sharing and reflection (as part of the adaptive management cycle) meaningful and effective. We describe the advantages of engaging community members or groups through data feedback sessions (Section 2). We describe the elements of designing and delivering data feedback sessions (Section 3), including

strategies for overcoming common challenges such as low literacy levels, lack of training in data analysis, transforming data into accessible and meaningful lessons, and eliciting interaction from the audience. We conclude with a summary (Section 4), a list of additional resources (Section 5), and sample materials used in data feedback sessions (Section 6).

We believe that by replicating and adapting this approach to engaging with data, communities around the world that depend on natural resources will strengthen their capacity to collect, analyse, and use data. This, in turn, will empower communities to use their resources sustainably and protect their environment through management and advocacy.



*Caption: A fisherwoman discusses results from catch monitoring during a training on data literacy.
Credit: Dahari.*

2. BENEFITS

Of Data Feedback Sessions

It can be a challenge to devote the time and resources necessary for data feedback sessions, especially when there are tight timelines based on a project or donor-dependent schedule. Often, data sharing becomes a cursory exercise or is skipped altogether due to time or resource constraints, or because its value is not recognised. Communities can engage with management without data sharing, but the difference between management conducted with and without effective data feedback sessions can be extraordinary.

Why are data feedback sessions so important for community-based adaptive management? As an experienced Blue Ventures colleague from Madagascar shares:

"Providing feedback on data to the wider community is important because the success of the activities depends on the community. Regular communication or feedback can build community support. Feedback also reflects the transparency between the members of the community and the NGO staff." (Cicelin Rakotomahazo, Blue Forests Coordinator, Blue Ventures, Madagascar).

Below, we outline some key benefits of sharing data through data feedback sessions.

2.1. Recognising data rights

From the perspective of data rights, resource users should have access to the data that are about their livelihoods and activities. For this reason alone, sharing data with resource users and their communities must be a priority.

2.2. Empowerment

The importance of empowering small-scale fishing communities through accessible data and information has been recognised in internationally-developed guidelines for small-scale fishery management². Data feedback sessions are key opportunities for communities to gain a sense of empowerment. The interactive format of a data feedback session allows participants to discuss their concerns and provide decision-making input. Furthermore, accessing and understanding the data can equip participants to persuade decision-makers to change a policy or management action.

The sessions are an ideal setting to recognise community contributions to adaptive management, which can help the community's role in management to gain legitimacy in the eyes of other management actors. Seeing the results of community efforts can lend credibility to community participation, leadership, and advocacy for change. Mwambao and partner communities in Tanzania share an example:

"We conduct village level participatory data analysis every year and data recorders also present their findings to the government fisheries staff. This has convinced government that local communities are capable of this level of data collection and interpretation, that 'they don't have to be experts', and that the reef closure intervention, for octopus in particular, is effective." (Lorna Slade, Executive Director, Mwambao, Tanzania).

² See the [Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries](#) (see especially section 11, 11.4).

Data feedback sessions help centre the decision-making process on data and observations, creating opportunities for those who don't normally hold power to influence monitoring and management decision-making. For example, women in Timor-Leste have become influential in fisheries management through their participation in monitoring and data feedback sessions (see Box 2).

These benefits of community empowerment can be enhanced by providing training on key skills, concepts, and technologies related to management or monitoring and evaluation. Sharing numerical data can become an opportunity to teach concepts and numerical literacy, for example, by showing how fishers' perceptions of catch seasonality is mirrored in a bar graph of catch data.



*Caption: Photos of Grupu Monitorizasaun Peskas, Ilik-namu, Atauro, Timor-Leste.
Credit: Ryan Lewis, Blue Ventures.*

Box 2 – Empowerment of women data collectors in Timor-Leste

Fisheries monitoring can become an empowering process by creating opportunities for community members who may not usually be included in management decision-making. Timor-Leste's Grupu Monitorizasaun Peskas consists of five groups of women who volunteer to collect fisheries data in their local communities using a co-designed smartphone questionnaire. Fisheries management meetings are often dominated by men, but these groups of women are now regularly presenting their work at meetings and have participated in national-scale fisheries management consultations. In addition to developing their communication and leadership skills, many group members have gained confidence and knowledge about marine conservation, becoming advocates for marine resource management in their communities. Beginning with including less-represented groups in collecting useful data, decision-making is now more inclusive and representative of the voices of more stakeholders.

2.3. Building trust and resolving conflict

Data feedback sessions can support transparency of data collection and management evaluation by inviting the community to observe the results of a management intervention, ask questions, and share their insights. Shared learning can occur through these interactions that communicate additional knowledge, experience, observations, and diverse interpretations of the data. Sessions that offer transparency, inclusivity, and shared learning can build bridges between management actors and communities, leading to stronger relationships and, in turn, greater mutual trust.

The sessions can also serve as a forum to resolve conflict through informed and inclusive discussions on resource use and management. By launching the data feedback session with an objective of shared learning built on data and observations, participants may be more inclined to share and consider diverse perspectives. This was the case for data feedback sessions conducted in fishing communities of Comoros, allowing community members to voice their perspectives and build mutual trust (see Box 3). However, it is important to recognise that some conflicts will require dedicated mediation sessions to allow additional time to discuss and resolve key 'sticking' points among participants.



Caption: Community members are attending a public session to share catch monitoring results in the Comoros.

Credits: Effy Vessaz, Blue Ventures.

Box 3 – Building trust in coastal fishing communities of Comoros

Engaging fishers in the process of collecting, sharing, and interpreting data is empowering. As active participants, their sense of ownership increases and they notice that their experience and local knowledge is valued, fostering a trust-based collaboration. In Comoros, Dahari and Blue Ventures have been supporting communities in developing fisheries management since 2015. At first, fishers were reluctant to engage in adaptive management. Participatory catch monitoring was one of the first activities to take place in the communities with small groups of willing and curious fishers. Regular public data feedback sessions provided an open space for the whole community to discuss results and engage in decision-making on fisheries management, involving up to 80 community members per session. This space for discussion and building mutual understanding also allowed Dahari and Blue Ventures to develop a long-term relationship with communities based on trust. Soon, more and more fishers were excited to learn about monitoring techniques, with 72 fishers trained in these by the end of 2020. Efforts have culminated in several management measures being put in place, including four temporary closures and one no-take zone. The community-based associations have also been recognised by the Comorian authorities for their work.

2.4. Data validation

Data feedback sessions allow community members to interpret and validate the data based on their own observations and experience. Data validation is necessary before applying the findings to revise management plans, and discussions during the sessions can add context and qualitative information to supplement the quantitative data. Data validation can lead to improvement of monitoring methods if issues are identified, for example, if certain groups are not represented in the sampling plan, or there are landing sites missing. Data validation from the community is especially important when using new management approaches, monitoring methods, or when adapting existing management or methods to a new context.

2.5. Informing decision-making, adaptation, and change

Data feedback sessions can initiate change at several levels, including individual, village, regional or national levels. At the individual level, information gained from a data feedback session may lead a community member to avoid overfished species and buy fish species that are shown to be abundant, or a fisher may choose to try a different fishing technique to avoid the effects of overfishing. At the village level, a community management committee may decide to change the timing or location of a temporary closure for octopus conservation, or to add a new temporary closure (see Box 4). At the national or regional level, data and discussions across communities can lead to organised decision-making and higher-level support (see Box 5).



Caption: Community Data Feedback Session facilitated by Mursiati from Forkani (CBO in Wakatobi Indonesia) to discuss the condition of octopus fisheries and how to see the potential implementation of octopus temporary closure in Darawa Village.

Credit: Lugas Hakim, Blue Ventures.

Box 4 – Community decision-making on temporary closures for octopus fishing in Indonesia

Data feedback sessions conducted by Blue Ventures' partner Forkani served as a discussion forum for the community in Darawa village, southeast Sulawesi, Indonesia, and led to a decision on implementing a temporary closure for octopus fishing. After one year of data collection and five data feedback sessions, Forkani facilitated community discussions to decide on the location and timing for the closure. The community compared data on total catch, fishing effort, and octopus size distribution from four potential fishing sites: Fulua Nto'oge, Uju Nu Umbu, Kapiso and Tonua Tolo. As a result, the community agreed to close one fishing site (Fulua Nto'oge) between June to August 2018.

Box 5 – Contributing to Belize's fisheries management strategy through data sharing

The red lionfish (*Pterois volitans*) is an invasive predatory fish in the Caribbean, where it threatens coral reefs and traditional fisheries. Luckily, lionfish is a palatable, versatile and healthy seafood choice. Since 2011, Blue Ventures has worked to develop a new fishery targeting lionfish in Belize. The concept is simple – fishers catch and sell this new, underexploited fishery target, and native fish populations recover. However, persistent (and legitimate) concerns about market viability, scalability and risks triggered us to embark upon an exploration of difficult questions: How much lionfish needed to be caught to confer environmental benefit? How big was market demand? Was this a financially viable endeavor for a seafood processor? What barriers did fishers face to supplying the market? Did everyone agree this was a good idea?

The resulting cacophony of data described complex interactions and feedback loops. Blue Ventures' challenge as facilitators of the lionfish management planning process was to communicate the key results to communities and stakeholders in bottom-up consultations and prompt discussion to gain their perspectives, ideas and feedback on lionfish management. During the discussions, 99 participants from six communities explored the complexities and considered plausible futures based on best available knowledge in the face of unpredictability and uncertainty. Participants provided feedback on different lionfish management interventions, evaluating strengths and weaknesses, identifying enabling factors, and their preferred approaches. We summarised the feedback as recommendations, which have now been formally adopted as [Belize's National Lionfish Management Strategy \(2019-2023\)](#).



Belize's National Lionfish Management Strategy (2019-2023).

3. DESIGN & DELIVERY

Of Data Feedback Sessions

To effectively facilitate communication, discussion, and shared learning, a data feedback session must be tailored to the needs and interests of its participants.

For example, to communicate catch monitoring results to fishers and engage them in a discussion about fishing gears, it is important to report the catch data separated by gear type, present the information in a coherent format (including visuals and a storyline), and to confirm that fishers who use the specified gears can attend the session.

The three elements of data feedback sessions are:

1. the content, including the key data and messages to share and discuss
2. the approach to delivering the feedback session and including participants

3. the tools to enhance clarity of the data and messages, and to facilitate communication and interaction.

In designing the session, each element should be tailored to match participant needs and interests. Regarding content, the data feedback session usually includes not only the relevant data, but also a storyline that improves understanding and interpretation of the data. The approach to the data feedback session is an equally important element, especially to gain the benefits described in Section 2. Finally, a number of tools are available to aid in delivering a data feedback session, each with their own advantages. The table below outlines the features to consider when tailoring the content, approach, and tools for a data feedback session; These features are further described in this section.

| CONTENT | APPROACH | TOOLS |
|--|--|--|
| Data that carries a message relevant to the audience | Inclusivity to ensure the diversity of community perspectives is represented | Visualizations to illustrate the content |
| Structure and storyline that gives context and a logical flow to the data and messages | Accessibility of the format and content to enhance participation and learning | Games and simulations to explore the content and stimulate discussion |
| | Sensitivity to social issues to protect participants and prevent potential conflict | Technology that meets audience interests and needs |
| | Interaction to understand community needs and interests | |
| | Frequency of sessions suited to community needs | |
| | Evaluation to learn how to improve future sessions | |

3.1. Content

3.1.1. Data

Data are at the core of the data feedback sessions and must be relevant and accessible to the audience. Two key considerations for selecting appropriate data are to identify 1) the types of data available, such as catch, income, age, gender, and health of resource users, the status of habitats and species, spatial/mapped data, etc. and 2) the interests of the target audience. Data can be presented in a variety of ways and tailored to the target audience. For example, when presenting catch data, Blue Ventures has found fishers are often interested in knowing catch per

trip as it represents their daily fishing activity and productivity.

In contrast, management actors (such as the village government or fisheries authorities) may be interested in larger-scale information, such as catch per day, to help them design the management measures for implementation. Selecting appropriate data and how to present it can be decided as early as the planning phase in the adaptive management cycle, and can be accomplished easily when community members participate in the data collection and analysis processes (see Box 6).

Box 6 – Participatory data analysis and tailored data feedback in Tanzania

We at Mwambao and our partner communities in Tanzania collect catch data for both octopus and fish for the spring tide periods (c. 16 days/month) at a village level. We also carry out community in-water biodiversity monitoring of intervention sites. The aim is to document any changes that can be detected as a result of management interventions such as reef closures. Participatory data analysis is prioritised because we feel that ownership of the data is paramount and leads to a local understanding of the management results.

Currently, we use simple hand-drawn bar charts for data feedback – this is because certain parameters can be analysed directly from the recording books in the village and the charts can be drawn by the data collectors themselves. Government stakeholders receive presentations from the data collectors and formal reports. The 'in-person' presentations are convincing: they demonstrate (and advocate) that the community members understand the impact of what they are doing and they are able to respond to any queries. The result has been greater understanding amongst data collectors, fishery committee members, and government stakeholders of the importance of a participatory data approach, as well as an understanding of the total catch per village of certain species (in kg, size and numbers), and the benefits resulting from reef closures.



*Caption: Data collectors and committee members take part in a participatory workshop to analyse results from catch monitoring.
Credit: Danielle Stern, Mwambao.*



*Caption: A data collector creates the bar charts from village data books to present results from catch monitoring in Zanzibar.
Credit: Timur Jack-Kadioğlu, Mwambao.*



*Caption: Zanzibari catch recorders and committee members discuss results from catch monitoring together.
Credit: Danielle Stern, Mwambao.*

3.1.2. Structure and storyline

A storyline that adds context and meaning to the data can improve the accessibility of the information for the target audience. It can also help maintain flow of the discussion by creating engaging dialogue (see Box 7). A clear, well-organised structure to the storyline also helps ensure presentation clarity and participant engagement in discussions.

We have identified three best practices in developing a storyline for the data feedback session:

1. Identify the purpose of communicating the data and conducting a data feedback session;
2. Decide on the most relevant data, the main messages, and any additional information that can support the discussion;
3. Link the data, messages, and additional information in a logical and contextualised storyline. We often start with the most straightforward messages and data before explaining more complicated ones. For example, we first report the community's total catch before reporting the income, catch distribution, or even catch per trip. This approach makes the content easy to follow, allowing the audience to take in the data more easily and effectively.



*Caption: Scenario planning exercise in Madagascar.
Credit: Cicelin Rakotomahazo, Blue Ventures.*

Box 7 – Participatory scenario planning for mangroves in southwest Madagascar

In the Bay of Assassins, southwest Madagascar, Blue Ventures' staff organised a workshop which used baseline data to engage community members in a process to predict the effects of a Payment for Ecosystem Services (PES) project on their mangroves. A total of 32 community members from 10 villages participated, representing a diversity of roles in the community (education, health, management of resources and village administration). The workshop aims were to predict the effects of the project, to identify community concerns surrounding its implementation, and to develop adaptive strategies to ensure the project's sustainability.

There was a clear structure for this two-day workshop involving four stages. Firstly, we presented participants with socio-economic and mangrove ecological baseline data to provide them with the context and guide their predictions of future changes resulting from the project. Next, we provided an overview of the participatory scenario planning exercise with participants. In the third stage we carried out the participatory scenario planning exercise, allowing participants to discuss what would happen in the area in the next 20 years with and without the project intervention (with a particular focus on people, ecosystem management, and governance of mangrove resources). This participatory planning approach ensured that the context, perspective, and meaningful engagement of local stakeholders was incorporated, which was critical to effectively implementing the mangrove PES. Small groups of participants wrote the predicted impacts with and without the project on large sheets of paper and then presented their work to the entire group. Participants engaged with socioeconomic and mangrove ecosystem data during the scenario planning exercise, allowing them to identify realistic changes, concerns and expectations about the future results of the proposed project, and to construct proactive strategies to maintain desired outcomes. The participants then identified any concerns associated with the proposed project, including effects on the project's viability, the local community's livelihoods, and the management of mangroves. Finally, the participants defined strategies to address these concerns. On the last day of the workshop, we summarised the results of the scenario planning, discussed different perspectives, and validated the tools to implement the project.



Caption: Scenario planning exercise in Madagascar.

Credit: Cicelin Rakotomahazo, Blue Ventures.

3.2. Approach

3.2.1. Inclusivity

Diverse stakeholders within a community often hold different knowledge and perspectives, and their inclusion in a data feedback session enhances the shared learning experience. When planning a data feedback session, it is important to consider the spectrum of possible participants with as much detail as possible to ensure diverse stakeholders are included. For example, 'resource users' might identify as fishers and tourism operators; 'fishers' might identify as boat fishers and foot fishers. An additional way to include diverse stakeholders is to seek out participants across a range of ages, occupations, genders, beliefs, and customs.

To ensure diverse stakeholders are represented and that they have equal opportunity and encouragement to participate in the session, it is important to consider whether participation will be greatest in a collective session or in smaller, specialised sessions. In general, greater stakeholder diversity will lead to a greater chance of enhancing mutual understanding and shared learning. However, there can be instances where specialised sessions may be needed, for example if one stakeholder type is more dominant or holds more power than others, which might inhibit participation of other stakeholders during the session.

To address inclusivity, the best practices we recommend are:

1. Make a list of all relevant stakeholder groups and confirm it with community leaders. Check carefully whether your intended audience includes all stakeholder groups. If some are not included, why not? If there are practical challenges to including certain stakeholder groups, is there an alternative way to include them?
2. Consider whether one data feedback session can include all stakeholder groups or whether multiple, stakeholder-specific sessions are needed to balance the objectives of shared learning and open participation.

"Participatory consultation is a speciality that requires thorough preparation to create an atmosphere that is inclusive and invites active engagement. Although I'm proud of the work we did to include the range of stakeholder groups in the lionfish management planning process, I think that we should have held more than one session per community, at different times and locations, to increase and enable more diverse participation."
(Jen Chapman, Country Manager, Blue Ventures, Belize).

3.2.2. Accessibility

A data feedback session needs to be accessible so that participation and learning can take place. Both format and content accessibility should be considered. An accessible data feedback session should be informed by detailed knowledge of the audience. For example, in terms of format accessibility, an evening session may be preferable for communities where most people are busy with their livelihoods during the day, while an afternoon session may be preferable for fishers who work in the evenings. In terms of content accessibility, if the target audience has limited literacy, illustrations, posters, or other visual media are likely to be more effective than charts or graphs in communicating the data. Storytelling methods that incorporate familiar lived experiences can ensure greater clarity than a presentation of the data alone. It is also important to check for understanding during the feedback session and make clarifications as needed.

Another consideration is whether there are opportunities to offer additional training to the target audience in data literacy and interpretation. In our experience, it takes around a year of facilitation and support for community members with limited prior experience to be able to read, interpret, and apply data to decision-making for management.

“We train community members as facilitators because it is important that the dialect used is the same as that of the people targeted.” (Cicelin Rakotomahazo, Blue Forests Coordinator, Blue Ventures, Madagascar).

3.2.3. Sensitivity to social issues

Designing elements of the data feedback session with sensitivity to social issues can ensure the session achieves its intended aims. In addition to knowing the target audience, mapping out the planned participants' roles and relationships in community structure can help to identify potential conflicts that can be avoided by protecting data (by not sharing it) or adjusting the design of the data feedback session.

Social issues can vary greatly by community and can include social, political, business, gender, or other matters. For instance, business competition between fish traders is a common issue. If each trader works with an exclusive group of fishers, then conducting separate feedback sessions to each group may reduce the risk of social conflict.

When sharing data, it is especially important to protect identities and sensitive data to avoid negative repercussions for individuals or communities. Steps should be taken to protect data throughout the monitoring, evaluation, and learning cycle. During the data feedback sessions, an important safeguarding step is to keep the data anonymous: it should be impossible for anyone to recognise their own or others' individual data in the shared data. It is also important to protect data that may be sensitive even if it remains anonymous. For example, Blue Ventures collects data on fish trader income to understand cash flow through the fish value chain, but usually protects income data rather than sharing it, especially when a community norm is to keep income information private.



Caption: Data feedback session in Indonesia.
Credit: Rayhan Dudaev, Blue Ventures.

3.2.4. Interaction

In order to achieve shared learning, it is important for discussions to elicit interaction among the participants. Often, interactive discussion can help to uncover new information and differing perspectives that can be used to improve approaches to monitoring and resource management. A facilitation process can be designed to draw out feedback from community members. Interaction is also necessary to conduct data validation, to verify whether the shared data match the experience and observations of the community. For example, some fishers may observe catch amounts that differ from the reported catch due to use of different gears, and suggestions can be made to better represent additional gears in the monitoring data and in the management actions.

We recommend the following best practices for facilitating interactive discussion during the data feedback session:

1. Actively engage all participants, inviting responses that develop interaction.
2. Avoid leading statements, instead ask open questions such as, "How does this relate to your experience?" and invite a variety of perspectives.
3. Set ground rules for the discussion or include other techniques to encourage equal participation and to avoid dominance of the discussion by only a few participants.
4. Be receptive to contributions from all participants. The data feedback sessions should prioritise sharing of diverse, and possibly unexpected or conflicting, observations and experiences, rather than endorsing the data or confirming assumptions.

"To encourage interaction, the speaker always probes the audience with questions while presenting results to ask for their opinion. For instance: Do the results correspond to the audiences' experience or knowledge? Does the current result differ from the past? What can or should we do to improve catches? Trained local association representatives have also presented the catch monitoring results, increasing community participation in the discussion by seeing their peers presenting." (Effy Vessaz, Regional Partner Support Coordinator, Blue Ventures, Comoros).

"We followed the World Cafe method³, providing a structured conversational process. We delivered short introductory presentations to provide the framework for open exploration and discussion amongst participants organised into small groups, each accompanied by a facilitator, before opening for broader discussion across the room. We also ensured a number of translators were available to help overcome language barriers." (Jen Chapman, Country Manager, Blue Ventures, Belize).

"The best way to interact with and provide feedback to the community is using approaches that involve them, for example, recording their voice or making a video of them to communicate results of work done in their village. Showing their photos or videos from a previous event (for example, during a participatory mapping exercise, mangrove planting, or a meeting) when giving feedback also is a good way to get the community motivated in the management activities." (Cicelin Rakotomahazo, Blue Forests Coordinator, Blue Ventures, Madagascar).

³ <http://www.theworldcafe.com/key-concepts-resources/world-cafe-method/>

3.2.5. Frequency

Time spent with scheduling and announcing data feedback sessions can be reduced if participants can expect the sessions to occur in a regular schedule. Community members can share their preference for the frequency of the sessions. The communities that Blue Ventures works with in Indonesia usually prefer holding data feedback sessions every three months (or more frequently), while communities in Comoros prefer to hold sessions every six months.

The schedule of data feedback sessions can also be flexible to suit changes in community or management needs. For example, Blue Ventures often conducts data feedback sessions at the start and end of a new management initiative such as a temporary octopus closure. The initial data feedback session facilitates planning for the initiative, while the second session facilitates evaluating and reflecting on the results of the initiative. Data feedback sessions can be complemented by additional community engagement activities such as informal discussions that can maintain motivation and participation in management.

3.2.6. Evaluation

Evaluation can be applied to revise and improve the data feedback sessions. Each element of the data feedback session can be evaluated to determine how to make future sessions more effective. Evaluating aspects such as the tools or technologies used, the facilitation techniques, and the language, can help to identify ways to improve content clarity and to reach the desired audience.

We recommend a few options for evaluating the data feedback session:

1. Participant feedback: The most direct way to evaluate the data feedback session is to request participant feedback. Participants often can provide clear and specific

suggestions to improve the design and delivery of the sessions.

2. Volunteer presentation: This involves asking for a volunteer from the audience to re-explain the data and to draw the conclusions. Through the volunteer presentation, it becomes immediately clear whether the content was understood and whether clarifications are needed. The volunteer presentation can also enhance content clarity by reiterating the data findings and key messages, often with additional local context, language, or analogies contributed by the volunteer.
3. Quiz: An interactive quiz may be conducted following the feedback session to check for understanding, or a pre-test and post-test may be conducted before and after the session to check for increased knowledge.

"Anonymous evaluation forms were shared with participants after each session, and bilingual Blue Ventures facilitators were available to help complete these. The Blue Ventures team also met immediately after each session to collectively review the consultation process and evaluation feedback, enabling an adaptive approach." (Jen Chapman, Country Manager, Blue Ventures, Belize).

3.3. Tools

3.2.1. Visualisations

Effective visuals allow the audience to easily follow along during the data feedback session and take in the data and storyline. Photos and videos are highly eye-catching, but simple images, maps, and graphs can also be effective. Techniques like colour coding and using different sized icons can be used to convey the meaning of the data. For example, we might code total catch amounts in red or use octopus icons that vary in size to convey the size distribution of the catch.

In addition to colours and icons, it may be useful to make comparisons, such as what happened during one time period in comparison to another.

When developing visualisations, a participatory process can be used to obtain input from community members.

"We use Powerpoint presentations with slides including simple easy-to-understand graphs. Powerpoint is also good for animations, which make presentations interactive and dynamic for the audience." (Effy Vessaz, Regional Partner Support Coordinator, Blue Ventures, Comoros).

"We chose to represent data and socioecological systems modelling using artistic interpretations by a local artist, rather than centring discussions around graphs and numbers, which can be inaccessible to some stakeholders due to varied educational and literacy levels." (Jen Chapman, Country Manager, Blue Ventures, Belize).

"Currently we use simple hand-drawn bar charts for data feedback sessions - this is because certain parameters can be analysed directly from the recording books in the village and the charts can be drawn by the recorders themselves." (Lorna Slade, Executive Director, Mwambao, Tanzania).

3.3.2. Games and simulations

Games and simulations are useful tools to encourage interaction and discussion among participants. They can help to convey complex information in a fun way, maintain participant interest, and prevent fatigue and boredom during the session. By participating in games or simulations, community members can explore a concept and test it using different approaches, making these tools very effective in enhancing shared learning.

Many Blue Ventures teams have experience using a tool called the [octopus fishing game](#) in community data feedback sessions to teach concepts in octopus fisheries management. The game simulates changes in octopus stock (due to mortality, recruitment, and fishing) and the resulting economic changes. Our experience in Madagascar, Indonesia, Timor-Leste and Comoros shows that by using the game, communities gain understanding of how effective management can generate biological and economic benefits. Community members may also increase their literacy or skills by practicing how to calculate economic benefits and draw graphs during the simulation.



Caption: Some locals in Indonesia playing the octopus fishing game.
Credit: Unknown.

3.3.3. Information Communications Technology (ICT)

Information Communication Technology (ICT) can greatly streamline the monitoring, evaluation, and learning process from data collection to data feedback sessions. We use “ICT” to refer to devices (such as tablets and smartphones), software (including apps), and communications (such as messaging services and websites). ICT tools evolve rapidly and are highly versatile, so we present here only a few examples of how we have used ICT tools for data sharing:

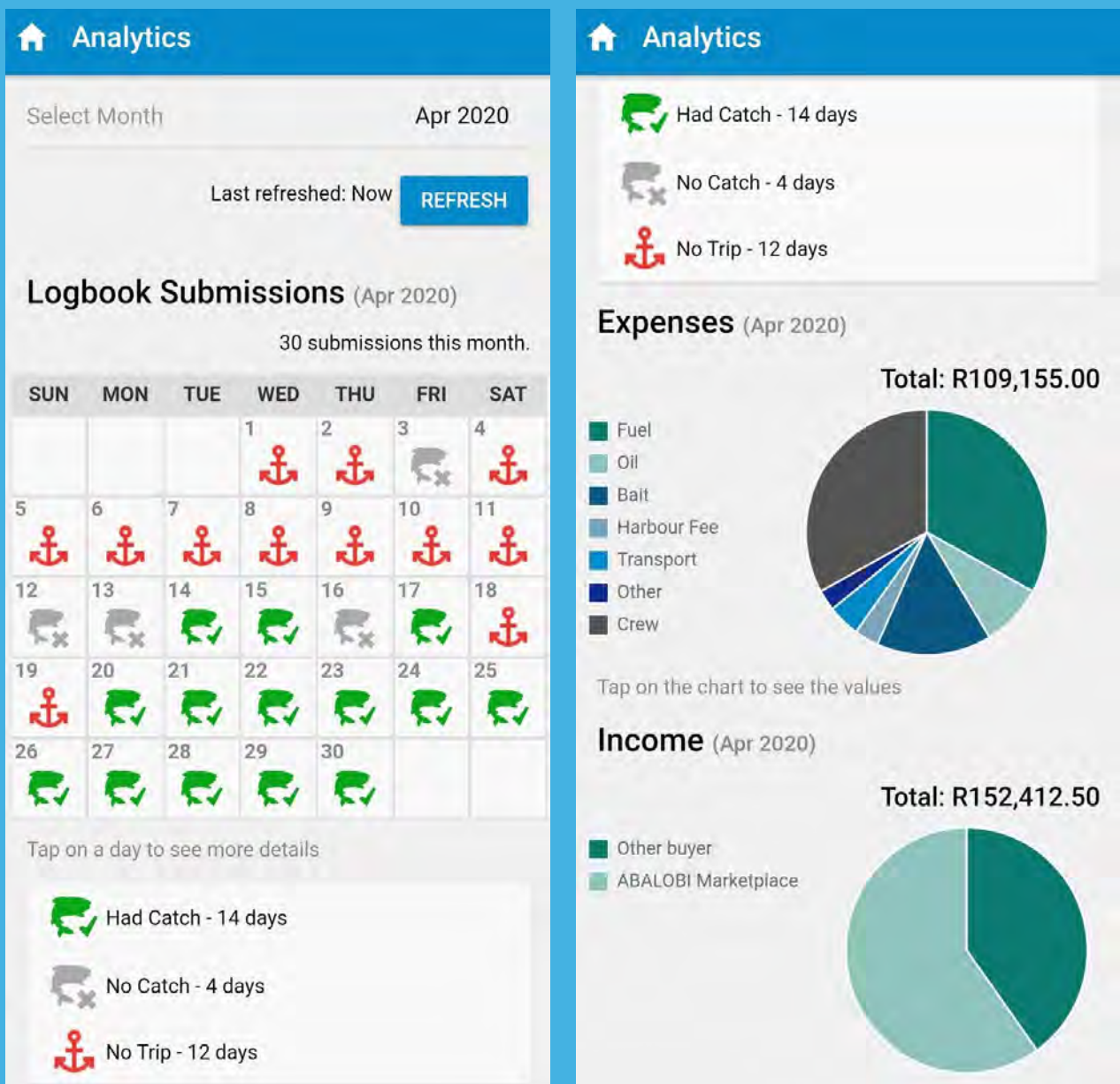
1. ICT can facilitate a collaborative process for presenting data in which the target audience can provide input on how the results are modelled (see Box 8). This improves community empowerment and ownership of the data as well as making the results more engaging and accessible. ICT can also shorten the time required for data analysis, even enabling near ‘real-time’ results following data collection.
2. Creative options abound with ICT tools that can complement data and messaging in data feedback sessions. In Timor-Leste, the Blue Ventures team shared virtual reality (VR) footage of local coral reefs during data feedback sessions, which helped bring the information to life and allowed community participants to discover parts of their environment that they had not experienced before (see Box 9).

3. ICT can facilitate communication and help maintain engagement and collaboration between management actors and communities. ICT can be especially useful in between data feedback sessions and to reach broader audiences. Some teams use messaging apps to maintain contact and share data, either amongst team members or with community members and resource users.

While the potential contributions of ICT tools can be exciting, it is important to assess the logistics and capacity for these tools, as there can be many limitations in small or remote communities. Use of computers, for instance, can be difficult for presentations, but the computer can be used to prepare visualisations that can be printed or copied to other media. It is worth periodically reviewing ICT developments as well as logistics and capacity as each of these tend to evolve, making ICT more feasible or “mainstream” fairly quickly.

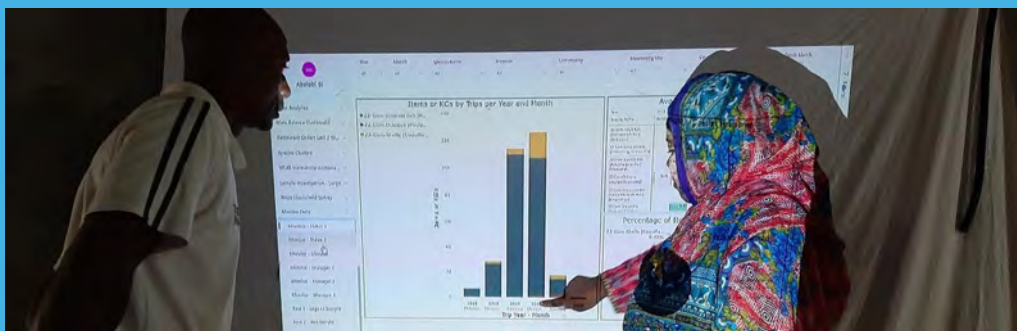
Box 8 – Using a data dashboard to create visualisations on-demand

ABALOB works with fishers through the use of a co-designed mobile app, which is a digital logbook that allows fishers to capture their data and use it to guide management and fishing operations. The ABALOB Fisher App is a free app that can be downloaded and utilised by fishers on a basic smartphone. Fishers use the app to record their activities, catch data, income, and expenses. Their individual records can be accessed as monthly data directly on their phone, including their fishing efforts, catch information, and expenses.



Caption: In-app data analytics for individual fishers on the ABALOBI Fisher App.

Fishers can also come together as a group during data feedback sessions and discuss trends such as an increase in the number of poor sea days, or the increase in the cost of bait or other inputs and come up with a plan on how to address these challenges. In addition, the data feedback sessions provide ABALOBI with the opportunity to engage with fishers on other topics, develop a shared vision, and build trust.



Caption: A fisher in Comoros gives feedback on data visualisations with Dahari, ABALOBI and Blue Ventures. This feedback contributed to improved visualisations on management results, which were more adapted to fishers' needs and would increase data understanding.

Box 9 – VR tools in Timor-Leste

Data about marine environments can seem abstract and difficult to understand, particularly if people have never seen the habitats being discussed with their own eyes. Even fishers who spend the majority of their time at sea may not have seen coral reefs up close. Blue Ventures' Timor-Leste expedition volunteers and staff created 3-D videos of some of our study sites, which can be viewed on a smartphone using a VR headset. These headsets are used prior to data feedback sessions to give the participants a sense of the habitats and resources that are discussed during the sessions. This activity engages people, regardless of literacy or data literacy level, in understanding the local marine environment. We have found that many people are surprised to see the quality of the reefs, as they often do not know that such beautiful biodiversity can be found locally, without having the opportunity or equipment to see the marine environment. The VR videos also serve as an excellent ice breaker and keep people interested while everyone is arriving. It is a favourite of people of all ages!



Caption: High school students in Manatuto view coral reefs using a VR headset as part of community outreach activities in Timor-Leste. Credit: Unknown.



The Xefi Suco of Behau views coral reefs using a VR headset, whilst waiting to begin a data feedback meeting. Credit: Unknown.

4. CONCLUSION

Data sharing and reflection can enhance community-based management strategies (such as LMMAs) by contributing to an informed and collaborative decision-making process. Sharing data through feedback sessions that include appropriate content, approach, and tools can empower communities to access the data related to their resources, voice their perspectives, and

achieve shared learning to improve monitoring and management decision-making. Our hope is that this toolkit supports communities and conservation practitioners in realising the full potential of their data to contribute to collaborative decision-making, sustainable and equitable resource use, effective management, and advocacy for natural resource conservation.



5. FURTHER READING

Blogs

- [Community engagement and data collection in Moheli, Comoros](#) (Blue Ventures)
- [Every Voice Counts - Data feedback in the Barren Isles, Madagascar](#) (Blue Ventures)
- [Gender and Information and Communication Technologies](#) (Agrilinks)
- [Using fisheries monitoring as a tool for empowering women in Timor Leste](#) (Blue Ventures)

Guides

- [Information and Communication Technologies for Small Scale Fisheries - Handbook](#) (Food and Agriculture Organization of the United Nations, FAO)
- [Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries](#) (FAO)
- [Using ODK: A user guide to setting up community mobile monitoring](#) (Blue Ventures)

Hubs

- [Community supported fisheries group](#) (The Small-Scale Fisheries Resource and Collaboration Hub, SSF Hub)
- [ICT4Fisheries Network](#) (SSF Hub)
- [Information System on Small Scale Fisheries](#) (Too Big To Ignore)

Research

- [Hidden Harvest](#) (WorldBank report)
- [Illuminating Hidden Harvests](#) (WorldFish and partners)
- [Returning information back to fishers](#) (Wageningen University research paper)

Video

- ['How can data empower communities in marine management?'](#) (Blue Ventures webinar recording)
- [How do fishers understand data?](#) (Wageningen University)



6. ANNEXES

6.1. Sample session plan

Structure of data feedback session (experience from Indonesia):

1. Welcome and introduction (10 minutes)
 - Welcome the audience
 - Make conversation (tends to be informal - to make audience feel comfortable)
 - Explain the purpose of the meeting
2. Fishers reflect on the status of fisheries (20 minutes)
 - Let fishers tell the story about their catches, price, and challenges in fishing during the last month
 - It is important that we also give them an open space to talk
3. Data reflection and discussion (20 minutes)
 - Reflect the fishers' story about the fishery's status using data (data explanation). If possible, we can use the data for validating what fishers have told us
 - Discussion: it is important to give an open space for fishers to reflect on the data or to ask any questions and to discuss
 - It is also important to support the community in taking the learning points from the discussion
4. Wrap up, and action points (10 minutes)
 - Draw conclusions with the community
 - Decide community action points (if any) - e.g. after deciding location and time for a closure, a follow-up community meeting to talk about temporary closure regulations might be required

Note: The duration does not always have to be 60 minutes, it is flexible depending on community availability and the time needed to discuss specific topics.

6.2. Sample presentations and communications

- [Presentation](#) from a session in Belize
- [Data sharing session](#) of reef monitoring results in Comoros
- [Flyers](#) to share results of a fishery management measure in Comoros
- [Video](#) communicating update about Plan Vivo mangrove project in Madagascar
- Flyers ([datasheet 1](#), [datasheet 2](#)) to share results of octopus data collection in Indonesia

6.3. Sample data sharing tool

ABALOBİ uses a Power BI dashboard tool for data feedback sessions. Before the meeting, the ABALOBİ staff, in consultation with the fishers, decide the session agenda, the discussion points, and the type of data to present. We extract these data from the power BI dashboard. If connectivity is an issue, we save images and screen shots and put them in an offline presentation. We ensure the visuals are straightforward, the messages are clear and concise, and that there is ample time to explain and discuss the data. If the fishers are eager to learn or understand more, we are able to pull up other visuals using the dashboard. We also use the discussion as an opportunity to gain insights into the needs and priorities of fishers. ABALOBİ also ensures that fishers have the capacity to use the features of the app, including accessing their personal data on their phone and using the data.

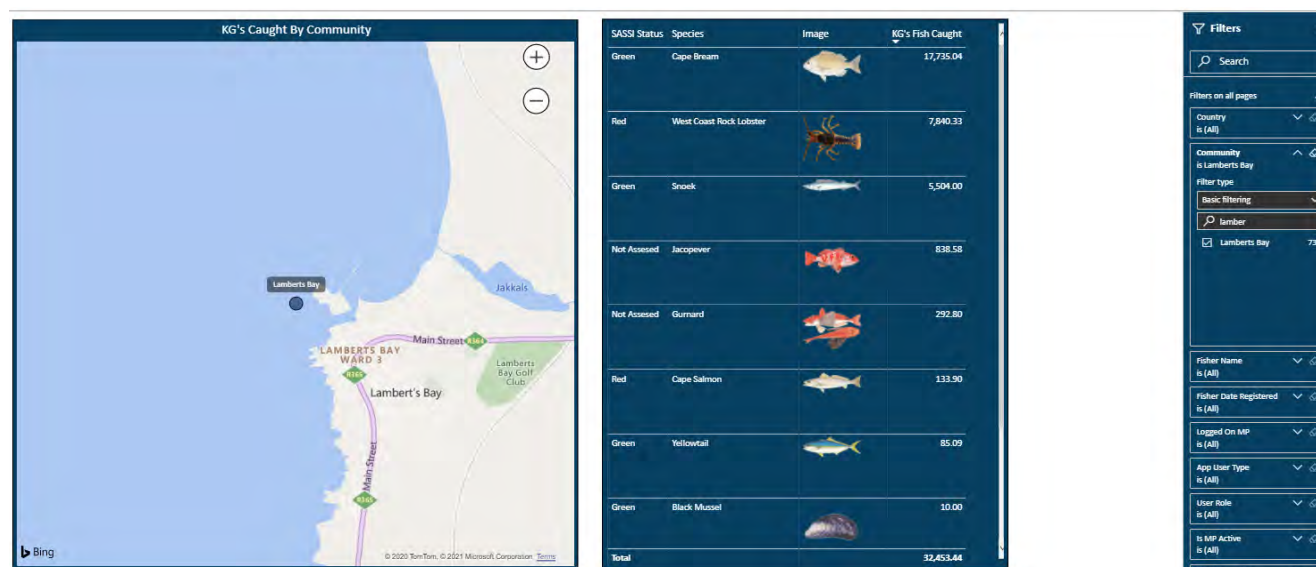


Figure 6.3.1.: Example of data view for amount of fish caught in Lambert's Bay, South Africa. The filters on the right allow for real time updating.

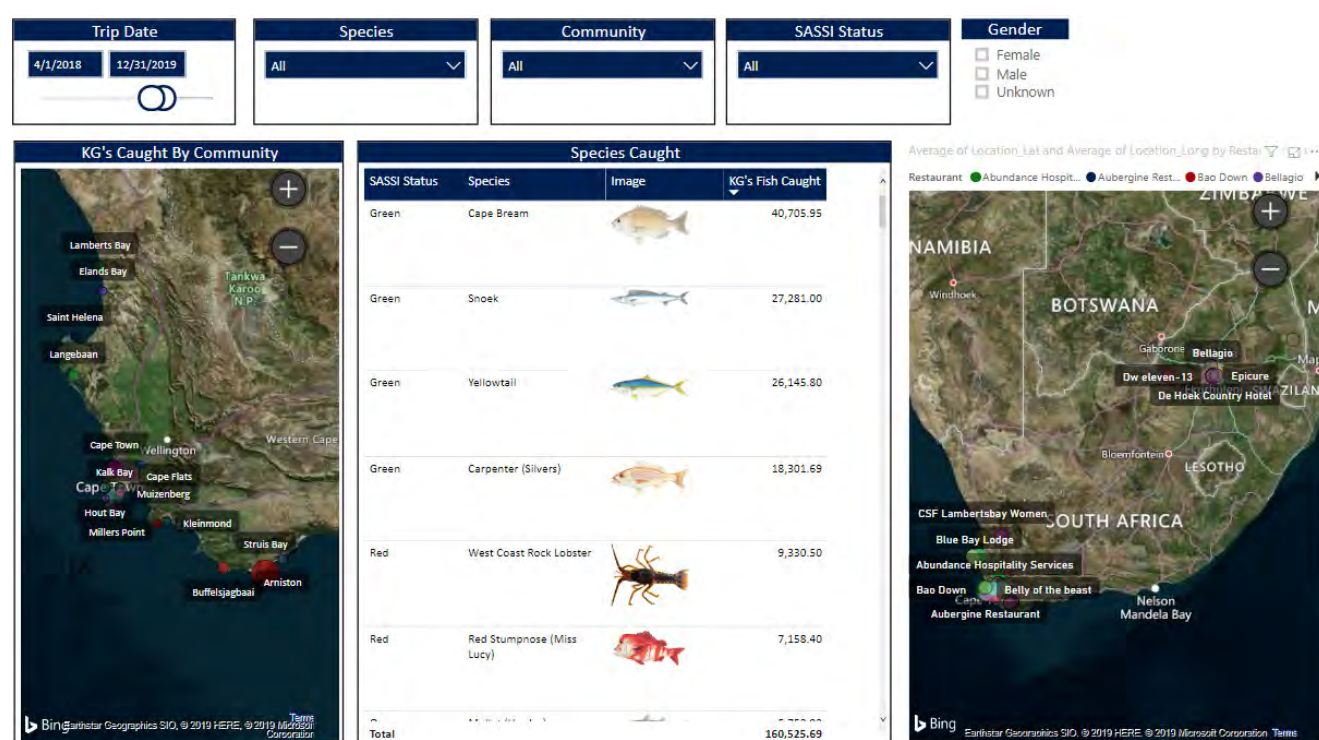


Figure 6.3.2.: Kilograms of species caught by community.

6.4. Sample data visualisation

- [Artist's interpretation of lionfish management scenarios.](#)
- Simplified data visualisation made by Indonesian partners from [data dashboard from Tableau](#). (Process of community data feedback session in Indonesia).

6.5. National Lionfish Management Strategy

Pages 79-89 are about the consultations and include SWOT summary tables from discussions, recommendations, enabling factors identified by participants, evaluation results, etc.



APRIL 2021

COMMUNITY ENGAGEMENT WITH DATA

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