Empowering communities to adapt to climate change:

Monitoring marine ecosystems using a locally developed method to inform community-based management

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Why is community-based monitoring important?

Climate change is expected to modify marine habitats all over the Pacific, with implications for the communities that depend on them for food and livelihoods. There is limited capacity within government departments in Pacific nations to conduct regular monitoring, meaning that communities are a key group to highlight changes in local marine ecosystems. With simple and robust monitoring tools, communities become empowered to make effective climate change adaptation actions.

Developing local capacity to monitor marine resources has been trialed throughout the Pacific with varying levels of success. Some of the main challenges of successful local monitoring are poor engagement, complex methods and reliance on costly materials and external data analysis.

In a pilot site in North Efate, Vanuatu, in response to community needs, we developed a marine monitoring toolkit that aimed to address the above issues. The Toolkit provides a novel approach to community monitoring that was co-developed with community Marine Champions from Nguna-Pele Marine and Land Protected Area and Tasi-Vanua environmental networks and the Vanuatu Fisheries Department.

How does the Toolkit work?

The Toolkit includes 6 modules that are independent of each other and communities select one or more modules depending on their local issues and resources. Using both qualitative and quantitative methods to monitor key local indicators of coastal habitats and resources, each module collects standardised data that is readily plotted onto a scale from nogat (none/ unhealthy) to fulap (full/healthy). Chiefs and community members of all ages are involved in the monitoring, management and review process (Figure 1). Importantly, this process also serves as an effective awareness-raising tool for communities.

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Nogat Fulap

The Toolkit has been designed to align with national policy, and provides information that can be used by government to inform national initiatives. This multi-level involvement means that management actions are streamlined towards common goals. Key to the success of the Toolkit is the involvement of the community Marine Champions in the training and delivery of monitoring sessions.

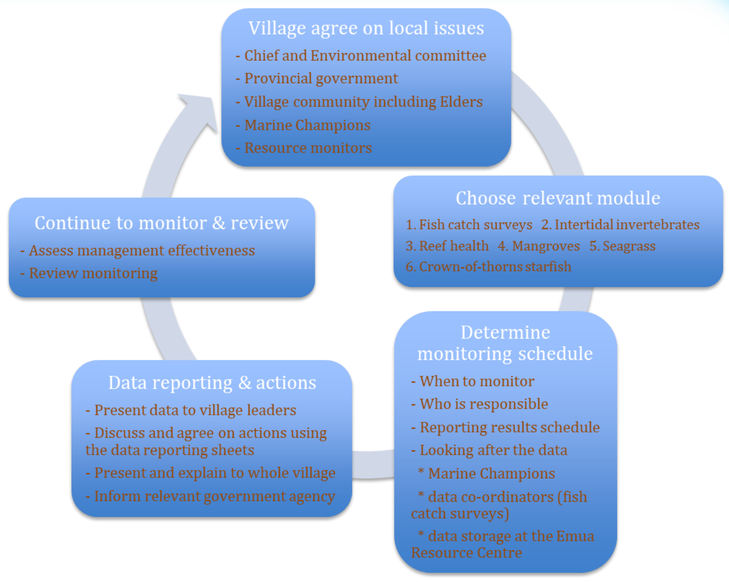

Figure 1. Diagram of the monitoring, review and management process

What makes the Toolkit different from other monitoring?

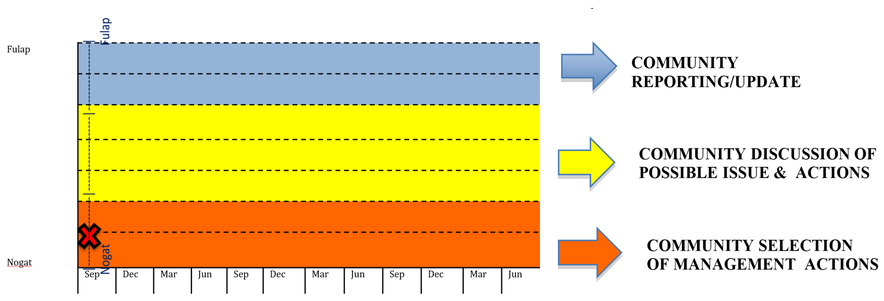

Figure 2. Data Reporting Sheet. Instant translation of monitoring results on to a graph that can determine what actions need to be taken

The Toolkit is designed to be easy yet robust, and to inform local actions, allowing communities to take ownership of all stages of monitoring and managing their marine resources. The Toolkit uses standardised methods for communities to apply monitoring results instantly, translating information from their surveys into management actions that target key local issues. This is achieved by translating the plots from the nogat to fulap scale onto the Data Reporting Sheet. The Data Reporting Sheets (Figure 2) use the same colours as the cyclone warning colours; blue indicates no concern, yellow indicates there is a possible issue and red indicates there is an immediate issue.

This means communities do not need to rely on outside experts to interpret the results, empowering them to use the monitoring results to inform local management actions.

How does the Toolkit inform local management?

The Toolkit includes an important community meeting at the start, where everyone comes together to agree on what management actions are suitable and acceptable for their local environment, if an issue is observed. If monitoring detects an issue, the community can meet again to confirm the management actions that will be implemented to address the issue. Communities will work together with provincial and government agencies to ensure by-laws in the management plans are recognised and enforced. Some examples of this are shown in Figure 3 and Figure 4. Using these methods, communities can adapt their traditional management to address the effects of climate change on their local marine environment.

Additional benefits of this work include increased local awareness of climate change and marine issues, larger locally managed tabu (no take) areas, increased food security, long term recognition and importance of conservation areas and new local ecotourism initiatives for income generation to support climate change adaptation.

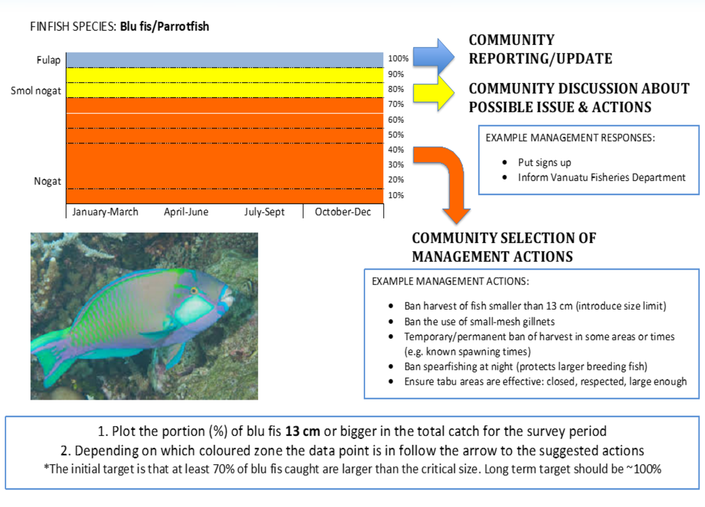

Figure 3. Management responses to monitoring results of Parrot Fish in the *Fish Catch Survey* (Module 1).

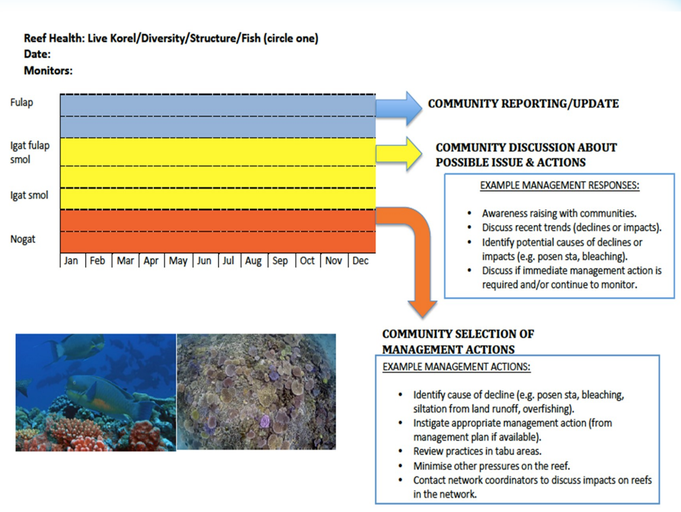

Figure 4. Management responses to monitoring results of reef health indicators in the *Reef Health Survey* (Module 3).

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