

## Multi-stakeholder engagement around territorial bottomfish stock assessment: Perspectives from Hawai'i and Guam

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### Executive Summary

Fishing communities, Western Pacific Regional Fisheries Management Council staff, and territorial and federal agency scientists and managers are separated by geography, language, historical conflict and mistrust, institutional cultures, and the specialized knowledge that each stakeholder group wields. Yet, these stakeholders' roles are highly interdependent in their contribution to territorial bottomfish fisheries and their stock assessment. This project represents a first step in bridging these gaps to build relationships and shared understanding through a multi-stakeholder engagement process.

We collected data through unstructured interviews and participant observation at public meetings from September 2020 to July 2021. Interviewees were selected either for their participation in the 2015-16 Hawai'i bottomfish commercial fishery data workshops, or their knowledge of, contribution to, or direct participation in Guam's bottomfish fisheries, fishery operations and data collection, stock assessment science, and management. We interviewed 42 stakeholders, representing fishers and fish vendors, the NMFS Pacific Islands Regional Office and Pacific Islands Fisheries Science Center, the Guam Division of Aquatic and Wildlife Resources, and Council staff and committee members.

Factors that may pose challenges during multi-stakeholder engagement include cultural and institutional forces unique to each stakeholder group, which in some cases inhibit their engagement with other stakeholders. Stakeholders' behavior is also guided by a combination of priorities and engagement incentives. Understanding where these converge and diverge across stakeholder groups allows us to leverage them for collective efforts and benefits. Data accuracy, for example, was a priority shared across all stakeholder groups. Some engagement incentives are shared across stakeholder groups, but few align through time for all stakeholders. Although the last territorial bottomfish stock assessments heightened tensions between stakeholders and highlighted the criticality of science and management decisions, it also served as a unique catalyst, synchronizing stakeholders' diverse engagement interests and timelines.

Stakeholders' now synchronized investment in engagement provides an opportunity for multi-stakeholder engagement. But, there are critical communication issues and the sociopolitical contexts that require attention. The cases we present demonstrate stakeholders' variable interpretations of "good science", discussions around gear efficiency and catch per unit effort (CPUE), and the Catch-It-Log-It application. They illustrate the ways in which stakeholders make vastly different associations with shared subject matter and language, from the technical aspects of stock assessment to poor relationships between the federal government and the territories, or threats to culture and ways of life. If ignored, these different interpretations of shared discussion will inhibit effective communication and may unnecessarily escalate conflict. We suggest that these underlying challenges be used to tailor communication and engagement that is inclusive of multiple values and perspectives, rather than attempting to separate them

from their topical discussions. Additionally, coordinating efforts between institutions and stakeholders requires great investment, but in avoiding redundant initiatives, conflicting narratives, and further degraded trust between stakeholders, provides benefits to efficiency.

Interviewees highlighted value in different strategies to help achieve engagement outcomes. Meeting stakeholders where they are geographically, in settings where they are comfortable, and in terms of their perspectives and values were noted to encourage participation and facilitate input. Preparing for multi-stakeholder engagement by meeting in smaller groups can help to circumvent social hierarchies and inter-group conflict and encourage the sharing of more diverse perspectives. Directed questions, documented decision-making, and balancing validation with maintaining discussants' focus on shared, clearly communicated goals can benefit group productivity and preserve group time and energy. Although the specific goals of engagement will likely determine who is included, care should be taken not to exclude perspectives prematurely. Part of the work that may precede engagement is identifying missing voices to diversify the conversation as much as is appropriate, while respecting the time and efficiency of meetings and their attendees. Interviewees noted that capacity for stakeholder mediation and culturally sensitive facilitation is key in the Pacific Islands Region, particularly in American Samoa.

Although stakeholders valued engagement outcomes like relationship-building and improved legitimacy of fisheries science and management, these alone may not provide sufficient incentives for engagement. Sharing information, improving fisheries science and management processes, and building stakeholder capacity were among the more tangible outcomes that stakeholders valued and hoped for. Upcoming stock assessment data workshops, for example, may benefit from stakeholder input that informs modified data treatment to better represent the fishery. If stakeholder input cannot be integrated into stock assessment in the short-term, it may identify data gaps and inform future research.

Interviewees described a lack understanding and coordination in the ways that their roles connect to others'. PIFSC stakeholders deliver survey sampling designs to territorial agencies with little awareness of how they are implemented and produce best science available based on data for which they lack context. Territorial agencies are asked to implement survey designs for an expansion algorithm executed by the Western Pacific Fisheries Information Network (WPacFIN), and neither of these stakeholders feel they have ownership or understanding of the expansion algorithm. Fishing stakeholders are asked to submit data to agencies they do not trust, for use in scientific and management processes for which they lack context. In their silos, stakeholders are left to a) fulfill their roles based on priorities and values shaped by their communities, leadership, and federal mandates; and b) make assumptions about the intentions and activities of other stakeholders, perpetuating mistrust and defensive or offensive posturing. We suggest multi-stakeholder engagement for a systemic assessment that seeks shared understanding of the following processes: fishery operations, data generation, data treatment, stock assessment, and management systems.

As information is shared during multi-stakeholder engagement, effort should be made to minimize translation issues and maximize accessibility for all stakeholder groups. Participatory modeling is an engagement approach that synthesizes the perspectives of stakeholders and represents them in a shared model. Fuzzy Cognitive Mapping (FCM) is a qualitative participatory modeling tool that can help to communicate information about complex systems in a way that is accessible to diverse audiences. FCM accommodates diverse ways of knowing in its simple representation of variables and their directional impacts on one another, fosters collaboration and trust-building through transparent discussion, and can bring attention to

individuals' roles and agency in the system. We suggest participatory modeling or simple cognitive maps as a tool for upcoming multi-stakeholder engagement endeavors, whether they seek to make stock assessment models and their assumptions accessible to diverse stakeholders, or establish collective understanding of the bottomfish fishery and stock assessment system.

Finally, institutional frameworks are not conducive to proactive stakeholder engagement. In this system, individuals comprising the stakeholder groups we have identified must go above and beyond their institutional roles--propelled by their individual values--to improve communication, multi-stakeholder collaboration and, ultimately, territorial stock assessments. This not only places a burden on individuals but makes the system vulnerable upon individuals' departure. We therefore highlight the need for systemic, institutional support to incentivize engagement and build capacity within these stakeholder groups to engage more effectively

