Stakeholder Buy-In to Marine and Coastal Resource Management Under Conditions of Complex Governance

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Abstract

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Many marine and coastal resources can be classed common pool resources and are thus challenging to manage, especially where central government capacity is limited. As a result, marine and coastal resource management often 1) depends on stakeholders' cooperation with management efforts, and 2) involves systems of complex governance, in which multiple actors including resource users, local communities, local nonprofits, government across levels, and international non-profits and funders work together to undertake management. International non-governmental conservation organizations (INGOs) are prevalent in such settings, working across levels to increase the sustainability and conservation value of resource management, often with

the explicit intent of increasing stakeholder buy-in – that is, attitudes towards, support for, willingness to engage in, and willingness to comply with management. Yet little research to date has examined how INGO involvement, and in particular INGO direct engagement with users and other stakeholders, influences buy-in. The three papers presented in this dissertation seek to address this gap by presenting research derived from a novel synthesis of common pool resource theory, theories of participation, and theories of NGOs. Paper 1 presents results of an experimental test of an INGO-supported decision-support tool, FishPath, which solicits stakeholder knowledge to better specify management options in data- and capacity-limited fisheries. Thirty-two Australian fishery stakeholders participated in the test. FishPath use significantly increased both the perceived ease and perceived effectiveness of management; stakeholders' support for management trended upwards but the increase was not significant. Paper 2 presents content and process-tracing analysis of document (n=4) and original interview data (n=46) to examine how INGOs influence community-level incentives for the adoption and implementation of community-based marine and coastal resource management (CBM) in Fiji. INGO activities increase the perceived benefits of both adoption and implementation. However, implementation is experienced as much more costly by community members; INGO activities are not always sufficient to incentivize full implementation of CBM. Paper 3 applies process-tracing and content analysis to the same documents and original interviews analyzed in Paper 2, exploring how INGOs influence resource user participation in Fijian CBM decision making. Despite rhetorical support for increased participation, and the creation of new advisory and implementation structures, INGOs do not broaden user participation in decision-making, which remains in the hands of traditional elite decision-makers who may or may not be responsive to community needs. Furthermore, where community members perceive that they have been

excluded from decision-making and their needs left unmet, implementation of CBM appears more likely to fail. Together, the three papers highlight ways in which INGOs successfully increase stakeholder buy-in to marine and coastal resource management, as well as gaps in current INGO efforts. Together, these papers demonstrate the benefits of focused inquiry into the activities of INGOs and other actors engaged in complex governance of marine and coastal resource management, how those activities are experienced by resource users, and how resource users' experiences in turn influence management outputs and outcomes.

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INTRODUCTION TO THE DISSERTATION: STAKEHOLDER BUY-IN TO MARINE AND COASTAL RESOURCE MANAGEMENT UNDER CONDITIONS OF COMPLEX GOVERNANCE

Natural resources are termed common pool resources when it is difficult to exclude others from access (low excludability), but when use of the resource by one affects the availability of the resource to all (high subtractability). Common pool resources are challenging to manage because low excludability and high subtractability together make cooperative choices to limit resource use difficult. In a fishery, for example, fishers have a collective interest in maintaining sustainable flows of fish for food, income and other benefits. But individual fishers have private incentives to maximize their catch, as whatever they fail to catch will likely be caught by others. This may result in the Tragedy of the Commons (Hardin 1968), in which overfishing leads to fishery collapse. Convincing commons users to forgo some portion of their individual interest in order to realize their shared interest can be challenging, but is possible through coercion and/or cooperation (Olson 1971, Ostrom 1990).

Management of marine commons can be especially demanding. Jurisdictions may be complex and management authority geographically remote. Physical boundaries may be indiscernible and physical barriers to access impossible to construct. The resource of interest (e.g., fish) is largely invisible until extraction is underway, and resource status (e.g., fish populations) is correspondingly hard to track. Finally, many species of fish move between governed spaces. These factors challenge coercive, top-down approaches to commons dilemmas even where central management capacity is strong.

Meanwhile, global reliance on fish for food is growing rapidly, especially in lower-income nations (Farmer, Grainger, and Plummer 2014), and analysis of FAO global fisheries

data shows that current management is especially likely to be ineffective where management capacity is most constrained (Costello et al. 2012). In developing world, data- and/or capacity-limited contexts, effective management is likely to hinge on cooperation. Cooperative approaches involve motivating stakeholder buy-in (attitudes towards, and willingness to support, engage in, and comply with, management despite private incentives). Common pool resource scholars and scholars of natural resource management, including fisheries management, have long recognized stakeholders – fishers, other resource users, community members, and others – as key players in managing fisheries and other marine resources (Ostrom 1990; Ahmed, Capistrano, and Hossain 1997; Jentoft, McCay, and Wilson 1998; Smith, Sainsbury, and Stevens 1999; Berkes 2009; Cohen, Evans, and Govan 2015).

Where central management capacity is most constrained, cooperative marine resource management often takes place within complex governance networks that link actors including local users, communities and nonprofits; national governments; and international nonprofits and funders (Cohen, Evans, and Govan 2015). International conservation NGOs (INGOs) are ubiquitous in these networks (for examples see Sloan and Chand 2015; Jupiter et al. 2014; Abernethy et al. 2014; Lawson-Remer 2013). To increase stakeholder buy-in, INGOs develop and disseminate management tools, facilitate management processes, share information, and provide funding, training, and expertise, often working directly with resource users (Crosman 2013). However, the effects of such INGO interventions are little studied.

There is reason to believe that INGO interventions may be problematic. Critiques of INGOs accuse INGO-led conservation efforts of disenfranchising indigenous peoples and undermining universal human rights (Chapin 2004). Peer-reviewed case studies have flagged the imperfect fit between INGO goals and desires and those of resource users and local communities

(Benson 2012; Cinner and Aswani 2007). Furthermore, NGO theory suggests that INGOs themselves, rather than acting from solely altruistic motives in order to create or support the public good (Castells 2008), are faced with organizational incentives that drive them to prioritize organizational survival – especially funding (Prakash and Gugerty 2010) and legitimacy (DiMaggio and Powell 1983; Lang 2013). Even where INGOs genuinely intend to enable stakeholders to support, engage in and comply with marine resource management, to what extent do INGOs' stakeholder-directed interventions have the desired result? This dissertation tackles this question by unpacking how INGO interventions affect stakeholder buy-in to management.

This dissertation includes three papers, each designed to examine a different INGO strategies to increase stakeholder buy-in. Paper 1 presents the results of an experiment testing the effects of FishPath, an interactive decision-support tool explicitly designed to solicit stakeholders' knowledge about the data- or capacity-limited fisheries in which they take part, on stakeholders' support for formal fisheries management as well as their perceptions of the ease and effectiveness of management. Papers 2 and 3 present the results of qualitative field research in Fiji. Paper 2 examines causal links between INGO engagement and *iTaukei* (Native) Fijian villages and those villages' adoption and/or implementation of community-based management (CBM), across eight *iTaukei* villages that differ on INGO involvement, adoption, and implementation of CBM but that are matched across other predictive dimensions. Paper 3 explores CBM participation in decision-makings in those same eight villages, examining the roles of INGOs in broadening participation as well as exploring how decision-making structures, and the extent to which they enable resource user participation in decision-making, influence implementation of CBM. A concluding chapter summarizes my findings across papers and discusses implications for the ways in which INGOs and others might stimulate or increase

stakeholder buy-in to marine and coastal resource management.

Paper 1, "The effects of FishPath, a multi-stakeholder decision-support tool, on stakeholder buy-in to management in data-limited fisheries," seeks to answer the question: How does engagement of stakeholders via an INGO-developed, interactive decision-support tool (FishPath) affect their buy-in to formal management of a data-limited fisheries, both in the presence and absence of in-person expert support? The FishPath tool interactively engages stakeholders in a data- and capacity-limited fishery; that is, a fishery that is difficult to manage using standard, data-intensive, Western science-based methods. FishPath first incorporates tool users' expertise by soliciting their input across a broad set of fishery characteristics, then provides them with a prioritized shortlist of recommended management strategies that are grounded in scientific best practice and tailored to the conditions facing the fishery in question (Dowling et al. 2016). FishPath is at the center of The Nature Conservancy's global fishery strategy; to date it has been used in fisheries in Australia, the US, Canada, Peru, Jamaica, Mexico, Kenya, Indonesia, the Seychelles, and elsewhere. This paper reports the results of a field experiment to test the hypothesis (drawn from work on stakeholder participation (e.g., Reed 2008)) that FishPath use increases stakeholder buy-in to management, here defined as support for, perceived ease of, and perceived effectiveness of management. As FishPath is usually applied in workshops supported by tool and fisheries experts, the experiment also tests the hypothesis that in-person, expert support of Fish Path use further increases stakeholder buy-in beyond tool use alone.

On November 17, 2017, with support from collaborators, I conducted a field experiment with a broad range of Australian fisheries stakeholders in Darwin, NT. Participants (n=32) were provided with a hypothetical case-study fishery designed to mimic commonly encountered real-

world data and capacity limitations. The experiment ran in three stages. In Stage 1, participants were presented with a tailored shortlist of management options for the fishery, but did not interact with FishPath. In Stage 2, participants collectively worked through FishPath, inputting the hypothetical fishery information; the tool then presented the same management options initially seen in Stage 1. In Stage 3, after a common introduction to FishPath's output followed by random assignment into a control and treatment group, Group A (control) was left to explore the output without additional support, while Group B (treatment) explored output with support from a FishPath and fisheries management expert. After each stage, participants were asked to rate: 1) their support for an ongoing process to select management options from the shortlist; 2) how easy or hard they expected management of the fishery to be; and 3) how effective they expected management of the fishery to be. Questionnaire data were subjected to statistical analysis to test the hypotheses presented above.

Paper 2, "International non-governmental organizations and the adoption and implementation of community-based management of coastal and marine resources," seeks to answer the question: How do INGOs impact community-level incentives for the adoption and implementation of community-based management of marine and coastal resources? I approached this question through fieldwork in eight *iTaukei* Fijian villages. Community-based management of marine resources through a Locally Managed Marine Area (LMMA) approach has been enthusiastically embraced in Fiji, with 450 LMMAs reported across the country in 2017 (Aswani et al 2017). Furthermore, multiple INGOs are known to work in Fijian CBM, and adoption and implementation of CBM are known to vary across sites (Sloan and Chand 2015). Finally, *iTaukei* Fijian villages are, in many ways, ideal sites for CBM per common pool resource (CPR) theory (Ostrom 1990), as they are place-based, with long-standing, deep geographic ties including ties

to traditional fishing grounds, the boundaries of which have remained stable over generations and which are recognized under national law. Membership in the group of users with extraction rights to a given traditional fishing ground is determined by tribal membership, which is also firmly established both by tradition and national law. In this paper, I test three related hypotheses derived from a synthesis of CPR theory (e.g., Ostrom 1990, Agrawal 2001) and theories of NGOs (e.g., Prakash and Gugerty 2010, Lang 2013): 1) INGO activities incentivize adoption of CBM; 2) INGO activities incentivize implementation of CBM; and 3) INGO activities incentivize adoption of CBM more than they incentivize implementation of CBM.

I conducted field research in Fiji between May and September of 2018. With the assistance of local collaborators, I identified eight *iTaukei* villages on the island of Vanua Levu. I restricted the sample to a single island in order ensure cultural similarity across villages, and matched villages on size and marine resource reliance, in order to control for factors predicted by CPR theory to influence adoption and implementation of CBM. Within these parameters, my eight case villages were selected to vary on the dependent variables of interest (that is, INGO involvement, adoption of CBM, and implementation of CBM), including counterfactual cases. In each village, I conducted an average of five interviews (from four to seven) with community leaders, specifically targeting the village chief, the village headman, a representative of the women's group, a representative of the youth group, and a representative of the resource management committee (village interviews n=40). In addition to village interviews, I conducted interviews with representatives of three organizations working in Fijian CBM: two INGOs working in the case villages, and FLMMA, a network organization that coordinates CBM activities and consists of INGOs, government agencies, villages, and others (organizational interviews n=6). I also collected management plans, where available (management plans n=4). I

applied process tracing and content analysis to test my hypotheses. Process tracing analysis tracks the process whereby which a study case arrives at an outcome of interest (e.g., implementation of CBM) and subjects that process to a series of conceptual tests and in order to test pre-determined hypotheses (Collier 2014).

Paper 3, "Who decides, who advises? Participation, international non-governmental conservation organizations and community-based marine resource management decision-making," seeks to answer three related questions: How do INGOs impact community-based marine resource management decision-making structures? How do local leaders perceive INGO efforts to transform decision-making? And how do INGO activities that influence decision-making structures affect implementation of CBM? Chapter 3 is based on process-tracing analysis of the same interviews and documents analyzed for Chapter 2. In this paper, I test three related hypotheses, drawn from a synthesis of common pool resource theory (e.g., Ostrom 1990, Agrawal 2001), theories of participation (e.g., Fung 2006), and theories of NGOs (e.g., Prakash and Gugerty 2010, Lang 2013) : 1) INGOs encourage broadened user participation in CBM decision-making; 2) Implementation of CBM is more likely where INGOs encourage or incentivize broad user participation in decision-making; and 3) Implementation of CBM is more likely where local leadership supports broadened participation in CBM than it is where local leadership opposes broadened participation.

Marine and coastal resources are common pool resources that are often difficult to manage via coercion; as such, much management in this sphere relies on stakeholder buy-in – that is, stakeholders' attitudes towards and willingness to support, engage in, and comply with management efforts. Furthermore, due to previous failures of coercive approaches, and especially where central government capacity is limited, marine and coastal resource

management often occurs under conditions of complex governance, among actors including resource users, governments, INGOs, funders, and other stakeholders. Together, the three papers presented here contribute to public management and natural resource scholarship by synthesizing a broad range of scholarship from the realms of fisheries, common pool resource management, natural resources and environment, public policy and governance, and non-governmental organizations. This range of literature enables me to develop and test causal hypotheses predicting how one set of actors who are prevalent in complex governance – international non-governmental conservation organizations – influence stakeholders' buy-in, one component underpinning the success of management efforts. While much pre-existing work examines marine resource management processes and outcomes (e.g., Gutiérrez, Hilborn, and Defeo 2011; Cinner et al. 2012; Sloan and Chand 2016), little work focuses explicitly on the roles of INGOs. Work that does focus on INGOs tends to be focused on single cases and to omit tests of counterfactual cases. By applying an interdisciplinary understanding that synthesizes the theoretical traditions cited above, as well as causal methods drawn from public policy and management scholarship, the papers reported here advance our understanding of both the effects of INGOs' activities and the wider contexts in which they operate.

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PAPER 1. THE EFFECTS OF FISHPATH, A MULTI-STAKEHOLDER DECISION-SUPPORT TOOL, ON STAKEHOLDER BUY-IN TO MANAGEMENT IN DATA-LIMITED FISHERIES

Abstract

Fisheries are increasingly managed with involvement of fishers and other stakeholders. Stakeholders are especially critical where managers lack full knowledge of the system to be managed, resources to gather additional information, and/or resources to monitor and enforce compliance. Such 'data-limited fisheries' comprise more than 80% of the total global fish catch and face challenges to maintaining sustainable harvest rates. Sustainable management of data-limited fisheries may be improved by decision support that informs assessment and management choices and that is available to fishers and managers. Here I report results from a field experiment conducted with Australian fisheries stakeholders. The experiment tested FishPath, an interactive decision-support software tool for data-limited fisheries, and its influence on stakeholder buy-in to management. In Stage 1, participants were provided with a hypothetical fishery that mimicked commonly encountered real-world data- and capacity-limitations. To establish baseline levels of buy-in, the research team also presented participants with a shortlist of management options tailored to the fishery; participants did not interact with FishPath. In Stage 2, to test the effect of FishPath use, participants collectively input the hypothetical fishery into FishPath; the tool then presented the same management options seen in Stage 1. In Stage 3, to assess the effect of expert support, participants were randomly assigned to a control group and a treatment group after a common introduction to FishPath output. The control group explored the output without additional support, while the treatment group explored output with support from a FishPath expert. After each stage, participants were asked to rate: 1) their support for an

ongoing process to select management options from the shortlist; 2) how easy or hard they expected management of the fishery to be; and 3) how effective they expected management of the fishery to be. Statistical analysis of questionnaire data shows that while FishPath use does not significantly increase stakeholder support for management (possibly due to ceiling effects, as support was high in Stage 1), it does significantly increase participants' perceptions of the ease and effectiveness of management at each stage of the experiment.

Keywords: Fisheries management, data-limited fisheries, stakeholder buy-in, decision support

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Development and Research Council (Australia), the Commonwealth Scientific and Research Organization (Australia) and the Nature Conservancy (US). This research was reviewed by the University of Washington Human Subjects Division (STUDY 00002381).

1. Introduction and background

1.1 MOTIVATION OF THE STUDY

Fisheries scholars and agencies have long recognized stakeholders as central to fisheries management (Smith, Sainsbury, and Stevens 1999; Ahmed, Capistrano, and Hossain 1997). Stakeholders are especially critical where managers lack full knowledge of the system to be managed, resources to gather additional information, and/or resources to monitor and enforce compliance (i.e., data-limited fisheries) (Dowling et al. 2015). Data-limited fisheries comprise more than 80% of the total global fish catch (Costello et al. 2012) and their management is rife with uncertainty (Carruthers et al. 2014). Research suggests that they are increasingly exploited and that current management may fail to address stock declines (Worm and Branch 2012; Costello et al. 2012).

Because of data limitations, gold-standard Western scientific ("formal") fisheries management practices are often impracticable in data-limited fisheries. Moreover, simple, generic, low-cost solutions such as generically parameterized models should not be indiscriminately applied (Dowling et al. 2018). Tailored approaches should acknowledge specific species' and fisheries' data and context. This does not preclude any management of such fisheries, particularly as fishery stakeholders themselves have expert knowledge. But engaging stakeholders can be costly, in terms of both time and money, to both coordinating agencies and stakeholder participants.

One possible approach to reducing costs is a standardized method of soliciting stakeholder input. Such an approach may seek to collate existing knowledge about the fishery, identify where additional knowledge may be most fruitfully sought, identify currently feasible management options that are expected to be effective given the fishery context, and increase

stakeholder buy-in to management processes and resulting rules. This is the approach taken by FishPath, and to some extent, by previous fisheries' management decision support tools (Alagappan and Kumaran 2013). FishPath is a data-limited fisheries management decision-support tool developed by a Science for Nature and People Project (SNAPP) working group (Dowling et al. 2016), with a current core team of scientists from The Nature Conservancy, the Commonwealth Science and Industry Research Organization (CSIRO) Oceans and Atmosphere, and the National Oceanic and Atmospheric Administration (NOAA) Fisheries section. This paper seeks to answer the question: How does use of FishPath influence stakeholder buy-in to formal fisheries management, in the presence or absence of in-person expert support?

1.2 OVERVIEW OF THE PAPER

The paper proceeds as follows. It begins with a discussion of why formal management can be challenging in data-limited fisheries. This is followed by a discussion of the critical role of stakeholder buy-in to management of fisheries in general, and data-limited fisheries in particular. This discussion includes a brief survey of previous efforts towards creating management support tools for fisheries, and an overview of FishPath and how it is applied in practice. The paper concludes with the design and results of an experiment that tests whether use of FishPath increases stakeholder buy-in to formal management of a data-limited fishery.

1.3 FORMAL MANAGEMENT AND DATA-LIMITED FISHERIES

1.3.1 Data-limited fisheries

Data-limited fisheries, which make up more than 80% of global catch (Costello et al. 2012), are those fisheries for which managers lack the information necessary to allow

quantitative, model-based assessments of fish stock status. This information deficit challenges managers' ability to track fishery impacts and adapt management (Dowling et al. 2016). Data-limited fisheries tend also to be capacity-limited – that is, resource constraints hinder fisheries authorities from collecting additional data and/or monitoring and enforcing management (Dowling et al. 2016). Here I use 'data-limited' to refer to fisheries lacking management data, capacity, or both.

1.3.2 Ideal formal fisheries management

Formal fisheries management, as I use the term here, centers on the development of an implementable, enforceable and effective integrated harvest strategy. Harvest strategies are formal frameworks for managing exploitation of fisheries (e.g., Sainsbury, Punt, and Smith 2000; Butterworth and Punt 2003). They comprise a fully specified set of rules for making management decisions, and consisting of three iterative, adaptive components: (1) a species and/or fishery monitoring program (2) indicators of the current status of the fish stocks that will be calculated from the monitoring data (often via a stock assessment), and (3) application of indicators to design or adapt decision rules (e.g., regulations) that effectively meet management goals (goals which may be established by national legislation, as is the case in the US and Australia) (Sainsbury, Punt, and Smith 2000; Butterworth and Punt 2003; Punt, Smith, and Cui 2002). In an ideal, data-rich fishery, for example, comprehensive catch data and species' life history may be collected and used to model the status of the fish stock (i.e., stock assessment), model outcomes may be compared to pre-determined target reference points like Maximum Sustainable Yield, and the results of that assessment may be used to set harvest controls like total allowable catch (Figure 1-1).

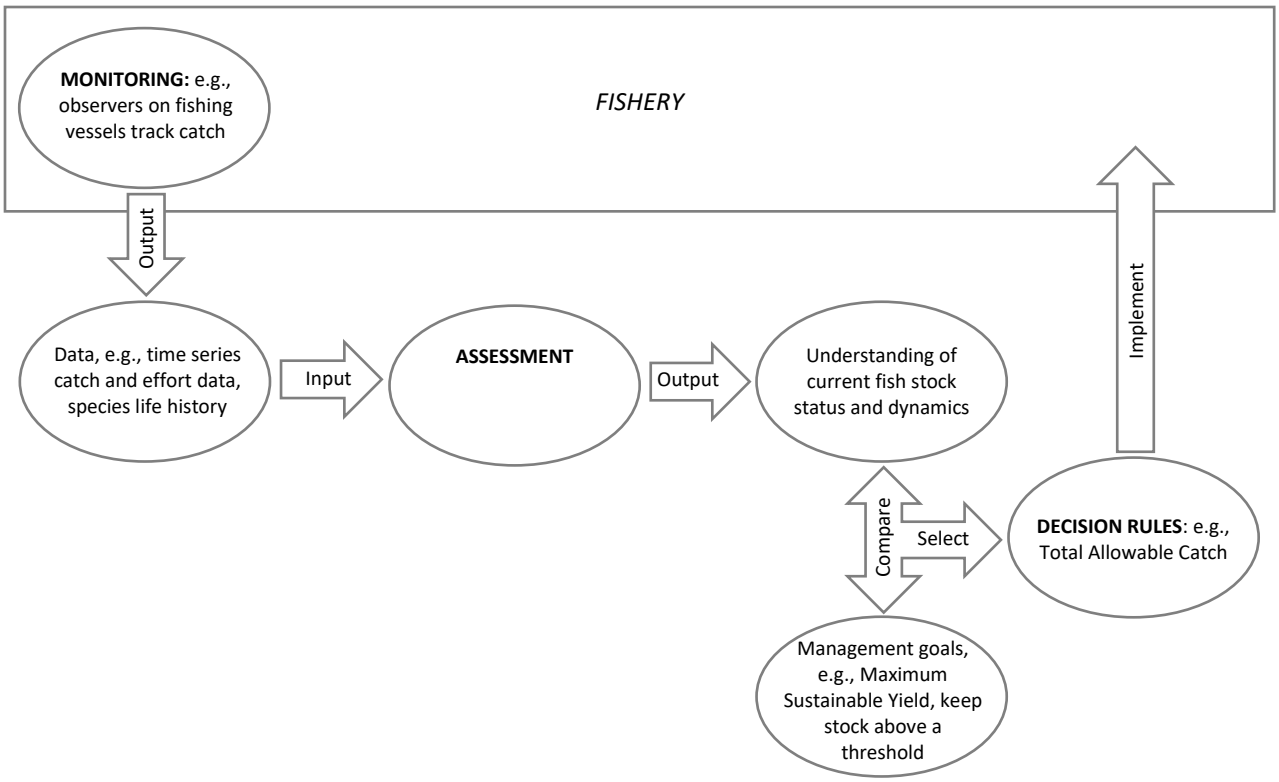

Figure 2-1. The integrated harvest strategy approach to fishery management.

Within the harvest strategy, monitoring, measurement, assessment, decision rules, and implementation must be specified quantitatively (Sainsbury, Punt, and Smith 2000). Formal management is thus often predicated on extensive data on catch, effort, and trends over time, as well as knowledge of target species' life history and fishery operational characteristics (e.g., types of gear used, vessel size) (Bentley and Stokes 2009; Dichmont et al. 2015). It follows that formal management requires not just data, but also capacity. Capacity may include: people and/or technology to gather/collate knowledge of the targeted species and other species caught inadvertently (bycatch), and to monitor catch and fishery operations; knowledge of, and expertise in applying, assessment methodologies that vary from the straightforward (comparing monitoring data to simple indicators) to the sophisticated (fisheries-specific statistical modeling techniques like stock assessment); the ability to select decision rules that will meet fishery goals,

in light of the preceding; the ability to enforce those rules; the ability to track the fishery over time and adapt management approaches as necessary; and funding to finance all of the above.

1.3.3 Data-limited fisheries management

The specifics of what legally constitutes a data-limited fishery differ by jurisdiction, but data-limited fisheries generally exist where species, catch or effort data are entirely lacking, incomplete, or limited in temporal scope, estimates of total abundance or biomass are lacking, or where key reference points like Maximum Sustainable Yield are otherwise incalculable or very uncertain (Dichmont et al. 2015; Dowling et al. 2016). Globally, where central governmental resources are constrained and capacity is limited, fisheries agencies may lack the funding and/or expertise to collect or analyze data necessary for adoption of an MSE approach. Subsistence, small-scale, or primarily recreational fisheries may be low commercial value or generate minimal income, precluding the imposition of fees sufficient to support MSE management. Data limitations may also be found in fisheries that are new or developing, those that target multiple species either opportunistically or by design, or where ports or landing sites are unknown and/or spatially dispersed. Thus, by their very nature, data-limited fisheries are challenging to formally manage.

In some jurisdictions, legislative or managerial subscription to narrowly defined formal management has historically resulted in data-limited fisheries being essentially unmanaged by central authorities, even where capacity is relatively high (Bentley and Stokes 2009). More recently, some more developed nations' fisheries management agencies have attempted to bridge the gap between formal management needs and data-limited fishery realities through implementation of tier systems in which data availability and quality, the types of assessments

that might be based on existing data, and levels of uncertainty in both data and assessments are used to rank a given fishery into a given tier (Dichmont et al. 2015). Higher-numbered tiers (i.e., data-limited fisheries) are associated with more conservative management as managers build in additional precautionary buffers to address the increased risk of overfishing associated with less refined assessments (Dichmont et al. 2015). Despite such efforts, globally, data-limited fisheries not only constitute a majority of global catch, they appear to be increasingly overfished. FAO data shows that current management is likely ineffective in data-limited contexts, particularly for smaller stocks, with ramifications for long-term sustainability, food security, and ecosystem state (Costello et al. 2012). Analysis that contrasts modeled stock status in data-rich fisheries with global catch trends suggests that data-limited fisheries are increasingly exploited and that current management may fail to mitigate against stock decline (Worm and Branch 2012). New model refinements show that this is most likely where the proportion of the catch that is reported and tracked varies from year to year (Rudd and Branch 2016), as may be the case when management is contested, in flux, or patchily enforced over time.

However, data-limited fisheries management is not impossible. Indeed, the "procedural paradigm" that underlies formal management – that is, iteratively testing a variety of management strategies and selecting the one that best meets management goals – is entirely suitable to data-limited fisheries in theory, although it has until recently been somewhat patchily applied (Bentley and Stokes 2009). Increasingly, assorted empirically verified harvest strategy components are available for data-limited fisheries, although those methods vary in both their effectiveness and associated levels of uncertainty (Kraak et al. 2010; Carruthers et al. 2014; Dowling et al. 2015). Yet, despite scholars' recognition of the need for a way to select appropriate management strategies even when data are limited (Bentley and Stokes 2009), full

information on the range of options and their likely feasibility and effectiveness have historically been largely unavailable to data-limited fishery stakeholders (MRAG Ltd. 1991; Dowling et al. 2015).

1.4 STAKEHOLDER ENGAGEMENT AND BUY-IN

Stakeholder engagement – the process of involving stakeholders in management processes and/or decision-making – can take various forms and serve various ends, including providing information, soliciting information, empowering marginalized voices, and enabling stakeholders to manage themselves (Reed 2008). Stakeholder engagement in governance in general, and in natural resource management in particular, has been widely accepted as both pragmatic and normative good practice, by scholars, agencies, and decision-makers (Lynam et al. 2007; Reed 2008; Garmendia et al. 2010). Fisheries scholars and agencies have long recognized stakeholders as key players in managing fisheries (Smith, Sainsbury, and Stevens 1999; Ahmed, Capistrano, and Hossain 1997). Fisheries stakeholders may include managers, industry representatives, conservation interests, and scientists (Smith, Sainsbury, and Stevens 1999); they may also include local communities and individual fishers (Allegretti, Vaske, and Cottrell 2012).

Pragmatically, fisheries stakeholder engagement is believed to improve the knowledge base on which management is predicated, allowing for better management decisions (Lane and Stephenson 1998; Kraak et al. 2010). Consistent with this pragmatic approach, in application, FishPath primarily treats stakeholders as knowledge repositories (Lynam et al. 2007), and seeks to leverage stakeholder expertise to fill in the knowledge gaps that hinder formal management of data-limited fisheries.

Beyond the substantive uses for stakeholders' expert knowledge, there is reason to believe that, as targets of management, some data-limited fisheries stakeholders – fishers, in particular – may be central to successful implementation of formal management (Aceves-Bueno et al. 2015). Monitoring methods, especially low-cost ones, often rely on fishers as implementation partners (for example, fishers must be willing to maintain comprehensive, accurate log books where log books underpin monitoring efforts). Furthermore, where capacity is severely lacking, enforcement of fishery rules may in practice be reduced to relying on fishers to choose to comply with existing rules in the absence of surveillance and enforcement. Indeed, fishers who are "bought in" to management may in fact make management self-enforcing both through their own decisions and through the norms they propagate through their networks. Together, these observations point to the potential importance of stakeholder buy-in to management of data-limited fisheries.

Here, I define stakeholder buy-in to formal fisheries management as a) stakeholders' beliefs that formal fisheries management is possible and b) that such management would be effective, as well as c) their support for a process designed to move the fishery towards formal management. This definition of buy-in includes efficacy beliefs (self-efficacy, or beliefs about how easy or hard it is for an actor to undertake an action, as well as response efficacy, or beliefs about whether or not the action will have the desired effect (i.e. "outcome expectations;" Bandura 1977), as well as simple support for management, in order to disaggregate the complex perceptions stakeholders may have about management of a resource. To the extent that stakeholders express support for formal management efforts and believe that formal management of their fishery is feasible and effective, we should expect that they will be more likely to support and comply with monitoring efforts and decision rules. Efficacy beliefs, in particular, have been

found to drive behavior change in the realms of health and climate change mitigation (Bandura 2004; Ortega-Egea, García-de-Frutos, and Antolín-López 2014).

Normatively, stakeholder engagement may let stakeholders know their voices are heard, resulting in reduced conflict, increased trust in decision-making, and improved buy-in to management (Lane and Stephenson 1998; Reed 2008; Wesselink et al. 2011). Another commonly cited normative benefit of stakeholder engagement is that broadened participation results in increased influence for the traditionally disenfranchised, as well as more equitable power sharing (Reed 2008; Wesselink et al. 2011). Critics of stakeholder engagement counter that providing equal access and influence to stakeholder groups with different levels of power and voice is deeply challenging, and may in fact backfire in unanticipated ways, including by eroding trust in decisions (Coglianese 2002; Lynam et al. 2007; Reed 2008; Wesselink et al. 2011). While this critique is salient overall, FishPath does not intrinsically seek to empower stakeholders, merely to pick their brains and convince them that management is feasible, effective, and worth complying with. In particular, FishPath neither engages stakeholders in setting goals or defining management problems (which usually happens at the national, rather than fishery-specific, level), nor seeks consensus solutions to management problems. In terms of rationales for stakeholder engagement (Wesselink et al. 2011), FishPath's aims are simply substantive (improving the substance of decisions) and instrumental (engaging those on whom implementation relies).

A final critique of stakeholder engagement, and specifically of how success is often measured, is that studies too often rely on stakeholders' self-reported perceptions rather than measuring actual outputs or outcomes, of engagement (Coglianese 2002). This study endeavors

to address this issue by including efficacy beliefs, which have been shown to predict behavior change, in the measures of stakeholder buy-in.

1.5 FISHERIES DECISION SUPPORT AND FISHPATH

1.5.1 Fisheries decision support tools

Fisheries management decision-making is complex and multi-faceted, limited by available knowledge, decision-makers' access to knowledge, and their ability to apply that knowledge to meet competing management goals (Alagappan and Kumaran 2013). As a result, previous scholars and practitioners have both noted the theoretical utility of computer-based systems to support management decision-making and made efforts to develop such tools.

Expert systems – computer-based tools that collate the knowledge of multiple human experts in the interests of making that knowledge readily available to non-experts (MRAG Ltd. 1991; Alagappan and Kumaran 2013) – have proliferated in fisheries since the 1990s (Alagappan and Kumaran 2013). However, a recent review reveals that existing expert systems designed to support fisheries management are either narrowly focused, for example on single pre-defined species or hyper-specific management issues (e.g., fish ladder design, invasive species control), or offer technical solutions that may not be appropriate where data and capacity are limited (Alagappan and Kumaran 2013). Early tools focused in part on creating a user-friendly interface that made the assessment stage of formal management more accessible to non-expert decision-makers. However, they also pre-supposed the existence of data-rich inputs and advised users to collect additional data in the face of severe data limitations (MRAG Ltd. 1991), rather than enabling users to work with currently available data. The developers of these early systems explicitly recognized that data limitations would challenge use of the tools they designed, and

explored the ramifications of mismatch between data availability and data needs for specific management objectives, but lacked the capacity to include this functionality in the tools they created (MRAG Ltd. 1991). In addition to the limitations discussed above, to my knowledge none of the existing decision-support approaches are designed with the additional goal of building stakeholder support for management.

1.5.2 FishPath

FishPath was initially developed in 2015, by a Science for Nature and People Partnership (SNAPP) working group (see Dowling et al. 2016 for details). The tool forms the center of The Nature Conservancy's global fisheries strategy. To date, The Nature Conservancy and FishPath experts have travelled to sites in Australia, the US, Canada, Spain, Peru, Mexico, Kenya, Jamaica, Indonesia, the Seychelles, and elsewhere to apply FishPath to local fisheries. A FishPath workshop is usually a three-or-so day affair, in which managers, fishers and other stakeholders join forces to work through the tool and determine a path towards formal management of the fishery in question. FishPath and fisheries management experts are present to provide in-person expert support, helping stakeholders interpret questions and understand output.

FishPath was developed in answer to calls for a way to identify and choose between management approaches in data-limited fisheries. FishPath has multiple aims: to mitigate management paralysis caused by managers restricting themselves to familiar approaches to management; to push management forward and deliver actionable information in data-limited contexts; and to involve stakeholders in management processes, make those processes transparent, and stimulate stakeholder buy-in. FishPath seeks to allow stakeholders in a data- and capacity-limited fishery to interactively assess their fishery via a user-friendly, web-based

interface, and identifies a short, ranked list of harvest strategy approaches and caveats as to their use, based on the input that stakeholders provide.

FishPath distills the current knowledge of best-practice management strategies for data-limited fisheries, the contexts in which given practices are most effective, and the data and capacity requirements of those practices into a series of closed-ended questions presented in a user-friendly computer-based interface (Dowling et al. 2016). Questions are designed to canvas stakeholder knowledge on: 1) fisheries data availability; 2) life histories of target species; 3) operational characteristics of the fishery; 4) socio-economic characteristics of the fishery; and 5) fisheries governance context (Dowling et al. 2016). The questionnaire is separated into three sections that reflect the components of an integrated harvest strategy (i.e., monitoring, assessment, and decision rules); the sections can be run individually or in sequence depending on the needs of users. For each section, the tool compares responses with established data-limited management options, in order to identify feasible and appropriate harvest strategy components and caveats to each strategy's use that are tailored to the specific fishery under consideration (Dowling et al. 2016). The ultimate goal of FishPath is to structure stakeholder engagement in order to source knowledge that can be used to move the fishery in question towards formal management.

FishPath output includes information on whether a given management option is considered appropriate to and feasible in the fishery (Figure 1-2, left margin of Panel A) along with a stoplight-coded system of caveats as to each option's use (Figure 1-2, left-center of Panel A). The top layer of output also identifies the responses that were most influential in either including or excluding options (Figure 1-2, bottom of Panel A). Beyond the top layer of output, a number of drop-down and/or click-through options enable users to further investigate the

management options and the criteria by which each one was recommended or rejected (Figure 1-2, Panels B and C). Deeper layers of information that are accessible within FishPath output include 1) explanatory text for each management option, with links to relevant literature (Figure 1-2, Panel B); and 2) the questionnaire item(s) and associated response(s) that led to that management option being recommended or rejected, with detailed information on the each of the caveats associated with the option and why it applies.

Note that FishPath is "not intended to replace, but rather help guide, hone, and augment, local knowledge or expert judgment" (Dowling et al. 2016, 80). The tool does not provide a single "solution" to the problem of managing the fishery in question, but it does limit the management choice set by identifying possible and appropriate harvest strategy components through a selection process that is transparent to users. The tool also allows users to fully engage with the complexity of their fishery and to target management more effectively. In particular, where stakeholders hold pre-existing knowledge of or preferences for certain management approaches, FishPath output allows them to ground truth and reconsider those preferences as necessary. For example, users may discover that the tool precludes use of a particular monitoring approach (e.g., satellite vessel tracking) as too costly, but know that local agencies in fact have the resources to institute that approach. The tool's output allows users to identify the questionnaire item and response that led to that approach being rejected, and users may choose to alter their response in order to see how making that change alters the choice set overall. Alternately, where certain data limitations are flagged in FishPath output as precluding use of a preferred management strategy (e.g., lack of data on ocean conditions at the time of catch precludes calculation of standardized catch-per-unit-effort), existing management or stakeholder

capacity may be redirected to gather that data in the future so that the once-rejected approach becomes feasible.

For a thorough overview of FishPath, see Dowling et al (2016). The overall approach of FishPath remains unchanged since this study was conducted, although the input and output interfaces and management options continue to evolve.

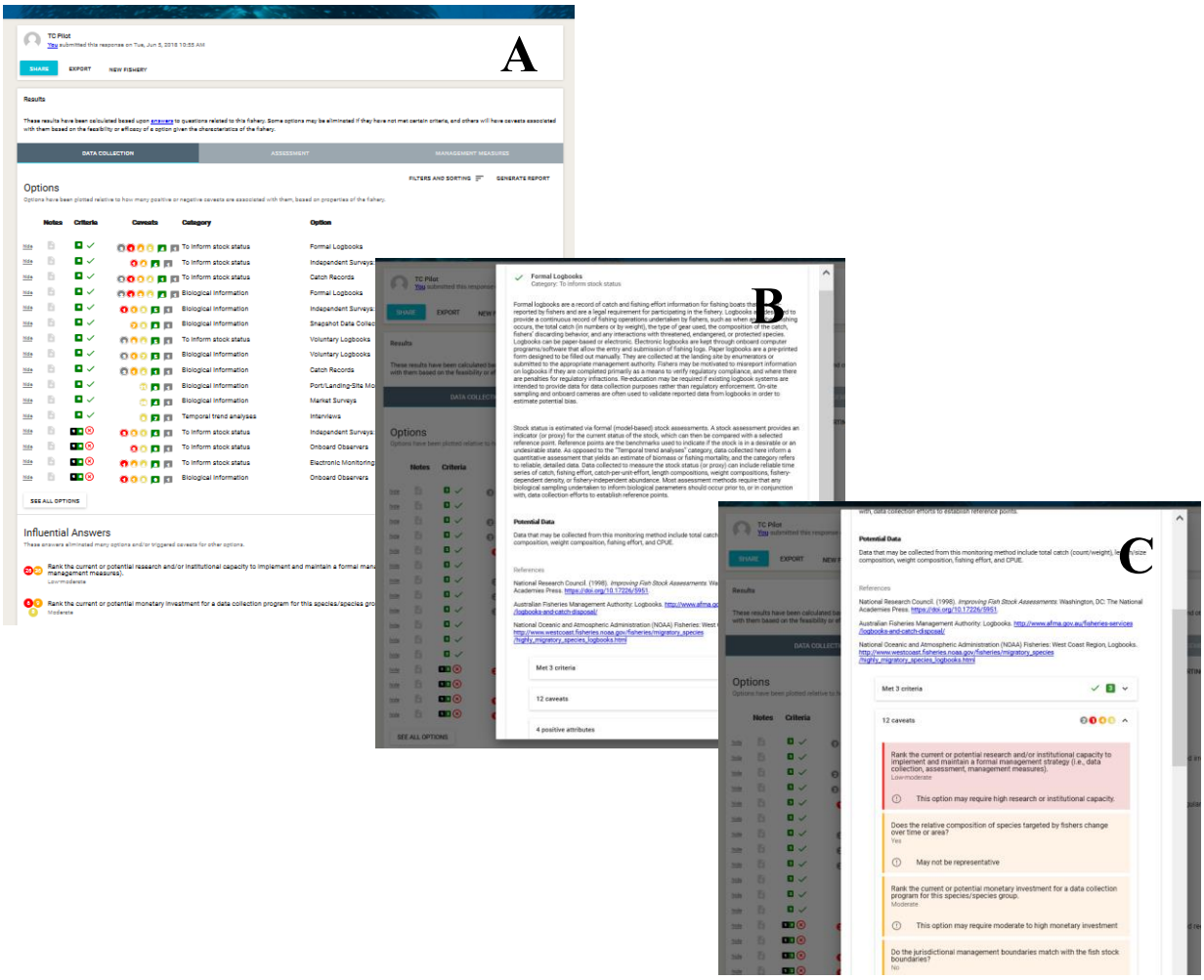

Figure 1-3. Example FishPath output with informational pop-ups. Monitoring output shown here; some options hidden for ease of presentation. Management options are listed with "stoplight" coded caveats, and flagged as feasible (green check) or infeasible (red circled X) (A). Clicking on an option yields a descriptive pop-up with references (B); from here; clicking on the caveat dropdown yields detailed information on why those caveats apply to the fishery in question (C).

As described above, a FishPath workshop allows stakeholders to apply FishPath to their fishery over approximately three days, with in-person support from international fisheries management and FishPath tool experts. Experts help stakeholders navigate and understand the tool and output. They facilitate engagement, answer stakeholder questions, explain technical concepts, and help stakeholders weigh the recommendations FishPath provides both against one another and in the context of stakeholders' nuanced real-world knowledge. Experts also take notes on how the tool can be improved and adapted. However, while there is no direct cost to local agencies, providing in-person expert support for FishPath use is expensive to the support team, and in some ways may limit application of the tool.

2. Research question and hypotheses

In sum, data-limited fisheries are common, but difficult to formally manage. Information and other costs are high. Stakeholder buy-in to fisheries management is particularly important to management success in data-limited contexts, and stakeholder participation in management is believed to improve management support and effectiveness. FishPath is an approach to data-limited fisheries management that seeks to both reduce the costs of management and increase stakeholder buy-in by allowing fishery stakeholders to cooperatively input fishery and social characteristics and receive output consisting of a vetted list of management options that are appropriate for their fishery. While FishPath gives data-limited stakeholders access to information that they are unlikely to have had previously, its use is somewhat limited by reliance on in-person expert support. Thus, this paper seeks to answer the question: How does engagement of stakeholders via FishPath affect their buy-in to formal management of data-limited fisheries, both in the presence and absence of in-person expert support? I hypothesize

that FishPath use alone increases stakeholder buy-in to formal management of a data-limited fishery, and that expert support further increases buy-in.

H1a. FishPath increases stakeholder buy-in to formal management of a data-limited fishery.

H1b. Expert support further increases stakeholder buy-in to formal management of a data-limited fishery beyond unsupported FishPath use.

3. Materials and Methods

3.1 OVERVIEW

In order to test the influence of FishPath use on fisheries stakeholders' buy-in to formal management, both with and without expert support, the research team implemented a field experiment at a specially designed FishPath workshop held in Darwin, NT in November 2017. The experimental design allows causal inferences about the effects of FishPath use, both with and without expert support, on stakeholder buy-in, although it limits generalizability.

The experiment included three stages. In Stage 1, we first provided stakeholders (n=42, 32 of whom completed all experimental stages) with a brief introduction to formal fisheries management, in order to ensure a shared baseline level of knowledge. We then introduced the group to a hypothetical data-limited fishery based on real-world data-and capacity limitations. The hypothetical fishery was reverse-engineered from FishPath, thus associated with a pre-identified set of most feasible and appropriate monitoring, assessment, and decision rule options: the management shortlist. The management shortlist was also presented to stakeholders in Stage 1. Participants did not interact with FishPath in Stage 1. In Stage 2, participants collectively worked through FishPath, inputting the hypothetical fishery information in response to the FishPath questionnaire; the tool then presented output that identified the management options

initially seen in Stage 1 as the most feasible of all monitoring, assessment and decision rule options available. In Stage 3, participants were randomly assigned to one of two groups after a common introduction to FishPath's output. In order to control for the effects of exposure to FishPath over time, Group A (control) was left to explore the output without additional support, while Group B (treatment) explored output with support from a FishPath expert. After each stage, participants were asked to rate: 1) their support for an ongoing process to select management options from the shortlist; 2) how easy or hard they expected management of the fishery to be; and 3) how effective they expected management of the fishery to be. At the end of Stage 1 participants were also asked to complete a demographic questionnaire. The three stages lasted 55, 80, and 55 minutes respectively, including survey administration; participants were given a 15-minute break in the middle of Stage 2. Participants were provided a catered tea during the break, and lunch after completion of Stage 3. Participants were debriefed one-on-one or in small groups after the conclusion of the experiment.

Prior to the Darwin workshop, in order to refine timings and experimental materials, the full experimental design was pilot tested with a group of graduate students in marine and environmental affairs and fisheries at the University of Washington. Experimental design and hypothesized effects of treatments are summarized in Table 1-1.

	Stage 1	**Stage 2**		**Stage 3**	
				A (Control)	**B (Treatment)**
Treatment	Fishery information and management shortlist	Stage 1 plus FishPath tool use	Introduction to FishPath output	Stage 2 plus unguided time with output	Stage 2 plus expert supported time with output
Test	Pre-test	Post-test 1		Post-test 2	
Hypothesized effect on buy-in	0	+		+	++

Table 1-1. Summary of experimental design and hypothesized treatment effects.

3.2 RECRUITMENT

A diverse set of fisheries stakeholders participated in the workshop. Participants were recruited through outreach to Australia's National Seafood Industry Leadership Program alumni, a story/announcement in the Northern Territory Seafood Council newsletter, a release to Northern Territory media outlets, and in some cases through targeted, one-on-one outreach led by workshop organizers. Local expertise was invaluable in identifying and recruiting participants who were expected to vary in their initial attitudes towards formal management.

The Darwin workshop was organized by the Northern Territory Department of Primary Industry and Fisheries and the Northern Territory Seafood Council. In order to ensure broad participation, the workshop was scheduled to take place in conjunction with the Northern Territory Seafood Council's Annual General Meeting. To further encourage participation by a broad range of stakeholders, costs of some participants' workshop attendance were covered by the Fisheries Research and Development Corporation. The Northern Territory is home to a number of data-limited fisheries (primarily due to management capacity limitations), and Northern Territory residents are anecdotally perceived to be resistant to government intervention, including intervention in fisheries.

3.3 HYPOTHETICAL FISHERY

The research team provided all participants with the comprehensive information necessary to use FishPath for the hypothetical fishery via a 40-minute narrative presentation, followed by a question and answer session and supplemented with a 4-page information sheet (see Appendix 1-1). The presentation generally followed the order in which items would be encountered when using FishPath, although some pieces of information were combined or taken

out of order for the sake of presenting a coherent narrative. The information sheet distilled the critical points from the presentation. For ease of reference, the information sheet used a header-bullet format that was aligned with the general structure of the FishPath input questionnaire. A hypothetical case-study fishery in which no participant was a stakeholder was used both in order to remove the influence of vested interests on support for management (thereby allowing for cleaner initial results on the effect of the tool and different levels of support for tool use), and so that stakeholders from multiple fisheries and fisheries organizations could be included in the sample.

To make the hypothetical fishery challenging to manage, the design intentionally manipulated fishery operational and species characteristics, management capacity and jurisdiction, fisher attitudes towards and cooperation with management, and availability of data on species characteristics and fisheries operations.

The fictional target species, the "Timor choate," was set in the Timor Sea north and west of Darwin, with a range that included both Australian and Timor-Leste waters. We focused workshop application of FishPath on the commercial Timor choate fishery, although the fishery as a whole was designed to be multi-sector (both commercial and recreational, with the sectors fishing with different gears, and at different depths and distances from shore) and multi-species (also catching a closely related species with an overlapping range, with seasonal variation in proportion of species caught). The commercial choate fishery was designed to be both small (55 vessels) and low in commercial value. The fictional commercial vessels fished within a limited portion of the choate's spatial range, and tended to aggregate at sites that varied over time within that area. The commercial fishery was seasonal (limited to non-monsoon conditions); included bycatch issues, in particular bycatch of endangered seabirds; included latent effort in the form of

unused permits; was subject to changing operations (hook size and set depth) over time; and showed recent signs of effort creep (catching more weight of fish in the same amount of time). Supply chains were short: catch was primarily sold fresh for local consumption, although a small percentage was flash frozen and exported to markets in Asia.

Management authority and legal mandate was situated with the state: the state-level management agency had jurisdiction over the whole of the Australian commercial fleet, ports, landing sites, and local markets, but did not have jurisdiction over export markets or non-Australian fleets or waters. While the management agency valued data collection, their funding and capacity for regular data collection was limited and their resources stretched across an array of fisheries. Existing commercial choate fishery management was ad hoc rather than based on an integrated MSE-based harvest strategy, and administered through fixed quotas and vessel permits. Choate fishers perceived existing management as ineffective, resulting in low levels of cooperation between fishers and managers; fishers were also concerned that current levels of take might be unsustainable.

In order to simulate a real-world data-limited fishery, there were gaps in existing knowledge of Timor choate. Known species characteristics included spawning grounds, juvenile range, poor survivorship after catch-and-release, inability of the species to be live sexed, determinant growth (i.e., known maximum length at maturity), length as a function of age, and the status of the species as a periodic strategist (i.e., slow growing with relatively steady populations and variable recruitment when unfished). Imperfect information was available on overall abundance, length at first capture, the relationships between length and weight and length and fecundity, and variations in recruitment (i.e., the number of young that survive long enough

to enter the fishery). Unknowns included spawning season, stock recruitment steepness (i.e., relationships between stock levels and recruitment), growth rate, and carrying capacity.

We also specified which fishery data were currently available and which were not. Hypothetical fishery managers had access to some time-series data, including twelve years of biennial catch data on total catch, total effort, and length and species composition; the last six of those years also included mean length and length percentile data, allowing managers to estimate gear selectivity (i.e., which sizes of fish the gear in use in a fishery catches). We also specified that, given data collection methodologies and recent changes to the fishery, all available data were uncertain, but that preliminary attempts to assess the fishery indicated that overfishing was likely. The hypothetical managers had no access to data on total (i.e., fishing plus natural) mortality, maximum sustainable yield, equilibrium exploitation rate, the weight or sex composition of the catch, the effects of fishing on population density, fish abundance in the absence of fishing, catch locations, or oceanographic conditions or phase of the moon at the time of catch.

3.3 MANAGEMENT SHORTLIST

After introduction of the hypothetical fishery, we introduced participants to a shortlist of monitoring approaches, assessment techniques, and decision rules (see Appendix 1-2). We selected the strategies for inclusion in the shortlist by drawing, in each of the three categories, from those options that FishPath identified as most feasible and appropriate given the hypothetical fishery information. The final management shortlist included the options from each category that FishPath did not specifically recommend against (flag as infeasible) as well as those for which FishPath provided no red caveats (i.e., strong warnings against).

3.4 EXPERT SUPPORT

Expert support was initially designed to provide specific self- and response-efficacy information for a range of options covered by FishPath output: at least one "recommended" option (a strategy without significant caveats), one "middling" option (a strategy with some caveats, but no red "deal-breaker" caveats), and one "not recommended" option (an option that FishPath specifically recommended against or for which red caveats were provided). However, after encountering significant technical difficulties at the end of Stage 2, and simultaneously observing participant fatigue, the research team made an on-the-fly decision to allow expert support (in the treatment group only) to be guided by participant questions and comments rather than the pre-written script. In this way, implementation of the treatment – while diverging from the original intent – was a more accurate mirror of the way that FishPath expert support is applied in real-world fisheries than would otherwise have been the case.

Group A (control) directed the facilitator through the exploration of FishPath output according to the group's collective preferences (i.e., the group indicated to facilitators which management options and/or caveats they would like to investigate in more depth; the facilitator simply followed the group's directions). However, the Group A facilitator did not provide any additional information or answer any questions. While Group A had access to all the detailed information included in FishPath, they did not have assistance in directing their inquiries or interpreting the output. In essence, participants in Group A explored FishPath use independently, without expert support. Group B (treatment) similarly directed facilitators through the exploration of FishPath output, but also engaged with a FishPath and fisheries expert facilitator in an iterative conversation about management options, associated caveats, and why those caveats arose in regards to the hypothetical fishery. That is, participants in Group B received

expert support in interpreting FishPath output and in understanding how that output had resulted from the responses participants had provided, but were self-directed in their exploration of output.

3.5 MEASURES

At the end of each stage of the experiment, we administered a short survey asking participants to rate their buy-in to formal management of the hypothetical fishery. Participants were assigned anonymous identifiers to allow for frank responses together with tracking of individual change in attitudes over time, with FishPath exposure, and with the experimental treatment. Items asked participants to report how easy or hard they expected formal management of the hypothetical fishery to be (measured on a 7-point Likert scale that ran from 3 ("extremely easy") to -3 ("extremely hard"), centered at 0 ("neither easy nor hard")), how effective they expected formal management of the hypothetical fishery to be in meeting pre-defined management objectives (measured on a 5-point Likert scale that ran from 2 ("successfully attain management objectives") to -2 ("failure to attain management objectives"), centered at 0 ("no effect")), and their support for an ongoing process to formally manage the hypothetical fishery (measured on a 5-point Likert scale that ran from 2 ("strongly support") to -2 ("strongly oppose"), centered at 0 ("neither support nor oppose")). Respondents who selected "slightly oppose" or "strongly oppose" were asked to respond to additional items at the end of Stage 2 and Stage 3, at the request of tool developers. The Stage 3 survey also included an open-ended item soliciting any feedback on FishPath or the workshop that the respondents cared to provide. See Appendix 1-3 for the survey instrument.

As originally designed, the expert support treatment was intended to influence participants' efficacy beliefs, and questions about the ease and effectiveness of management were designed as a treatment check. However, as noted above, the treatment was not implemented as initially designed. Here I have included efficacy measures as a component of stakeholder buy-in, in recognition of the fact that stakeholders might, for example, support formal fisheries management as an ideal, but also think it is impossible to do well in their fishery. In this example, one would expect stakeholder buy-in to suffer, regardless of self-reported support. Self-efficacy beliefs influence whether and how people faced with risk change their behavior, and interventions that influence self-efficacy beliefs have been shown to drive behavior change in the realm of health (Bandura 2004); both perceived self- and response efficacy have been found to influence individual behavior in the realm of climate change (Ortega-Egea, García-de-Frutos, and Antolín-López 2014; Doherty 2014). Including efficacy beliefs in a broader definition of stakeholder buy-in thus reflects findings from other fields, and extends this study beyond stakeholders' self-reported support for formal management. Self-reported support for management may be problematic in this study in particular, given the use of a hypothetical fishery and the possibility of social desirability bias.

We collected demographic data after the conclusion of Stage 1, in association with the first survey. Respondents were asked to identify their primary or current, and secondary or past, sector of involvement [industrial (industrial-scale commercial)/commercial (medium- to large-scale commercial)/artisanal (small-scale commercial)/customary or traditional/recreational/other (*please specify*)]; their roles in those sectors [resource scientist/resource manager/vessel owner/ vessel owner-operator/vessel captain/traditional owner/fisher or recreational angler/processor/ other (*please specify*)], their years of experience in those sectors, whether they had previously

been involved with a fishery that was formally managed through an integrated harvest strategy [yes/no/don't know], their primary jurisdiction, and their previous exposure to FishPath [never heard of FishPath before today/heard of FishPath only in the context of today's workshop/knew of FishPath outside of the context of today's workshop, but had not used it/had used FishPath previously/other (*please specify*)]. The demographic questionnaire is reproduced in Appendix 1-4.

3.6 ANALYSIS

Statistical analysis incuded two-tailed Welch's t-tests to test for different levels of perceived ease, effectiveness, and support for management between the treatment and control groups, and one-tailed paired t-tests to test for the effect of 1) initial FishPath use and 2) extended exposure to FishPath, both a) with and b) without expert support, on perceived ease, effectiveness, and support for management. Two-tailed Welch's t-tests are appropriately used to check for differences between groups as they compare different individuals and do not specify the direction of the difference. Paired t-tests are appropriate for re-tests of the same individuals, and one-tailed t-tests are appropriate to check for treatment effects as my hypotheses specify that FishPath use increases stakeholder buy-in. I used F-tests to check for differences between sample subgroups, tests of association to check for associations between dimensions used to delineate subgroups, and Fisher's exact tests to test the demographic balance of the treatment and control groups. Fisher's exact test is appropriate as sample sizes are very small. Fisher's null hypothesis is that samples are independent of condition; thus, a failure to reject the null is a failure to determine imbalance between control and treatment groups. Data were collated and cleaned in Excel and analyzed in R v3.4.3 (base version).

4. Results

4.1 DEMOGRAPHICS

Forty-one participants attended the Darwin workshop. Of those, 32 completed all three experimental stages and submitted completed surveys. There were 39 full responses in Stage 1, due to one late arrival and one unreadable response, and 38 full responses in Stage 2, due to three early departures (including the late arrival). Based on both the research team's observations and respondent feedback to open-ended items soliciting feedback on the workshop as a whole, I attribute the large jump in attrition between Stage 2 and 3 to the technical difficulties already referenced, which in turn briefly challenged our ability to show FishPath output and resulted in what one respondent termed "lost momentum." Thirty-six participants submitted readable demographic responses in total; 29 of the 32 participants who completed all three experimental stages also submitted readable demographic questionnaires. Not all respondents answered all demographic items.

Below, I initiallly report results for the 32 full responses. Results are then verified against a dataset that includes partial responses (respondents who participated in Stage 1 and Stage 2, but not Stage 3, or those who participated in Stage 2 and 3 but not 1). Demographic results are reported for the 32 full responses, with NA values assigned where a respondent either skipped an item or did not provide demographic information at all.

Participants represented Commonwealth-wide fishery organizations (n=2) as well as fisheries and fisheries organizations across multiple jurisdictions (n=2) and assorted Australian states, including the Northern Territory (n=14), Queensland (n=1), South Australia (n=1), and Western Australia (n=1). Eight participants who submitted demographic information did not submit jurisdictional information. Stakeholders identified their current or primary fisheries

sectors as industrial (n=1), commercial (n=6), artisanal (n=9), recreational (n=6), customary/ traditional (n=3), and other (n=4), the last including research organizations and non-fishing marine stakeholders. Seven respondents indicated involvement with additional sectors, either currently or in the past; secondary sectors mirrored those listed above. Participants' self-reported years of experience in their primary or current sector varied from 1 to 50 years, with a median of 13 and mean of 17.3 years of experience.

Respondents held various positions in their primary sector, including resource scientists (n=2), resource managers (n=8), vessel owner/operators (n=7), recreational fishers/anglers (n=3), and others (n=9) (administrators, industry and policy advisors, licensees, compliance officers, and marketing/promotion). Fifty-two percent of participants who provided a completed demographic questionnaire reported previous experience with formal fisheries management (including one item non-response as a non-report). Six participants had no knowledge of FishPath prior to the workshop, 14 had heard of FishPath only in the context of the workshop, and six had previously heard of FishPath outside of the workshop context, but had not used it. No participants reported previous experience using FishPath.

4.2 CONTROL VS. TREATMENT GROUP BALANCE

Sixteen participants were randomly assigned to each of the control group and treatment groups. Participants were blind to the treatment and their group assignment. Participants drew a strip of numbered stickers from a hat before beginning the experiment; we assigned participants to a group at the beginning of Stage 3 based on a numeric mid-point cut-off. Each participant attached a numbered sticker to each survey as an anonymous identifier.

The groups appear to have been generally well matched on demographic characteristics, assuming non-responses from the control group do not mask major differences (see Table 1-2). The control group reported their sector variously as commercial (n=5), artisanal (n=4), customary/traditional (n=1), recreational (n=3) and other (n=1), with two non-responses. The treatment group included industrial (n=1), commercial (n=1), artisanal (n=5), customary/traditional (n=2), recreational (n=4) and other (n=3) sector representatives. The control group included resource managers (n=3), vessel owner-operators (n=3), fishers/recreational anglers (n=1) and others (n=6), with three non-responses. The treatment group included resource scientists (n=2), resource managers (n=5), vessel owner-operators (n=4), fishers/recreational anglers (n=2), and others (n=3). Control group participants identified their primary jurisdiction as Commonwealth (n=1), multiple (n=1), and Northern Territory (n=6), with eight non-responses; treatment group participants identified their primary jurisdiction as Commonwealth (n=1), multiple (n=1), Northern Territory (n=9), South Australia (n=1) and Western Australia (n=1), with three non-responses. Six members of the control group and nine members of the treatment group indicated previous experience with a formally managed fishery (four and zero non-responses, respectively). Four members of the control group had never heard of FishPath prior to the workshop, six had heard of FishPath only in the context of the workshop, and two had heard of FishPath in other contexts, with four non-responses. In the treatment group, two participants had never heard of FishPath, eight had heard of the tool only in the context of the workshop, and four had heard of FishPath in another context, with two non-responses. Fisher's exact tests show no significant differences between the control and treatment group on any of the above demographic measures (Table 1-2). Years of experience did not differ significantly between the control and treatment group ($p=0.59$). Average years in primary sector

was 17.27 years in the control group (ranging from 2 to 50 years) and 16.13 years (ranging from 1 to 50 years) in the treatment group.

		Control	Treatment	p-value
Sector	Industrial	0.00	0.06	0.66
	Commercial	0.31	0.06	
	Artisanal	0.25	0.31	
	Customary/traditional	0.06	0.13	
	Recreational	0.19	0.25	
	Other	0.06	0.19	
	N/A	0.13	0.00	
Primary position	Resource scientist	0.00	0.13	0.57
	Resource manager	0.19	0.31	
	Vessel owner	0.00	0.00	
	Vessel owner-operator	0.19	0.25	
	Vessel captain	0.00	0.00	
	Traditional owner	0.00	0.00	
	Fisher/recreational angler	0.06	0.13	
	Processor	0.00	0.00	
	Other	0.38	0.19	
	N/A	0.19	0.00	
Jurisdiction	Commonwealth	0.06	0.06	1
	Multiple	0.06	0.06	
	NT	0.38	0.56	
	SA	0.00	0.06	
	WA	0.00	0.06	
	N/A	0.50	0.19	
Formal management	Yes	0.38	0.56	1
	No	0.38	0.44	
	N/A	0.25	0.00	
FP experience	Never heard of before today	0.25	0.13	0.66
	Heard of in the context of today only	0.38	0.50	
	Heard of in another context	0.13	0.25	
	Used previously	0.00	0.00	
	N/A	0.25	0.125	

Table 1-2. Demographic balance between control (n=16) and treatment group (n=16). Fisher's exact test used to assess statistical differences in category counts between groups.

No significant differences in perceived ease, effectiveness, and support for management were evident between the treatment and control groups in either Stage 1 or Stage 2 of the experiment (results of Welch's t-tests, control vs. treatment, respectively: means in Stage 1, ease -0.56 vs. -0.63, p=0.86; effectiveness 0.93 vs. 0.56, p=0.32; support 1.00 vs. 1.25, p=0.49; means in Stage 2, ease 0.69 vs. 0.38, p=0.45; effectiveness 1.00 vs. 1.06, p=0.83; support 1.19 vs. 1.31, p=0.68) (Table 1-3). These results are reported based on the sample limited to those participants who responded to surveys for all three stages, but are robust to the inclusion of partial responses.

		Control	Treatment	t	p-value
Stage 1	Ease	-0.56	-0.63	0.18	0.86
	Effectiveness	0.93	0.56	1.10	0.32
	Support	1.00	1.25	-0.70	0.49
Stage 2	Ease	0.69	0.38	0.77	0.45
	Effectiveness	1.00	1.25	-0.21	0.83
	Support	1.19	1.31	-0.41	0.68

Table 1-3. Comparison of mean stakeholder buy-in (two-tailed Welch's t-tests) across measures by control and treatment group. All scales centered at 0; ease and support measured on a 5-point scale running from -2 to 2; effectiveness measured on a 7-point scale running from -3 to 3. Results reported only for complete responses (n=16 each, control and treatment).

4.3 EFFECTS OF INITIAL FISHPATH USE

Initial use of FishPath significantly increased perceived ease of formal management of the hypothetical fishery across the entire sample (one-tailed paired t-test result t=5.04, p<.0001). Between the end of Stage 1 and the end of Stage 2, mean perceived ease of management increased from a mean of -0.59 to 0.53, or from between "somewhat hard" and "neither easy nor hard" to between "neither easy nor hard" and "somewhat easy." This result is robust to the inclusion of Stage 1/2 partial responses (five participants who responded to surveys in both Stage 1 and Stage 2, but not in Stage 3).

Initial FishPath use significantly increased perceived effectiveness of formal management of the hypothetical fishery across the entire sample (one-tailed paired t-test result t=1.96, p=.02). Between the end of Stage 1 and the end of Stage 2, mean perceived effectiveness increased from a mean of 0.75 to a mean of 1.03, or from between "no effect" and "minor success" to "minor success." This result is robust to the inclusion of Stage 1/2 partial responses.

Initial FishPath use did not significantly increase participant support for a process to move the hypothetical fishery towards formal management (one-tailed paired t-test result t=0.81, p=0.21). Mean support at the end of Stage 1 was 1.13, or just over "slightly support;" mean support at the end of Stage 2 was 1.25, between "slightly support" and "strongly support" but not significantly higher than at the end of Stage 1. This result is robust to the inclusion of Stage 1/2 partial responses. The above results are summarized in Table 1-4.

	Stage 1 (n=32)	Stage 2 (n=32)	Average change	t	p-value
Ease	-0.59	0.53	1.12	5.04	0.00
Effectiveness	0.75	1.03	0.28	1.96	0.03
Support	1.13	1.25	0.12	0.81	0.21

Table 1-4. Comparison of mean stakeholder buy-in (one-tailed paired t-tests) at the end of Stage 1 (prior to exposure to FishPath) and at the end of Stage 2 (after initial FishPath exposure). All scales centered at 0; ease and support measured on a 5-point scale running from -2 to 2; effectiveness measured on a 7-point scale running from -3 to 3. Results reported only for complete responses.

4.4 EFFECT OF CONTINUED FISHPATH USE, WITH AND WITHOUT EXPERT SUPPORT

In the control group (no expert support), continued use of FishPath did not result in any change in perceived ease of formal management of the hypothetical fishery (paired t-test result t=0.00, p=.50). Mean perceived ease of management in the control group was 0.69 or between

"neither easy nor hard" and "somewhat easy" at both the end of Stage 2 and the end of Stage 3. In contrast, in the treatment group, continued, expert-supported use of FishPath did result in a significant increase in perceived ease of formal management (paired t-test result $t=2.24$, $p<.05$). Mean perceived ease of management in the treatment group was 0.38 at the end of Stage 2 and 0.89 at the end of Stage 3, increasing from between "neither easy nor hard" to close to "somewhat easy." These results are both robust to inclusion of the Stage 2/3 partial response (one participant who did not respond to the Stage 1 survey but did respond in Stages 2 and 3).

In the control group, continued use of FishPath resulted in a significant increase in perceived effectiveness of formal management in meeting management objective (paired t-test result $t=1.86$, $p<.05$). Mean perceived effectiveness in the control group was 0.94 or just below "minor success in meeting management objectives" at the end of Stage 2, and 1.19 or slightly above "minor success in meeting management objectives" at the end of Stage 3. The treatment group showed no significant difference in perceived effectiveness of formal management between the end of Stage 2 and the end of their expert-supported Stage 3 (paired t-test result $t=1$, $p=.17$). Mean perceived effectiveness in the treatment group was 1.06, just above "minor success in meeting management objectives," at the end of Stage 2 and 1.13 at the end of Stage 3. These results are generally robust to the inclusion of the Stage 2/3 partial response, although the increase in perceived effectiveness in the treatment group does gain marginal significance ($p=.08$) when the Stage 2/3 partial response is included.

Additional use of FishPath did not result in a significant change in support for a process to move the hypothetical fishery towards formal management, regardless of the presence or absence of expert support (paired t-test results control $t=1$, $p=.17$, treatment $t=0.37$, $p=.34$). In the control group, mean support was 1.19 or just above "slightly support" at the end of Stage 2 and

1.32, or between “slightly support” and “strongly support” at the end of Phase 3; in the treatment group, mean support was 1.31 or between “slightly” and “strongly support” at the end of Phase 2 and very similar at 1.38 at the end of Stage 3. These results are robust to the inclusion of the Stage 2/3 partial response.

Given the small effect of expert support in Stage 3, I also tested whether further exposure to FishPath affected perceived ease, effectiveness or support for management across the pooled Stage 3 sample (i.e., control and treatment groups combined). With a pooled Stage 3 sample, I find that extended exposure to FishPath caused a significant increase in perceived ease of management (t=1.76, p=.04) from 0.53 to 0.78; significantly increased perceived effectiveness of management (t= 2.10, p<.05) from 1.03 to 1.16, and had no effect on support for management (t=-.90, p=0.19, Stage 2 mean 1.25, Stage 3 mean 1.34). Including the partial response does not substantively change any of these findings. The above results are summarized in Table 1-5.

	Control (n=16)				Treatment (n=16)				Pooled (n=32)			
	S 2	**S 3**	**t**	**p**	**S 2**	**S 3**	**t**	**p**	**S 2**	**S 3**	**t**	**p**
Ease	0.69	0.69	0.00	0.50	0.38	0.89	2.24	0.02	0.53	0.78	1.76	0.04
Effective-ness	0.94	1.19	1.86	0.04	1.06	1.13	1.00	0.17	1.03	1.16	2.10	0.02
Support	1.19	1.32	1.00	0.17	1.31	1.38	0.37	0.34	1.25	1.34	0.90	0.19

Table 1-5. Comparison of mean stakeholder buy-in (one-tailed paired t-tests) at the end of Stage 2 (after initial exposure to FishPath) and at the end of Stage 3 (after additional use of FishPath), by Stage 3 control (no expert support) and treatment (expert support) groups and with a pooled sample. All scales centered at 0; ease and support measured on a 5-point scale running from -2 to 2; effectiveness measured on a 7-point scale running from -3 to 3. Results reported only for complete responses.

Figure 1-3 depicts all mean ease, effectiveness and support across all experimental stages, with Stage 3 results included both pooled and separated out by treatment and control groups.

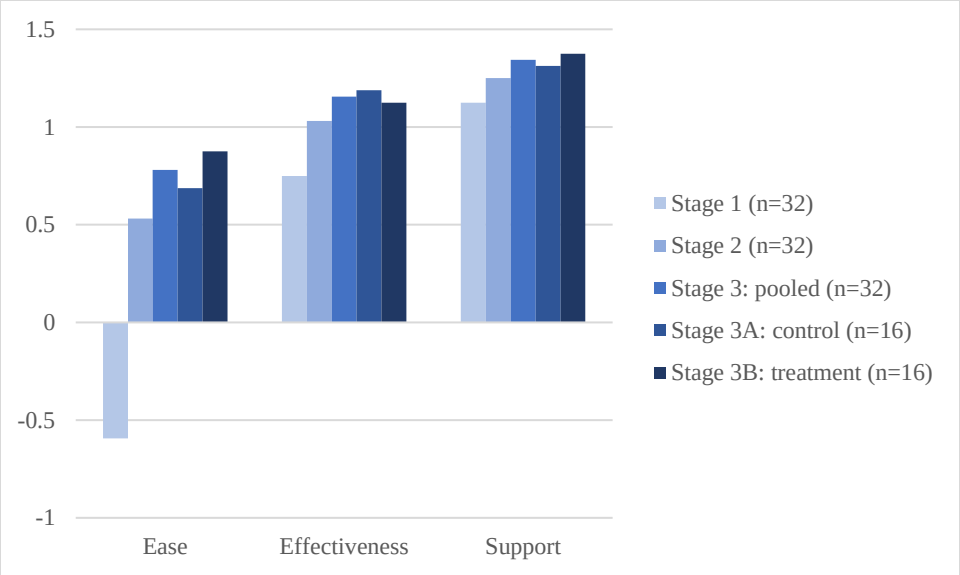

Figure 1-3. Mean perceived ease, effectiveness, and support for formal fisheries management across experimental stages. Error bars not shown as means represent re-tests of the same individuals (Belia et al 2005).

4.5 SUBGROUP EFFECTS

To test for subgroup effects, I first grouped primary sector into manager (resource manager or resource scientist; n=10), user (vessel owner-operator or recreational fisher/angler; n=10), or other (other or NA; n=12), excluding partial responses. No significant differences were found between stakeholder subgroups for perceived ease, perceived effectiveness or support for management.

It is also possible that previous experience with formal management influences the effects of FishPath use. Formal management experience was uncorrelated with stakeholder type (p=.65), so I tested this possibility separately. I found no significant difference in perceptions of ease or effectiveness of management between stakeholders who reported previous experience with formal management and those who reported no such experience (n=15 and n=13 respectively) in any stage of the experiment. I did detect a marginally significant difference in support for a

process designed to move the hypothetical fishery towards formal management after Stage 2 ($t=1.89$, $p=.07$), with those without previous formal management experience more supportive. However, this result was not apparent in Stage 1 and disappeared in Stage 3.

5. Discussion

FishPath is an approach to data-limited fisheries management that seeks to both reduce barriers to formal management and increase stakeholder buy-in. FishPath solicits cooperative input on fishery and social characteristics from fishery stakeholders, then provides them with a vetted list of management options appropriate for their fishery. While FishPath gives data-limited stakeholders access to information which they are unlikely to have had previously, its application to date has relied on in-person expert support. Combined with previous work on stakeholder participation in natural resource management (Lynam et al 2007; Reed 2008), this raises two questions: Does FishPath increase stakeholder buy-in? Does expert support make a difference to stakeholder buy-in?

FishPath does increase stakeholder buy-in to formal management of a data-limited fishery. Stakeholders' perceptions of the ease and effectiveness of formal management increased significantly after initial FishPath use, and again after additional time with the tool (when groups are pooled). Additionally, although there was no statistically significant increase in support for formal management, FishPath use was associated with increases in perceptions of ease and effectiveness, as well as increased support, across all stages of the study. The trends were – with only one exception, where no change was evident – uniformly consistent with my primary hypothesis.

Findings on the effect of providing expert support were mixed. Expert support increased the perceived ease of management but had no statistically significant effect on the perceived effectiveness of management (which did, however, increase significantly in the control group). These findings do not support any firm conclusions about the influence of expert support on stakeholder buy-in writ large.

It is interesting that FishPath use has no significant effect on self-reports of support for formal management. I attribute this to a combination of ceiling effects and small sample size. As was the case for both perceived ease and perceived efficacy, support for formal management increased across each stage of the experiment; however, support was initially relatively high (mean 1.13, above "slightly support," out of a possible maximum of two, "strongly support"). While recruitment efforts were targeted to include participants judged likely to be initially suspicious of formal management of data-limited fisheries, the choice to situate the experiment in an Australian context may have limited the inclusion of participants who differed on this dimension. Australia's fishery management structure has emphasized formal management and stakeholder participation since the 1990s (Smith, Sainsbury, and Stevens 1999), so that even participants who had not been involved in a formally managed fishery were likely to have encountered social norms in favor of formal management more generally. Furthermore, the decision to use a hypothetical fishery meant that participants had no real stake in management, which may have resulted in increased influence of social desirability bias on participant responses. A hypothetical fishery was used to enable as a relatively clean, proof-of-concept test, but this approach is subject to some limitations (discussed in more depth below).

Nonetheless, the increases in perceived ease and effectiveness of management found here are encouraging for data-limited management success, especially given the breadth of fisheries

stakeholders included in the experiment. Formal management of the data-limited fishery was perceived as much easier by both fishers and managers after working through FishPath tool. Expert support in navigating FishPath output further increased the perceived ease of management among participants. Extrapolating from related studies in health and climate change (Bandura 2004; Ortega-Egea, García-de-Frutos, and Antolín-López 2014; Doherty 2014), believing that a management approach is possible in a given context (self-efficacy) is likely to predict managers' intentions to use the approach and may predict fishers' intentions to comply with management. Similarly, after FishPath use, participants perceived formal management of the data-limited fishery as more effective. Again, perceived effectiveness (response efficacy) has been found to predict behavioral intentions (Ortega-Egea, García-de-Frutos, and Antolín-López 2014; Doherty 2014) and support for policy (Bostrom, Hayes, and Crosman 2019) in other environmental decision-making contexts. From this previous work, I infer that managers and fishers who believe that formal management will be effective are more likely to, respectively, implement and comply with that management.

5.1 LIMITATIONS AND FUTURE DIRECTIONS

This study is subject to a few limitations. Firstly, for logistical reasons and in order to present a relatively clean, proof-of-concept test, the study relies on a hypothetical fishery. This decision meant that participants had no real stake or investment in the management of the fishery studied, which may have resulted in their being more influenced by social desirability bias than they might have been had the fishery been one in which they were personally involved. As noted above, this could be especially true for the item measuring support, given the Australian context. Similarly, one might expect to see resistance to formal management most strongly among the

targets of regulation (fishers), who might expect that management would result in reductions of catch when compared to the status quo. The fact that there were no sub-group effects when testing a hypothetical fishery provides little assurance that no such effects would exist in a real-world application, as sample sizes here were very small. Finally, the hypothetical fishery and the modified workshop context in which it was explored meant that participants were insulated from the costs and benefits of the management process. During debriefs and in written feedback, many respondents indicated that they experienced FishPath as a useful tool, and expressed interest in applying it to their own real-world fisheries. But some participants also expressed concern about the opportunity costs of the management process were FishPath to be applied to their own real-world fishery. In short, the use of a hypothetical fishery here clearly challenges the generalizabilty of these findings: follow-up study should be conducted in real-world contexts.

In addition, these findings rely on stakeholder self-reports of buy-in, and self-reports can be unreliable in tracking perceptions of stakeholder engagement success (Coglianese 2002). It's challenging to construct a measure of buy-in that does not rely on self-reports, but this does not alter the fact that the reason buy-in is interesting is that it is likely to change behavior – in other words, management outputs and outcomes. Including efficacy beliefs, which are known to be associated with behavior change, in stakeholder buy-in, goes some way to addressing this critique. However, there can be no doubt that all the perceptions measured here might change over time in a real-world situation, as the outputs and outcomes of management are felt (Coglianese 2002).

The ecological outcomes of collaborative natural resource management are notoriously difficult to measure on reasonable time scales (Koontz and Thomas 2006). FishPath, however, presents an opportunity to track both outputs (adoption of formal management strategies) and

outcomes (fish stock status and dynamics). If, after use of FishPath, a fishery moves towards formal management, stakeholders are likely to collect time series data and thus observe changes in fishery indicators over time. These data could be leveraged to get a better sense of how the findings reported here translate into more concrete measures of management success in a real-world fishery.

As noted earlier, FishPath alone does not seek to empower stakeholders to set management goals, define management problems, or seek consensus solutions – all intentions that are often held up as best practice by supporters of stakeholder engagement in general (Lynam et al. 2007; Reed 2008). FishPath also doesn't address who should be in the room when the tool is used, or what those choices mean for equity and effectiveness, although there is reason to believe that those choices could be critical for the long-term impacts of management (Lynam et al. 2007; Reed 2008). FishPath can only really be applied in the context of a larger process that addresses these questions.

6. Conclusion

It behooves FishPath users to be alive to both the importance of process and inclusion in collaboration, and to the hazards of getting those things wrong. Realizing improved compliance and management outcomes will depend as much on the process surrounding FishPath use as on the tool itself. This process should be carefully considered, in order to ensure that all relevant stakeholders are included and that power differentials between different stakeholders are acknowledged and addressed (Reed 2008). The use of a hypothetical fishery in this study meant that exclusion of stakeholder groups (conservation interests, for example) was not critical; similarly, inter-stakeholder power dynamics were muted in this study. Both of these issues are

likely to have significant influence on management in real-world examples. The gains in stakeholder buy-in found here could easily be undone by a poorly-designed process that fails to correct for existing power differentials when soliciting participation, or that inequitably distributes the costs and benefits of participation and/or management. Perverse results of a carelessly-designed process could include stakeholders that are disenchanted or actually resistant to formal management strategies, or capture of the process by powerful interests. In both cases we would expect sustainability to suffer. If the tool is embedded in a well-designed and inclusive process, however, FishPath can provide a format for the integration of local and scientific knowledge that is held up as an ideal component of stakeholder participation by some scholars (Reed 2008).

It is worth noting that some participants, especially non-managers, expressed difficulty in understanding some of the terminology included in the tool, and distaste for the highly technical assessment component in particular. This can be seen as an early sign that FishPath creates burdens that are inequitably distributed among different types of respondents. FishPath developers have worked to address these concerns since the research reported here was conducted; however, note that the challenges inherent to creating a one-size-fits-all interface are likely to be magnified where stakeholders with even greater variation in education levels, experience, and ways of knowing are included in the stakeholder pool.

Stakeholders who feel that they have a voice in management are more likely to support management and/or comply (Hatcher et al. 2000; Reed 2008). The extent to which stakeholders perceive use of FishPath as giving them a voice in management, however, will be influenced by both the context and process surrounding tool use. As noted above, when divorced from a larger process, FishPath simply solicits information from stakeholders (i.e., “extractive knowledge

use," (Lynam et al. 2007)). Previous efforts to identify stakeholder participation best practices indicate that stakeholders' perceptions of their influence on management are greater where they are involved in setting management goals as well as implementing management decisions (Reed 2008). Where management goals are set unilaterally, either by national-level legislation (e.g., the United States, Australia) or by management agencies, stakeholders can expect to have no influence over management goals. A perceived lack of meaningful influence may in fact undermine stakeholders' willingness to engage over time (Reed 2008). Again, in order to ensure that improved stakeholder buy-in results in improved management outcomes, the processes surrounding the use of FishPath should be carefully designed so that, where possible, stakeholders are meaningfully empowered throughout the management process.

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Appendix 1-1. Timor choate fishery information sheet.

Fishery information: General

- The fishery is multi-species, targeting both the Arafura and the Timor choate.
    - The primary species actively targeted is the Timor choate.
    - The Arafura choate is also sometimes caught, especially in the spring when that species is more prevalent in local waters.
- This assessment focuses only on the Timor choate, and does not take an ecosystem or multi-species perspective.
- The Northern Territory choate fishery is managed by Northern Territory Fisheries (the state-level management agency; NT Fisheries).
- The fishery consists of two fleets.
    - The commercial fleet consists of ±55 longliners.
        - The longline fishery is entry-controlled via state-issued permits.
            - Permits are issued to vessels, not co-operatives.
        - 60 permits are owned (not all are owned permits are in current use).
    - The recreational fleet consists of ±100 vessels that fish with rod and reel.

Fishery information: Gears, etc.

- Longliners preferentially target larger fish.
    - In the past five years, longliners have made changes to their gear.
        - Longliners now use larger hooks, and set their hooks deeper, than in previous years.
        - Longline fishers have noticed that the new gears have made them more efficient (they are catching more choate in the same amount of time).
- Longliners do not discard a large proportion of the choate they catch.
- Longlines do result in bycatch, in particular bycatch of seabird species that are listed as vulnerable/endangered.

Fishery information: Markets

- Choate are a muscular, meaty, and mild-flavored fish.
- Both Timor and Arafura choate are sold in the same ways, to the same markets.
    - Most commercial catch is sold locally as “choate” or “sweetfish” to fish markets and restaurants.
        - Local markets are within NT Fisheries’ jurisdiction.
    - A small proportion of commercial catch is flash frozen and exported to Asia.
        - Export markets are not within NT Fisheries’ jurisdiction.
- Markets are generally stable, without much change over time.

Fishery information: Seasonality

- Prime season for choate is May-October.
    - Both the commercial and the recreational fisheries are dependent on non-monsoon conditions.

Fishery information: Geography

- All vessels sail out of Darwin or nearby ports.
- All choate catch is landed at known local ports.
- The fished area does not cover the whole of the species range.
    - Fishing locations are limited to a relatively narrow swathe of coastal water.
- Fishing sites vary across fleets and over time.
    - The commercial fleet fishes further away from shore and deeper, while the recreational fleet fishes closer in and shallower.
    - Vessels tend to clump at a small number of locations, though the locations themselves change over time.

Species information: Geography

- Timor Choate occur in the Timor Sea (in Australian, Timor Leste, and Indonesian waters).
- Choate spawn in shallow inshore waters, and remain in the shallows as juveniles.

Species information: Biology

- Choate are free swimming, silver-reddish fish.
- Choate are a slow-growing, long-lived species with variable recruitment.
    - Choate populations remain relatively stable over time, absent fishing pressure.
- Choate do not vary by sex in either their maximum mature size or their growth rate.
    - The sex of choate cannot be determined without killing them.
- Choate may occur in small schools, but do not aggregate in large schools, or to spawn.
    - Spawning season is unknown for choate.
- Choate that are handled live and returned to the water have poor survival.

Fishers: Culture

- Fishers are moderately economically and culturally dependent on the choate fishery.
- Due to ineffective management to date, fishers are mildly suspicious of or resistant to management.
    - Current levels of cooperation between fishers and managers are low.
        - Fishers do not always respect existing regulations.
        - Fishers may be willing to record data about choate catch, but may not always do so reliably.
        - Fishers would be more likely to help with data collection if they could see an incentive to so (for example, direct benefits from management).
    - Fishers associate via the Northern Territory Choate Fishers Association (NTCFA).
        - NTCFA may provide a starting point for cooperation with management.
- Fishers are concerned that current take of choate may be unsustainable.

Management: Culture

- The broader community supports formal management.
- NT Fisheries provides agency-based leadership for management of the choate fishery.
    - NT Fisheries has a legal mandate to monitor choate populations and fishing activities.
    - NT Fisheries values data collection moderately to highly.
        - Agency resources are limited.

Management: Current approach

- Due to limited resources, current management of the choate fishery is ad hoc rather than through an integrated harvest strategy.
    - The fishery is currently managed through fixed quotas and entry permits.
        - No marine protected areas or other no-take zones are in use.
- NT Fisheries does not suspect high levels of illegal, unregistered or unreported fishing in the choate fishery.

Management: Capacity

- Overall, the choate fishery is considered low commercial value.
    - Funding for management is low to moderate.
        - NT Fisheries has a moderate amount of money to invest in monitoring.
        - NT Fisheries' funding and capacity for research are low to moderate.
- NT Fisheries can collect monitoring data on the choate fishery every two years.
    - Data can be collected in the same places and using the same methods.
    - Data are likely to be spatially biased with respect to the entire population.
    - Data are expected to be representative of the entire Australian choate fleet and fishery.
- Enforcement of choate fishing regulations is by locally-stationed NT Fisheries compliance officers.

Management: Existing knowledge

- Local fishers, scientists and manager have current and complete knowledge on many fishery characteristics, including:
    - Stock status and indicators;
    - Depletion;
    - Fishery/environment interactions;
    - Habitat status;
    - Non-fishing threats;
    - Proxy target and limit reference points.
- Much choate population biology is well-understood, including:
    - Size at maturity;
    - Maximum length;
    - Length as a function of age (von Bertalanffy parameters);
    - Natural mortality.
- However, some choate biology is imperfectly understood, including:
    - Overall abundance;
    - Length at first capture;
    - Length-weight relationships;
    - Length-fecundity relationships;
    - Variations in recruitment.
- Some characteristics of choate are unknown.
    - Stock recruitment steepness is unknown for both the Timor and Arafura choate.
        - Stock recruitment steepness is known for the Coral Sea choate, a related but distinct species.
    - Growth rate and carrying capacity are both unknown for choate.

Management: Existing data

- NT Fisheries has been collecting data on the choate fishery every two years for the last 12 years. Data collected include:
    - Catch;
    - Effort;
    - Catch per unit effort (CPUE);
    - Length composition;
    - Species composition;
- For the last six years, NT Fisheries data collection has also included mean length and length percentiles.
    - Together these data allow estimation of gear selectivity.
- Given data collection methodologies and recent changes to the fishery, all available data are uncertain.
    - However, preliminary attempts to assess the fishery indicate that overfishing is likely.
        - Note that, given recent changes to the fishery, any assessment that assumes a certain mathematical form of selectivity should be applied with care to ensure that model assumptions accurately reflect real-world conditions.
    - Preliminary assessments do not suggest a particular form of decision rule.
- No data exists on:
    - Total mortality;
    - Maximum sustainable yield;
    - Equilibrium exploitation rate;
    - Weight composition;
    - Sex composition;
    - Fishery-dependent density;
    - Fishery-independent abundance;
    - Specific fishing locations;
    - Oceanographic conditions at time of catch;
    - Phase of the moon at time of catch.

Appendix 1-2. Timor choate management shortlist: Recommended formal management options by category.

Monitoring approaches:
Port/landing site monitoring
Snapshot data gathering
Interviews
Processor monitoring
Fish market surveys
Independent surveys
Voluntary logbooks
Legally required logbooks
Catch disposal records

Assessments:
Expert judgment
Risk analysis/Vulnerability
Empirical reference point
Multiple empirical indicators
Catch only models

Decision rules:
Spatial restrictions
Levies or taxes that incentivize fishers to avoid areas
Temporal restrictions
Apply additional precautionary buffers to existing management
Gear restrictions
Additional data collection
Overrides in case of exceptional circumstances

Appendix 1-3. Survey completed by participants at the end of each experimental stage.

Reminder: Formal management is designed to achieve agreed-upon objectives, in this case maximising catch while maintaining fishery sustainability. Formal management centers on an integrated harvest strategy that includes three linked parts:

1. Monitoring of the fishery (collecting data on fishing activities);
2. Assessment of the fishery (using monitoring data to estimate fish populations and trends over time);
3. Decision rules (using assessment outcomes to select fishery rules and regulations).

1. How easy or hard would it be to formally manage this fishery? (Please circle one)

Extremely easy	Very easy	Somewhat easy	Neither easy nor hard	Somewhat hard	Very hard	Extremely hard

2. What effect would formal management have on attaining management objectives (maximising catch while maintaining fishery sustainability) in this fishery? (Please circle one)

Successfully attain management objectives	Minor success in attaining management objectives	No effect	Minor failure to attain management objectives	Failure to attain management objectives

3. Please review the formal management options presented in the attached list. Based on these options, how much do you support or oppose formal management of this fishery? (Please circle one)

Strongly support	Slightly support	Neither support nor oppose	Slightly oppose	Strongly oppose

3a. Please answer only if you selected “Slightly oppose” or “Strongly oppose” in response to Question 3.
Would adding specific monitoring, assessment, and/or decision rule options to this list lead you to support formal management of this fishery? (Please circle one. If you select “Yes”, please specify below)

Yes No

Specific monitoring option(s):

Specific assessment option(s):

Specific decision rule option(s):

4. If you listed other options in your response to Question 3a, briefly, why would the approaches you listed work for this fishery?*

5. If the input you provided in your response to Question 4 was included in the caveats FishPath provides when recommending and/or eliminating strategies, would that change your level of support for formal management of this fishery? (Please circle one)*

Yes, completely Yes, a lot Yes, a little No

6. Is there any other feedback you would like to provide on FishPath or this session?*

*Items 4, 5 and 6 were included only in the Stage 3 questionnaire

Appendix 1-4. Demographic questionnaire.

Fisheries sector (current or primary sector): (Please check one)
☐ Industrial (industrial-scale commercial)
☐ Commercial (medium- to large-scale)
☐ Commercial (small-scale)
☐ Customary or traditional
☐ Tour operator
☐ Recreational
☐ Other: (Please specify)_____

Primary role in this sector: (Please check one)
☐ Resource scientist
☐ Resource manager
☐ Vessel owner
☐ Vessel owner/operator
☐ Vessel captain
☐ Traditional owner
☐ Fisher/recreational owner
☐ Processor
☐ Conservation
☐ Other: (Please specify)_____

Years of experience in this sector:_____

Alternate fisheries sector, if applicable (past or secondary sector): (Please check one)
☐ Industrial (industrial-scale commercial)
☐ Commercial (medium- to large-scale)
☐ Commercial (small-scale)
☐ Customary or traditional
☐ Tour operator
☐ Recreational
☐ Other: (Please specify)_____

Primary role in this sector: (Please check one)
☐ Resource scientist
☐ Resource manager
☐ Vessel owner
☐ Vessel owner/operator
☐ Vessel captain
☐ Traditional owner
☐ Fisher/recreational owner
☐ Processor
☐ Conservation
☐ Other: (Please specify)_____
Years of experience in this sector:_____

Have you ever been involved with a fishery that is formally managed through an integrated harvest strategy?
☐ Yes

☐ No
☐ Don't know

Jurisdiction of primary residence:_____

Before today, how familiar were you with FishPath? (Please check one)
☐ Never heard of FishPath before today
☐ Heard of FishPath only in the context of today's workshop
☐ Knew of FishPath outside of the context of today's workshop, but had not used it
☐ Had used FishPath previously
☐ Other (Please specify) _____

PAPER 2. INTERNATIONAL NON-GOVERNMENTAL CONSERVATION ORGANIZATIONS AND THE ADOPTION AND IMPLEMENTATION OF COMMUNITY-BASED MANAGEMENT OF COASTAL AND MARINE RESOURCES

Abstract

Where people who depend on the sea have input into how marine resources are used, fish stocks and habitats are often healthier. Healthier fish stocks and habitat in turn benefit people who depend on the sea, especially in lower-income coastal regions where people increasingly rely on fish for food. One way to structure local involvement in decision-making is community-based management (CBM). In CBM, resource-dependent communities take active part in making and enforcing rules, such as how, where, and when community members are allowed to fish. CBM has been offered as a way to improve developing-world fish stocks and food security for vulnerable global populations, and has been embraced globally by funders, non-governmental organizations, governments and communities. In particular, international non-governmental conservation organizations (INGOs) actively work to encourage communities around the world to adopt CBM. However, how INGOs ultimately influence the "why" and "how" of communities' decisions to engage in CBM remains poorly understood. Here, I use process tracing and content analysis to test whether INGOs influence the adoption and/or implementation of CBM, including counterfactual cases to explore alternate pathways to adoption/ implementation of CBM. Data were collected through fieldwork in Fiji, a nation where INGO involvement in CBM is common. I conducted interviews with local leaders in eight purposively selected *iTaukei* Fijian case study communities (n=40) that were roughly matched on community size and reliance on marine resources, but that varied on INGO involvement, adoption of CBM, and implementation of CBM. To triangulate findings, I also content analyzed formal CBM

adoption and implementation documentation (n=4), and conducted interviews with representatives of NGOs active in the case study communities and larger context (n=6). I find that INGO activities – in particular, information provision – incentivize adoption of CBM by increasing the perceived benefits of adoption, although other organizations can play a similar role to INGOs. INGO activities also incentivize implementation of CBM by increasing the perceived benefits of implementation, although they do little to defray costs of implementation, which my respondents experience as significant. Finally, I find that as respondents find adoption to be relatively costless, INGO activities incentivize adoption more than they incentivize implementation.

Keywords: community-based management, NGO, adoption, implementation, incentives

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1. Introduction

Community-based management (CBM) of marine resources, in which resource-dependent communities take active part in making and enforcing rules governing resource use, has been embraced by funders, non-governmental organizations, governments and communities throughout the developing world. When determining whether or not local communities will successfully self-organize to manage the resources on which they rely, political economy and common pool resource theory place the "why" (the incentive structures facing user groups) and "how" (those groups' decision-making structures) at the heart of the question (Ostrom 1990). However, while international non-governmental conservation organizations (INGOs)[1] are known to actively seek to promote CBM uptake (Cohen, Evans, and Govan 2015; Lawson-Remer 2013; Bell et al. 2009) the specifics and effects of INGO involvement in CBM remain largely unanalyzed. Thus, despite extensive work on the factors that influence the likelihood of the adoption and implementation of CBM (e.g., Ostrom 1990; Agrawal 2001), current research does not allow us to fully assess what drives modern-day CBM uptake, as the few studies that examine INGOs as a focus of research rather than part of the research context lack both cross-case comparisons and counterfactuals. This study seeks to address this gap.

Here, I seek to answer the question: How do international non-governmental organizations impact community-level incentives for the adoption and implementation of community-based management of marine and coastal resources? I use process tracing to test whether INGOs influence the adoption and/or implementation of CBM, including counterfactual

[1] Although "INGO" is most often used to refer to international non-governmental organizations in general, here I am applying the term only to international non-governmental organizations that focus specifically on environmental conservation and management.

cases to explore alternate pathways to adoption/implementation of CBM. Forty interviews were conducted with local leaders across eight purposively selected Fijian case study communities that were roughly matched on community size and reliance on marine resources, but that vary on INGO involvement, adoption of CBM, and implementation of CBM. In order to triangulate findings, I also analyzed formal CBM adoption and implementation documentation (i.e., management plans, understood by local organizations to underpin CBM (Govan and Meo 2011)) and interviewed six representatives of INGOs active in the case study communities. Process tracing uses structured analysis of qualitative data to investigate causality by identifying the series of events leading up to an outcome of interest and subjecting that series of events to conceptual tests designed to identify cause and effect (Mahoney 2012). This paper reports the results of a process tracing analysis that focuses on INGO activities and their influence on incentives for local adoption and implementation of CBM. The cases were selected to include counterfactuals, in order to allow for exploration of alternate pathways to local adoption and/or implementation of CBM.

1.1. BACKGROUND AND LITERATURE

As users of renewable common pool resources, fishers have a collective interest in maintaining long-term, sustainable flows of fish for food, livelihoods, income, and cultural benefits. However, in an open-access, unmanaged fishery, individual fishers have private incentives to extract as much as they can, as whatever they fail to catch will likely be caught by others. Such incentive structures may lead to overuse and eventual ecosystem collapse, or the Tragedy of the Commons (Hardin 1968). One demonstrated way of avoiding the Tragedy of the Commons is through collective action, whereby individuals forgo some portion of their

individual interest in order to secure the collective interest. Ostrom (1990) provides a lens with which to understand the conditions under which resource users overcome barriers to collective action. Her seminal work demonstrates that users, particularly users of small, geographically bounded commons where interactions are regular and some level of exclusion of outsiders feasible, may successfully self-organize to create institutions governing resource use, thereby averting the Tragedy of the Commons (Ostrom 1990). For this paper, management that develops from the grassroots – that is, among users themselves – will be called traditional community based-management. In traditional CBM, users who are deeply rooted in place observe the trends in, and effects of, their resource use over long periods of time and develop place-, resource- and culture-specific institutions that structure resource use, provide for conflict resolution, and establish sanctions for violators. Traditional CBM developed among agricultural irrigators in Spain (Ostrom 1990), forest users in Ethiopia (Fischer et al. 2014), and marine and coastal resource users in the South Pacific (Johannes 1978; Johannes 2002), among others.

In practice, however, the ways in which local users or communities identify, adopt and implement approaches to managing their common pool resources have changed since Ostrom's early cases. In contrast with traditional CBM, modern-day CBM rarely if ever results from pure self-organization by resource users. Modern-day CBM is still communitarian in intent, giving responsibility for decision-making and implementation at least in part to local resource users themselves, but it is informed, facilitated, and incentivized by actors who are external to the communities or user groups that are expected to take responsibility for management, a phenomenon also sometimes referred to as community-based co-management (e.g., Cohen, Evans, and Govan 2015). International non-governmental conservation organizations are particularly prevalent actors in this approach to CBM. INGO-mediated CBM is a popular

approach to commons management throughout the developing world, especially in coastal resource management across the Indo-Pacific (see, for example, Jupiter et al. 2014; Sloan and Chand 2015; Sloan and Chand 2016; Benson 2012; Lawson-Remer 2013; Abernethy et al. 2014; Austin and Eder 2007).

Yet international conservation organizations may in some ways be problematic players in CBM. Critiques of INGOs point out the historic failure of international conservation NGOs to adequately include local users and communities in their work, and accuse INGO-led conservation efforts of disenfranchising indigenous peoples and undermining universal human rights (Chapin 2004). Furthermore, peer-reviewed case studies have flagged the imperfect fit between the goals and desires of INGOs and those of local users and communities. Communities may value INGO intervention primarily for the development benefits it brings, rather than valuing biodiversity conservation per se, setting up conflicts between community and INGO priorities (Benson 2012); other communities may resist when conservation NGOs try to adapt local cultural practices to conservation ends under the umbrella of CBM (Cinner and Aswani 2007). Furthermore, modern theories of NGOs draw attention to how the incentives faced by INGOs themselves mediate against a purely altruistic role as supporters of the public good (Castells 2008) and towards strategic action designed to secure and maintain funding (Prakash and Gugerty 2010) or organizational legitimacy (DiMaggio and Powell 1983; Lang 2013). INGOs react to their own incentive structures in predictable ways: for example, both instrumental concerns and isomorphism drive organizations to focus on limited-term projects with measurable results, a phenomenon not only theorized by scholars of NGOs (Krause 2014) but also observed – with mixed results for CBM uptake and outcomes – in studies of CBM projects (Benson 2012; Cinner et al. 2009; Béné et al. 2009; Blaikie 2006). Understanding the

ways in which INGO motivations influence organizational choices around whether, where and how to intervene in CBM is beyond the scope of this paper, which focuses on the impacts of INGO intervention rather than its drivers. However, it is clear that INGOs strategically respond to contexts and pressures that are far removed from the communities in which they mediate CBM. To the extent that INGO priorities and preferences diverge from those of the communities with which they work, the adoption and implementation of INGO-mediated CBM may become less attractive to communities and users.

Although some scholars of CBM note the centrality of NGOs (Bell et al. 2009; Cohen, Evans, and Govan 2015), they leave the specifics and effects of NGO involvement largely unanalyzed. In fact, the literature on NGO involvement in CBM is so sparse that a recent systematic review was unable to include NGO involvement as a determinant of community-based conservation outcomes, despite the authors' recognition that NGO involvement was likely to be a key independent variable (Brooks, Waylen, and Mulder 2013).[2] INGO involvement is likely not the only determinant of CBM outputs, or even the only key variable omitted from our understanding. Importantly, however, the literature as it stands does not allow us to understand what, precisely, INGOs are doing in CBM, nor what effects those actions have. One study examining the impacts of strengthening local marine resource management in Fiji concluded that some of the benefits (e.g., increased household incomes) posited to accrue from CBM are in fact instead attributable to INGO activities (e.g., establishment of alternative livelihoods) (Lawson-Remer 2013). This further underlines the need to understand the specifics of INGO involvement

[2] Note that the terminology applied to CBM varies by discipline and over time, and that in this case community-based conservation and CBM refer to the same phenomenon; community-based natural resource management is another commonly used term.

in CBM as they apply to both the processes and the products of CBM.

As adoption and implementation are necessary precursors to realizing the socio-economic and ecological benefits that CBM is posited to offer, study of how INGOs affect local-level incentives for the adoption and implementation of CBM is valuable. While contemporary work on CBM acknowledges the complexity inherent to the extensive presence of external actors (see, for example, Cohen, Evans, and Govan 2015; Bell et al. 2009; Cinner 2011; Berkes 2009), little work explicitly examines the modern phenomenon of users "self-organizing" with the assistance and guidance of, and/or in response to, external actors including INGOs. One exception is work focusing on a pilot program in Bangladesh that sought to coordinate government, NGOs, and fishers in order to institute community-based inland (floodplain) fisheries management (Hossain, Rahman, and Thompson 1998; Ahmad 2003; Thompson, Sultana, and Islam 2003). These authors' findings include seven primary lessons on the contributors to successful establishment of CBM: 1) community size and well-defined resource systems and user groups are less important in inland (floodplain) fisheries; 2) clearly defined property rights that include provisions to allow rights-holders to make resource management decisions are key; 3) user group homogeneity is important; 4) building new institutions is as easy as building on existing institutions; 5) skilled, ongoing facilitation (provided by NGOs in this example) is necessary, but not sufficient; 6) visible, salient resource management activities are key, and 7) external forces create challenges, and overcoming them contributes to empowerment (Thompson, Sultana, and Islam 2003). However, as already noted, this research focuses on inland (floodplain) fisheries; furthermore, the NGOs examined are domestic development NGOs, rather than the INGOs discussed in the present study. Finally, although the importance of CBM incentives is widely agreed upon (Adams and Hulme 2001; Pomeroy, Katon, and Harkes 2001; Govan 2009; Aceves-

Bueno et al. 2015), the previous studies do not explicitly examine incentives or how external actors affect them at the community level. Overall, the research in this context provides little hard evidence on the influence of NGOs on management uptake, especially as the population examined appears to be limited to communities enrolled in the pilot project: as a result, samples are small, data are largely subjective/anecdotal, and counterfactual cases (cases where CBM was not undertaken) are entirely lacking.

2. Research question and hypotheses

This study seeks to answer the question: How do international non-governmental organizations impact community-level incentives for the adoption and implementation of community-based management of marine and coastal resources? I disaggregate adoption from implementation for two reasons. Firstly, theory and empirics show that INGOs are themselves subject to time and performance pressures that I expect to influence their engagement differently across adoption and implementation (Prakash and Gugerty 2010; Krause 2014; Benson 2012). Secondly, disaggregating thusly recognizes the common phenomenon of adoption of marine conservation/resource management schemes with no or limited implementation, as documented by the prevalence of "paper parks" (Rife et al. 2013). While the same drivers (i.e., the influence of actor incentives) may be at work across stages, I expect that they may manifest to different effect in different stages.

Here I define INGO involvement as INGO outreach, engagement, or substantive support for CBM in a community of interest. I define formal adoption of CBM as a community-generated formal statement, proclamation, or document committing to local coastal resource management. Finally, I define successful implementation of CBM as actions taken to realize management on the ground, with CBM institutions in place and functioning for at least three

consecutive years at the time of study. INGOs are commonly subject to three-year funding cycles, making the three-year cut-off a natural break point in defining successful implementation (Crosman 2013). Based on common pool resource scholarship (Ostrom 1990) and studies that examine gaps between adoption and implementation in marine resource management (Rife et al. 2013), as well as the specifics of the study context, in-place, functioning implementation institutions are defined as community compliance with, and monitoring and enforcement of, rules governing resource use, as well as an intentional effort to shift pressure off marine resources.

From the above, I derive my primary hypothesis. Due to project approaches (Krause 2014) and time constraints on INGO engagement (Crosman 2013), INGO involvement may incentivize adoption of CBM but may fail to give equal weight to incentivizing CBM implementation (H1). Rigorous measurement and causal attribution of social and ecological CBM outcomes is challenging, as change in social-ecological systems occurs over long time frames and controlling for other factors influencing outcomes is virtually impossible (Thomas and Koontz 2011). Outputs like formal adoption, on the other hand, can be tracked through existing statements, proclamations, and documents (Koontz and Thomas 2006). INGOs that face funder-driven pressures to demonstrate success or isomorphic pressures towards project-based approaches are likely to frame CBM success in ways that are easy to document (Blaikie 2006). These choices are likely in turn to determine what INGOs emphasize within their CBM involvement: "number of communities adopting" or other adoption-focused metrics are likely to be more feasible to measure than alternatives that directly address implementation and effects of CBM. It follows that if INGOs prioritize demonstrating measurable success, INGO follow-through, including efforts to incentivize and support CBM implementation and long-term

engagement and follow up, will suffer. From the above synthesis of common pool resource theory, theories of NGOs, and work on CBM, I derive the following three hypotheses.

H1a. INGO involvement incentivizes adoption of CBM. INGO activities increase the benefits, or perceived benefits, and/or decrease the costs, or perceived costs, of adopting CBM, thereby increasing the likelihood of adoption.

H1b. INGO involvement incentivizes implementation of CBM. INGO activities increase the benefits, or perceived benefits, and/or decrease the costs, or perceived costs, of implementing CBM, thereby increasing the likelihood of implementation.

H1c. INGO involvement incentivizes adoption of CBM more than it incentivizes implementation of CBM. INGO activities are more likely to shift (perceived) costs and benefits of adoption than (perceived) costs and benefits of implementation, as adoption is easier to measure and report in short time frames.

3. Methods

3.1 SITE SELECTION

Globally, small-scale fisheries of the kind often managed through CBM are important contributors to food security and drivers of economic development (Béné, Macfadyen, and Allison 2007). Fish are especially critical in the Pacific: subsistence fishing provides, and is expected to continue to provide, the majority of the healthy animal protein needs of Pacific Islanders (Bell et al. 2009; Charlton et al. 2016), and subsistence fisheries have historically been of high economic value across Pacific Island nations (Hickey and Johannes 2002). Furthermore, Pacific Islanders derive food, coastal protection, economic benefit from tourism, and incalculable cultural value from their near-shore waters. The value of these services to society, combined with increasing ecosystem stress from coastal development, fisheries commodification, climate

change, and other anthropogenic pressures, make understanding management of small-scale Pacific fisheries increasingly important.

Fiji is a hotbed of CBM, with 450 reported Locally Managed Marine Areas as of 2017 (Aswani, Albert, and Love 2017), but known variation in successful implementation of CBM (Sloan and Chand 2015). Furthermore, multiple large conservation organizations are active in Fijian CBM. While CBM is widely embraced across the Pacific Island nations, Fiji leads the region in the density and accessibility of communities adopting CBM, establishing the largest possible large sampling frame for case selection.

Fiji is a best-case scenario for adoption and implementation of local marine resource management. The nation is especially appropriate as a research site because coastal *iTaukei* Fijian communities meet many of the design principals for successful collective action established by Ostrom and her successors (Ostrom 1990; Agrawal 2001). Coastal *iTaukei* Fijian communities are generally small; racially homogeneous and well-bounded by family, clan and tribe; reliant upon local resources; and located geographically close to resource extraction sites that are in turn bounded by visible landmarks, delineating well-established traditional borders (Biturogoiwasa 2001). Given this, it is unsurprising that over generations (and in common with much of the Pacific) locals developed traditional cultural practices that are similar to CBM approaches. However – again in common with much of the region – traditional Fijian CBM was disrupted by colonization when the British overlaid colonial power structures onto existing traditional management. The British left a legacy of parallel but inconsistent governance institutions at the national and local levels, which in turn left local resource management in limbo after Fijian independence (Johannes 1978). Nonetheless, contemporary governmental and INGO efforts have focused on reinforcing and revitalizing both the national-level institutional

structures supporting CBM and the will and capacity of local communities to self-manage. The government of Fiji recognizes local *iTaukei* Fijian extraction rights in traditional fishing grounds (and the exclusion of non-rights holders, at least in theory), and formally supports CBM as an approach to coastal natural resource management. Finally, Fiji is home to the Fiji Locally Managed Marine Area Network (FLMMA), a coordinating organization that exists to facilitate CBM by connecting actors across level and scale. FLMMA members include Fijian coastal communities, government agencies, and international and local NGOs. In short, as a study site, Fiji provides close to an ideal recipe for successful implementation of CBM – yet local observers note that success is not always the observed outcome (Govan et al. 2009; Sloan and Chand 2015). Why not? While it is possible that this variation is attributable solely to factors exogenous to INGO involvement (e.g., local environmental conditions, climate change impacts), the discussion of the complexities of INGO-mediated CBM above raises questions about how well INGO needs and goals are aligned with community needs and goals. Understanding how INGOs influence CBM adoption and implementation through their influence on incentives for management will shed light on how the relatively understudied phenomenon of INGO-mediated CBM aligns, or fails to align, with the theoretically and empirically established conditions under which traditional CBM has been observed to be successful.

3.2 CASE SELECTION

Work in Fiji yielded a large population of communities from which to select cases for study. I purposively sampled eight *iTaukei* Fijian communities, all located on Fiji's second largest island of Vanua Levu, through a combination of most similar cases (controlling for traditional culture, community size, homogeneity, boundedness of user and resource systems,

and reliance on marine resources) and diverse cases (variance on the dependent and independent variables) (Seawright and Gerring 2008). I selected villages to vary on the dimensions of INGO involvement, adoption of CBM, and implementation of CBM (Table 2-1). As multiple INGOs work with communities on CBM in Vanua Levu and organizational approaches may vary, I selected communities to represent variation across INGOs as well. This approach to case selection allowed me to address the counterfactual (e.g., cases in which CBM was adopted and/or implemented without INGO involvement, or cases in which INGO involvement did not lead to adoption and/or implementation), bolstering my ability both to make causal claims and to contribute to a generalizable understanding of the phenomenon of interest. While case studies of CBM are relatively common (e.g., Christie, White, and Deguit 2002; Cinner and Aswani 2007; Clarke and Jupiter 2010a), I have been unable to identify previous work that explicitly includes counterfactual cases (Lawson-Remer (2013) being one exception, although that study controls for NGO presence as a possible confounder rather than as a driver of research questions).

	No adoption	**Adoption**	**Implementation**
No INGO	Village 3	Village 2	Village 1
INGO 1	-	Village 5	Village 4
INGO 2	Village 6	Village 7	Village 8

Table 2-4. Case selection.

Limiting case selection to *iTaukei* Fijian villages in Vanua Levu meant that communities were well matched on the dimensions of ethnic homogeneity and traditional culture. As noted above, *iTaukei* communities throughout Fiji are comprised of well-bounded user groups, as rights to use traditional fishing grounds are tied to tribal membership, and tribes are closely linked to traditional villages; furthermore, traditional fishing grounds have been established for centuries and boundaries are widely known and established in law. To control for other sources of variation, I consulted with local experts to match communities as closely as possible on size

and dependence on marine resources. Selecting cases that are comparable on observable dimensions that existing theory suggests might influence the outcome of interest, but that differ on the dimensions that motivate the study, is characteristic of rigorous case-based designs (Yin 2013). In-country case selection and field research took place between May and September, 2018.

3.3 DATA COLLECTION AND ANALYSIS

For this study, I combined within-case process tracing and between-case comparison approaches to causal inference. Within-case process tracing focuses on the causal mechanisms leading to an outcome of interest (Mahoney 2012); in this case, the method allows me to examine the sequence and structure of events surrounding the adoption and implementation (or otherwise) of CBM. Process tracing has been specifically forwarded as an appropriate method for establishing causality in complex, real-world contexts, including how CBM outcomes are linked to CBM processes (Thomas and Koontz 2011). Furthermore, within-case process tracing extends the researcher's ability to make causal inferences when combined with purposive case selection and cross-case comparison (Collier 2011; Bennett and Checkel 2014). The method focuses on first describing temporally ordered "snapshots" of the process of interest, and subsequently on examining the connection between those stages in a series of tests to establish the necessary and sufficient conditions for pre-determined hypotheses to be accepted or rejected (Collier 2011; Mahoney 2012).

Within each case study community, I identified local leaders with help from the village

headman, who was also my formal village host.[3] I targeted five individuals in each village for interviews: the chief or acting chief of the village; the village headman; a representative of the village women's group; a representative of the village youth group;[4] and a representative of the village resource management committee. Respondents were selected to include local leaders who have great influence over management decisions and who may benefit disproportionately from resource management (Muehlig-Hofmann 2007) (i.e., chief), leaders who have input into management as well as implementation responsibilities (i.e., village headman, resource management committee rep), and leaders of groups who traditionally have less voice in decision-making (i.e., women's and youth representatives). I conducted from four to seven interviews per village (n=40 total, five on average). The semi-structured interviews focused on community characteristics, resource system characteristics, decision-making, organizational activities, and respondent attitudes (see Appendix 2-1 for the full interview protocol). I sometimes omitted interview items based on respondent expertise (e.g., questions about fishing ground health and change over time were omitted for respondents who did not fish) or saturation (village size, for instance). Interviews were primarily in English, with Fijian interpretation as needed. After completing community interviews, I conducted interviews with staff from the INGOs working in the case communities (one field worker and one central staffer for each INGO), as well as interviews with one field worker and one central staffer from FLMMA, the local network organization that connects communities, government, and INGOs (NGO reps n=6). I also collected management plans, where they existed and were applicable (n=4). Where it usefully

[3] The village headman is the official, governmentally-appointed gatekeeper of access to *iTaukei* villages; it is his or her role to host outsiders visiting the village for research, conservation or development purposes, and to connect them to the resources they require.
[4] Note that in an iTaukei village, youth is defined as ages 18-35. No children under 18 were interviewed for this research.

supplements understanding, this study also includes information gleaned from participant observation; where information comes from interviews, I identify the source by their position, in parentheses. All villages, respondents, and INGOs were promised confidentiality; interviews were recorded digitally.

I transcribed all interviews verbatim, after which a translator provided secondary translation for 12 recordings where initial interpretation was found to be insufficient (i.e., translated to English directly from the Fijian vernacular captured in audio recordings). Within those 12 interviews, I preferentially used information from secondary translation where disagreement

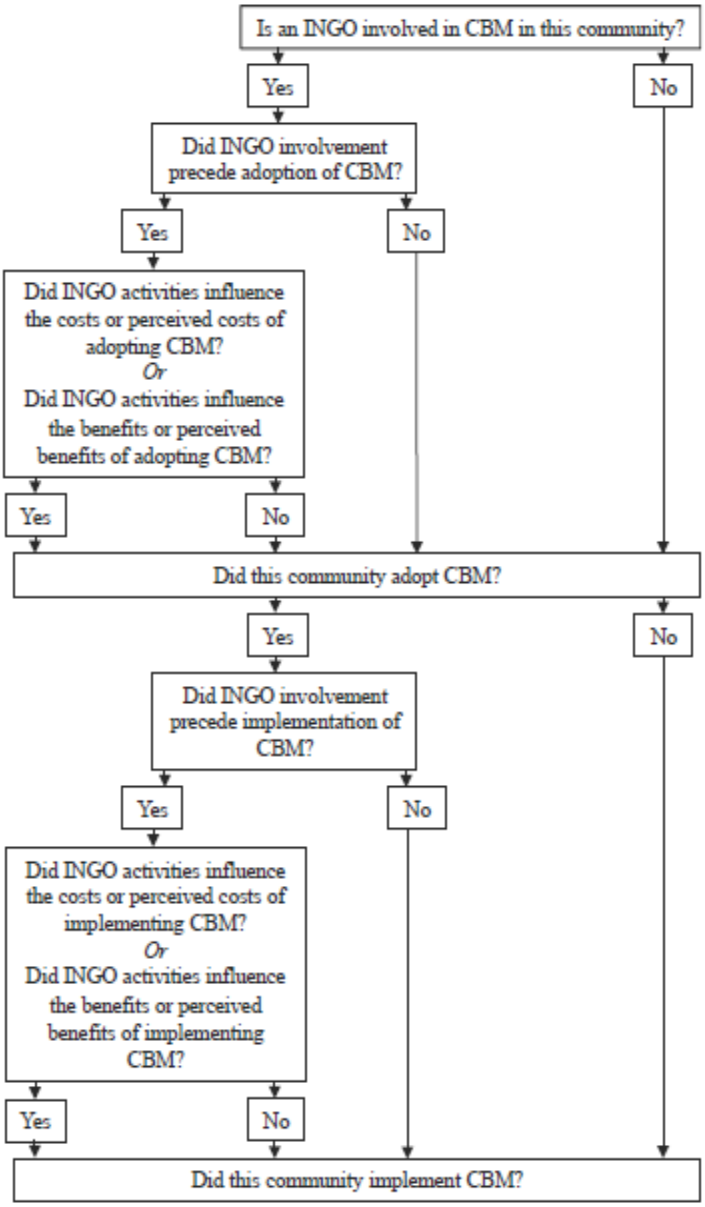

Figure 2-4. Process tracing pathways underlying hypothesis testing.

between the two translations existed.[5] One management plan was also translated from Fijian to English; the rest were in provided in English. I coded interviews and management plans in ATLAS.ti (version 8.4.15.0), using a multi-dimensional coding scheme developed from the theory and prior empirics presented above, and adding new subcodes to the scheme when information not covered in the initial scheme came to light in interview responses. I coded for primary variables of interest (adoption and implementation of management), attitudes (towards management or towards INGOs), activities (information/knowledge activities, management resource provision, bridging/connecting, management recommendations, management activities, and development aid or support provision), actors (community, community leaders, district leaders, provincial leaders, NGO, government, IGO, church, private sector), and incentives/changes to incentives (known predictors, material costs and benefits, livelihood/cultural costs and benefits, social costs and benefits, environmental costs and benefits) and causal claims (see Appendix 2-2 for the full coding scheme). A second coder independently coded 5 randomly selected interviews using the same coding scheme; average percent agreement was 90%, and average Cohen's kappa was 0.75, indicating substantial intercoder agreement and thus good reliability.

I applied process tracing to the full set of coded interviews and documents associated with a given village. Process tracing path structures are presented in Figure 2-1. The far-left pathway is evidence of support for H1a and b (INGOs influence incentives for adoption and implementation, respectively). INGO involvement that preceded adoption/ implementation of

[5] Neither of the interpreters with whom I worked was professionally trained in that capacity; interpreters sometimes noticeably summarized responses, or supplemented with their own knowledge (both were employed by FLMMA and familiar with the communities and larger system of interest). Secondary translation was used to mitigate these issues.

CBM is a "hoop test," which, if failed, serves as strong evidence to refute those hypotheses (Collier 2011; Mahoney 2012). If the data pass the hoop test, and indicate that INGO involvement influenced the (perceived) costs and benefits of adoption/implementation, these together serve as strong support for H1a and H1b, respectively (the two tests together forming a "smoking gun" (Collier 2011; Mahoney 2012)). If, having passed the smoking gun test, the community also adopted/implemented CBM and respondents attributed adoption/implementation to shifted incentives resulting from INGO intervention (not pictured, but targeted in interview questions and coding (see Appendices 1 and 2), this constitutes extremely strong support for H1a and H1b (or "doubly decisive" (Collier 2011)). Note that there are up to three data sources for each of the "smoking gun" tests of whether INGO involvement shifted incentives (i.e., community interviews, INGO interviews, and CBM documents). Individual sources were treated as weak evidence for H1, and only when the evidence provided by multiple sources aligned did I treat it as a "smoking gun." Alternate pathways were used to explore alternate factors in the causal chain leading to adoption/implementation of CBM, as well as the conditions under which H1 does not hold true. H1c was tested by comparing results of H1a tests and H1b tests both within and across communities.

4. Results

I begin my results by presenting contextual information necessary to make sense of village-level results. I then present findings for each village, including findings on factors believed to predict successful community self-organization (village size, distance to market, boundedness of resource system and user group, resource dependence, and resource state) (Ostrom 1990; Cinner et al. 2012) as well as the history of local management and the local roles,

if any, of INGOs or other organizations. Results are summarized in Table 2-2, presented at the end of the section.

4.1 STUDY CONTEXT

Under Fiji's dual system of governance, *iTaukei* Fijians are registered in the *Vola ni Kawa Bula* (Native Land Register, or VKB) as members of a clan and tribe; they are also Fijian citizens subject to the laws and governance structures of the post-colonial national government (Sloan and Chand 2015). Post-colonial government administrative units in Fiji are, in order from smallest to largest, village, district, province, division. These administrative units map imperfectly on to traditional clan and tribal geographic divisions. Various government positions exist to bridge the traditional village, district and provincial hierarchies (based in traditional clan and tribal chiefdoms) and the post-colonial Fijian government; among my respondents, both the village headman and the district representative play this role (Sloan and Chand 2015). Under current Fijian law, registration in the VKB confers ownership over traditional lands (land areas are usually defined at the clan level) and extraction rights in traditional fishing grounds (usually defined at the tribal/district level and located in the waters directly adjacent to the lands owned by the clans in a given tribe). While tribal/district-level fishing grounds (*qoliqoli*) are defined in law, village fishing grounds (*ikanakana*), which lie within district-level grounds, are for the most part informally defined by custom as the area directly adjacent to a coastal village. For detailed information on dual governance in Fiji, see Sloan and Chand (2015).

4.2 VILLAGE 1: NO INGO, IMPLEMENTATION

Village 1 is a small (19 households) *iTaukei* village on the northeast coast of Macuata Province, on a bay with direct access to the sea. The village is remote: the nearest market is a minimum 2-hour bus ride, and local roads may become impassable in the rainy season. In common with *iTaukei* villages across Fiji, both the boundaries of the traditional fishing grounds and the identities of those with a right to use those grounds are well defined. Village 1's traditional fishing grounds are defined at the village and district levels, and are shared with Village 2 and with other villages in the district. In Village 1, I conducted interviews with the village chief (also, in this case, chief of the district), the village headman, a representative of the women's group, a representative of the youth group, and the district representative (in lieu of a member of the village resource management committee).

Respondents agree that Village 1 is highly dependent on marine resources for income (Chief, village headman, women's rep, youth rep), food (Village headman, women's rep) and cultural obligations (Chief, women's rep). In Village 1, as in most coastal *iTaukei* villages, the ocean is also central to the conception of self among community members: "Because they say it's the mother, you know, of everything in the world. So it's part of our life. The sea is part of our life" (Chief). Despite the fact that the bounds of the group of users with rights to fish in the traditional grounds are clear, poaching by non-rights holders is known to occur, as poachers are sometimes observed while villagers are out on the water (Village headman). Respondents generally believe that their fishery is healthy (Chief, women's rep, youth rep), although some note visible damage to the reef from destructive terrestrial and fishing practices (Village headman).

There is no INGO active in Village 1; nonetheless, local management measures have been adopted and are being implemented. This community thus demonstrates an alternative pathway to the hypothesized INGO-mediated pathway to adoption and implementation.

Beginning in the late 1990s (FLMMA central staff) to early 2000's (Chief), a local NGO/FLMMA partner organization (NGO 3) was involved in advocating for local marine resource management in the district of Villages 1 and 2. With the help of the Macuata Provincial Office (Chief), NGO 3 initially approached the district chiefs for permission to work in the district. After this initial meeting, NGO 3 conducted a baseline ecological survey of the district reef (Youth rep Village 2). The NGO then met with the district chiefs to share ecological survey results (Youth rep Village 2), create awareness of local marine resource reliance (Chief), and recommend adoption of a *tabu*[6] (fisheries no-take zone) for conservation and sustainable marine resource management (Women's rep, Youth rep Village 2). In 2004, as a direct result of the information provided by NGO 3, which changed their understanding of the benefits of managing via a *tabu* (Chief), the chiefs of the district formally adopted a large, offshore *tabu* (Chief, youth rep Village 2, management plan), well distant from Villages 1 and 2, in the traditional district-level fishing ground. Information about the *tabu* was shared with district villages through traditional hierarchies (Chief, women's rep). NGO 3's role was limited to raising awareness and facilitating adoption, with no further involvement after the *tabu* was declared (FLMMA central staff, youth rep Village 2), and specifically no additional support for alternate livelihoods or other efforts to mitigate short-term resource losses associated with the closure (FLMMA central

[6] *Tabu* is a traditional cultural practice that was historically used to stockpile fish for a celebration or community event – for instance, a *tabu* is traditionally instituted to mark the death of a chief, then opened to provide food for the chief's funeral after a 100-day mourning period. Traditionally, *tabus* were temporary closures. Traditional *tabus* lack formal legal status under current Fijian law.

staff) (note that the chief believes that NGO 3 was involved until 2007, but offers no information on what the NGO did after facilitating adoption of the *tabu*). However, local fish wardens[7] were appointed by the district villages to patrol the *tabu* boundaries (Youth rep Village 2). The management plan for Villages 1 and 2's district is now outdated, having not been updated since 2004 (FLMMA central staff, management plan).

In 2007, the province of Macuata played host to the Methodist Church of Fiji's annual conference (Chief). As hosts, each district within Macuata (including the district of Villages 1 and 2) had an obligation to provide money and/or resources to support the conference (Chief, youth rep Village 2). In order to meet these obligations, the *tabu* adopted in 2004 was opened and harvested (Chief, women's rep, youth rep Village 2). Although the intention was to open the *tabu* for a limited time (Chief, women's rep), most respondents agree that since it was opened in 2007, the large, offshore *tabu* is no longer active (Women's rep, youth rep Village 2), is not actively patrolled (Youth rep Village 2), or at least is not strictly observed (Chief). However, the benefits realized from fishing the *tabu* convinced the district chiefs that *tabus* were a worthwhile management strategy (Chief, women's rep).

In 2008, without any further involvement from NGO 3, in light of the observed benefits from the initial *tabu* (Chief, youth rep) and a desire to maintain resource access for future generations (Village headman) – or perhaps from a need to make up for breaking the initial *tabu* (Village headman/acting chief Village 2) – the district chiefs decided to formally proclaim a series of smaller, local *tabus*, including one in the bay directly adjacent to Village 1 (Chief,

[7] Fish wardens are trained by the Ministry of Fisheries and officially deputized to carry out monitoring activities in Fiji's traditional fishing grounds. They may interdict non-licensed outsiders but have no legal enforcement role (that role is assigned to the police) (Management plans Villages 7 and 8) (1991).

village headman), in Village 1's traditional village-level fishing ground. The bay was selected as it is a known breeding ground for fish (Village headman).

The Village 1 *tabu* was still in place ten years later, at the time of research (Chief, village headman). While Village 1 fishers had some initial difficulty adjusting to the closure of the bay (Chief), they have since adjusted and turned increasingly to other food and income sources like agriculture (Chief) – although some respondents note increased costs associated with needing to travel further to fish (Women's rep). Furthermore, locals began to see spillover benefits from the closure, increasing their catches in nearby, non-*tabu* areas (Chief, women's rep). As the *tabu* covers a small bay, the boundaries of where the *tabu* starts and ends are easy to see and remember (Youth rep). When the *tabu* was first adopted, a buoy was installed to mark the bay as a *tabu* area, and although that buoy has since been lost (Village headman) the area is easily patrolled, given that the entirety of the closure is adjacent to and visible from Village 1 (Youth rep). Perhaps unsurprisingly, local compliance is good (Village headman, youth rep). Occasional non-compliance by community members is dealt with by publicly addressing violators in a village meeting, and reminding them of the threat of divine retribution (Chief). Poaching by non-rights holders within the *tabu* is not common, although outsiders may occasionally come fish at night (Village headman, resource management committee rep Village 2). The chief of Village 1 retains the ability to open the *tabu* temporarily for a traditional obligation or village event (Village headman).

In Village 1, adoption of the current CBM regime was driven by a strong, educated decision-maker and local experiences of visible resource benefits that accrued from a previous *tabu* put in place due the adoption-focused efforts of a local NGO. Compliance in Village 1 is driven by intact traditional ties and respect for the traditional authority of the district/village

chief, combined with the chief's residence in the village (see Paper 3, Sections 4.1.3 and 5.2.2); knowledge of the benefits that accrue from management; and the location of the *tabu* directly adjacent to the village, making violators visible. Costs of monitoring and enforcement are negligible for Village 1 residents. Village 1 presents an alternate pathway to adoption and implementation of CBM, which can be seen as a variation of the hypotheses presented above. In Village 1, adoption of management was mediated by a) a local NGO rather than an INGO and b) work done in the past rather than the present. A variation of H1b is similarly supported: although no additional implementation support was provided by the local NGO, the information provided that drove adoption is also driving ongoing implementation.

4.3 VILLAGE 2: NO INGO, ADOPTION WITHOUT IMPLEMENTATION

Village 2 is a small (10 households) village on the northeast coast of Macuata Province, with access to the sea via a mangrove swamp and a 15-20 minute boat ride downriver. The village is remote: the nearest market is a minimum 2.5-hour bus ride, and local roads may become impassable during the rainy season. The resource system and authorized user group are both well-bounded. Village 2's traditional fishing grounds are defined at the district level; Village 2 shares a district with Village 1. In Village 2, I conducted interviews with the village headman/acting chief, a representative of the women's group, a representative of the youth group, and a representative of the village resource management committee.

Respondents agree that, like Village 1, Village 2 is highly dependent on marine resources for income (Village headman/acting chief, women's rep, youth rep) as well as food (Women's rep, resource management committee rep, youth rep) and cultural obligations (Youth rep).

Poaching by outsiders is known to occur (Youth rep), although Village 2's more inland location precludes detailed knowledge of the extent of poaching (Resource management committee rep, youth rep). Respondents generally agree that the fishery is healthy (Village headman/acting chief, women's rep, resource management committee rep) although (again in common with Village 1) some notice visible coral damage that they attribute to destructive fishing practices (Resource management committee rep).

There is no INGO active in Village 2. As part of the same district that is home to Village 1, Village 2 has adopted local management measures, but the community was not actively contributing to implementation at the time of research. Village 2 was selected to explore an alternate pathway to adoption without implementation.

The pathway to adoption of Village 1's local *tabu*, presented above, also applies to Village 2 (the *tabu* in Village 1 also serves as Village 2's local *tabu* (Village headman/acting chief), as Village 2 is very close to Village 1 but not directly on the coast). As members of the district, community members are obligated to take part in implementing the local *tabu* (Women's rep). However, at the time of research, Village 2 was not contributing to implementation, although they had recently set up a village resource management committee: "Now, I can say, we haven't managed anything at all. Until now. But we just filled up one committee before, that's at our last meeting" (Resource management committee rep). Specifically, the Village 2 village resource management committee is discussing assigning fish wardens to patrol the Village 1 *tabu* at night, by boat, to discourage or interdict poaching (Resource management committee rep).

Village 2 community members also see benefits from implementation of the local *tabu*, including spillover effects (Village headman/acting chief), the potential for reduced effort in the

future (Resource management committee rep), and improved sustainability of current and future livelihoods (Youth rep). However, there are perceived costs associated with implementation, and particularly of acting as a fish warden. Fish wardens supply their own boats and gas to patrol, incurring personal costs to secure a collective benefit (Youth rep), and women fish wardens may be particularly vulnerable to the threat of violence when confronting poachers (Resource management committee rep).

As in Village 2, adoption of the current CBM regime in Village 2 was driven by a strong decision-maker and past experience with local NGO-mediated management. Compliance in Village 2 is also driven by respect for the traditional authority of the district/village chiefs; knowledge of management benefits; and the location of the *tabu* directly adjacent to Village 1, so that violators are likely to be observed and sanctioned. In contrast to Village 1, Village 2 monitoring and enforcement costs are significant and have so far prevented the village from actively contributing to those activities. Given that monitoring and enforcement by Village 1 is costless, Village 2 faces incentives to free ride on Village 1 efforts towards implementation. Like Village 1, Village 2 supports a variation of H1a, in which adoption of management is mediated by a) a local NGO rather than an INGO and b) work done in the past rather than the present. A variation of H1b is similarly supported: although no additional implementation support was provided by the local NGO, the information that drove adoption is also driving ongoing implementation, although some components of implementation are completely lacking in this case.

4.4 VILLAGE 3: NO INGO, NO ADOPTION

Village 3 is a small to mid-sized (50 households) *iTaukei* village on the north central coast of Macuata Province, with relatively direct access to the sea. The village is semi-proximate to the nearest market (1 hour by bus, year-round). The resource system and authorized user group are well-bounded. Village 3's traditional fishing grounds are defined at the village and district levels. In Village 3, I conducted interviews with the chief, the village headman, a representative of the women's group, a representative of the youth group, and a representative of the resource management committee.

Village 3 is highly dependent on marine resources for income (Chief, village headman, resource management committee rep, youth rep), food (Chief, village headman, resource management committee rep, youth rep), and cultural obligations (Village headman). Poaching is known to occur in the traditional fishing ground, as both licensed and unlicensed outsiders are seen when community fishers are out on their boats (Chief, resource management committee rep, youth rep). Respondents note that the health of their fishery has declined over time (Chief, village headman, women's rep, youth rep) although some maintain that it is still healthy (Women's rep, resource management committee rep). Some respondents attribute the decline in resource state to destructive fishing practices used by outsiders (Chief, village headman).

There is currently no INGO active in Village 3; the village has not formally adopted local resource management. Village 3 was thus selected to serve as a pure counterfactual.

Similar to Villages 1 and 2, Village 3 has a history of local *tabu* adoption, although in this case adoption was driven by information provided by the Ministry of Fisheries (Fisheries) rather than a local NGO (Village headman). Respondents did not provide a date, but based on the non-specific timelines presented by respondents I estimate that in approximately 2011 Ministry of Fisheries representatives visited the village and shared information on the use of *tabu* for

resource management (Village headman); they appear to have also have conducted an in-water ecological survey (Village headman) and reported back results that the local fishing grounds were rich and healthy (Village headman, resource management committee rep), subsequently recommending adoption of a *tabu* (Village headman). Note that according to one respondent, INGO 1 also visited the village once in 2011 or 2012, to share information similar to the information other respondents attribute to Fisheries representatives, although that respondent does not connect INGO 1's efforts with the adoption of any *tabu*, and in fact specifically asserts that the visit was useless: "It's just wasting of time, for them to come. Because we know what we are doing." (Resource management committee rep).[8] Regardless of the identity of the organization that created the impetus for the *tabu*, the chief of Village 3 formally declared a *tabu* shortly thereafter, with the intention of stockpiling fish in an area perceived to be depleted (Chief). The *tabu* was intended to be temporary and was opened after two to three years, once the resource was believed to have recovered (Chief). That *tabu* is no longer in place, and no new *tabus* have been subsequently adopted (Chief, village headman).

Despite the lack of current *tabu*, however, some respondents assert that locally-adopted rules govern resource use in other ways. The Village 3 resource management committee representative frames the following as village-level rules: nets not to be left on the reef overnight, fish size limits, a ban on cutting of mangroves, and large waste generated in the village to be buried rather than dumped in the sea; the women's group representative asserts that

[8] Respondents across villages often confuse NGOs and government ministries, particularly Fisheries. Multiple organizations across sectors often partner to provide information and conduct workshops, which contributes to conflicting attributions. Local respondents' confusion over actors' identities, particularly a tendency to conflate NGOs and government, has been observed elsewhere in the region previously (Austin and Eder 2007; Benson 2012). See the sections on Village 6, 7 and 8, as well as the Discussion, for more on this phenomenon.

the village chief banned fishing at night two years before the date of study. However, size limits are set, and dumping and mangrove cutting banned, by national-level legislation (Village 7 and 8 management plans), and the prohibition on nets left overnight is commonly adopted at the district level (Village 7 and 8 management plans), while fishing on scuba, which commonly occurs at night, is banned by national-level legislation. The Ministry of Fisheries commonly sends representatives to district and village meetings to share information about the details of, and justification behind, national level regulations and to stress the importance of compliance, and district/village chiefs routinely reinforce those messages. As Fisheries officials have visited Village 3 to share similar information in recent memory (Women's rep, resource management committee rep), it seems likely that respondents are confusing national law or district-level regulations with village-level initiatives.

While local compliance with the rules listed above is believed to be relatively automatic (Women's rep, when asked what happens after the chief said no more fishing at night: "They all obey the rules"), Village 3 fish wardens monitor and enforce the ban on night fishing (Women's rep). Fish wardens patrol the boundaries of the traditional fishing ground (*qoliqoli* boundaries are set by tradition, but formally recognized at the national level) and deter and interdict poaching by non-rights holders, although patrols are irregular (Resource management committee rep).

Although Village 3 was selected to be a pure counterfactual, this case does not serve as a true counterfactual. The community has worked with an external governmental agency (Fisheries) in the past, and has experience with local management through *tabus*, but are currently not directly applying that knowledge to manage locally. There are some parallels to Village 1, in that Village 3 has the ability to choose to adopt and implement at a later date, although I found limited evidence of local buy-in to *tabus* as a long-term conservation/

management strategy rather than a short-term resource storing (larder) strategy. Village 3 demonstrates an alternate pathway to adoption that is a variation on H1a, in which government agency (rather than INGO) involvement historically incentivized CBM adoption. Village 3 also demonstrates an alternate pathway to management overall, whereby community adoption and implementation of CBM is defined differently, and more in line with traditional Fijian cultural practices, than how it is defined in the INGO-mediated pathways hypothesized here. The opt-in/opt-out pathway followed by Village 3 does seems to be meeting the community's needs at present.

4.5 VILLAGE 4: INGO 1, IMPLEMENTATION

Village 4 is a small to mid-sized (40 households) *iTaukei* village on the northwest coast of Macuata Province, with very direct access to the sea. The village is semi-proximate to a small market (45 minutes by bus), but remote from a larger market (3 hours by bus), and roads may become impassable in the rainy season. The resource system and authorized user group are well-bounded. Village 4's traditional fishing grounds are defined at the multi-district level, shared between villages in Village 4's district, Village 5's district, and two other districts, as well as two villages in the neighboring province. In Village 4, I conducted interviews with the chief, the village headman, a representative from the women's group, a representative from the resource management committee, a representative from the youth group, the district representative, and a local fisher.

Village 4 is highly reliant on marine resources for income (Chief, district rep, fisher, village headman, women's rep, resource management committee rep, youth rep) and food (Chief, fisher, village headman, youth rep). Poaching is known to occur in the traditional fishing ground, as village fishers see unlicensed outsiders when they are out on the water (Fisher, women's rep, resource management committee rep). Respondents note a decline in their fishery's health (Chief, district representative, fisher, village headman, women's rep, resource management committee rep).

INGO actively works with Village 4; Village 4 has adopted and is implementing local management, although implementation is in some ways limited. Village 4 thus serves as a test of H1a and H1b, based on the extent to which it follows the leftmost path on the process tracing diagram (Figure 2-1).

In 2004, INGO 1 began working to coordinate management of the large traditional fishing ground shared between four districts of Macuata (INGO 1 field staff, fisher). The organization was invited in by the then chief of Macuata (since deceased), who had noticed a decline in the health of the fishing grounds over time (INGO 1 central staff). In this context, INGO 1 works at the provincial, district, and village level (INGO 1 central staff). In addition to the *tabus* discussed below, INGO 1 also advises decision-makers on the terms of the fishing license for the four-district traditional fishing ground (District rep Village 5),[9] supports the district representatives of the four districts with access to office space and related technologies

[9] Fishing licenses are issued by the Ministry of Fisheries, but the traditional leadership of the fishing ground must approve the license terms and sign off before licenses are formalized. Fishing licenses are required for any individual who wishes to fish in a traditional fishing ground for commercial gain, regardless of whether or not they are a traditional rights-holder. At the time of research, rights holders paid significantly lower licensing fees than non-rights holders/ outsiders who apply for a license. Fishing license terms are considered legally binding.

(INGO 1 field staff), provides assistance in linking to and applying for funding opportunities and connecting to other expertise (INGO 1 field staff), and facilitates the writing of the four-district management plan (INGO 1 field staff, management plan), as well as the individual district and village development plans (INGO 1 field staff, district rep Village 5), sometimes even providing translation services (INGO 1 field staff).

INGO 1 conducted a baseline ecological survey of the fishing ground in 2004 (District rep, management plan). That same year, the organization visited Village 4's district to conduct an awareness workshop and present survey findings, and stress the need for management (Chief, fisher), in particular the value of adopting *tabus* (Chief, district rep). Representatives from multiple villages across the four districts attended that workshop (INGO 1 project manager), including representatives from Village 4 (Village headman). The overall approach, and in particular the focus on establishing *tabus*, was in alignment with INGO 1's long-standing work on establishing marine protected areas in Fiji, and the global organization's priority focus on coral reefs and sustainable fisheries (INGO 1 central staff). In addition to sharing information on the value of adopting *tabus*, INGO 1 also shared information on national-level fishery regulations (Women's rep, INGO 1 central staff) and sustainable fishing practices (Village headman).

Prior to INGO 1's involvement, there were no *tabus* near Village 4 (Chief, village headman) (note that the district rep says that the *tabu* local to Village 4 was in place when INGO 1 began working in the districts, but was working overseas at the time and may be confusing a reconfiguration process coordinated by INGO 1 in 2011/2012 (Chief) with INGO 1's initial work). Respondents agree that INGO 1 advised the provincial chief and district decision-makers on the *tabus* (Chief, fisher) specifically on site selection (Village headman, district rep Village 5)

and the importance of placing the *tabu* in a spawning area (Fisher Village 5). INGO 1 also informed decision makers that adopting *tabu* areas would preserve resource access and livelihoods for future generations (Chief)

In 2004 (INGO 1 field staff) or 2005 (Fisher), the provincial and district chiefs declared a number of *tabus* throughout the fishing ground (at least one per district, as recommended by INGO 1 (District rep)), including the *tabu* local to Village 4. While no respondent explicitly states that INGO 1's activities caused adoption of the *tabu*, it is clear that adoption of the *tabus* was strongly influenced by INGO 1's advice, and causality is implied by some respondents: "And then, 2005, they came over, the [INGO 1]. So they put the *tabu* on these reefs" (Fisher). Furthermore, respondents cite benefits to future generations (the same rationale provided by INGO 1) as the motivation for adoption (Resource management committee rep), and say that INGO 1's engagement provided them with the knowledge needed to manage effectively (Fisher).

Village 4's *tabu* is located at an offshore reef adjacent to one of the preferred local fishing grounds (Fisher); the bounds of the reef are visible from the surface (Fisher). Upon adoption, INGO 1 placed a buoy at the *tabu* site to mark the closure, although the buoy is no longer present (Village headman). As noted above, INGO 1 also worked with leaders across the four districts to set fishing license terms, which include a map showing *tabu* areas (Village headman, management plan). Local compliance is generally believed to be good (Village headman, women's rep, INGO project manager 1), which the representative of the women's group attributes to INGO 1's messaging, and the village chief's reinforcement of that message. However, poaching in the *tabu* – by both rights-holders from other villages and non-rights holders – began about three years after adoption, shortly after local fishers began to notice spillover effects and improved catches (Village headman, fisher). Poaching was known to be

continuing at the time of research (Village headman, INGO 1 field staff); the high degree of poaching, and the temptation of an area rich in fish, may undermine compliance by some Village 4 fishers (Fisher, village headman, district rep). Although INGO 1 encourages Village 4 to actively protect the *tabu* (Village headman) and the boundaries of the traditional fishing ground (District rep), the organization does not provide resource support for monitoring and enforcement (District rep, INGO 1 field staff, INGO 1 central staff).

Monitoring and enforcement responsibilities in traditional fishing grounds are officially assigned to village fish wardens by the national government (Management plans Villages 7 and 8), as well as in the Village 4 and 5 management plan; similarly, INGO 1 representatives assert that monitoring and enforcement responsibilities lie with community (INGO 1 central staff). Most Village 4 fishers are relatively powerless to act when they encounter poachers in the *tabu* area. Fishers may return to the village to inform a fish warden, who can then return to the site, by which time the poachers may have already left (Women's rep); alternately, fishers who observe violators may choose not to report them at all (Resource management committee rep). Fish wardens are trained by the Ministry of Fisheries (Management plan); while training was historically also support by INGO 1, the organization has since retreated from this role (INGO 1 central staff). Due to resource constraints, formal monitoring and enforcement is practically nonexistent in Village 4. Village fish wardens do exist, but community leaders cite the lack of money, boats, satellite phones (there is currently no cellular service in Village 4), etc., as the reason why neither the *tabu* nor the fishing ground boundaries were being actively patrolled at the time of research (Chief, village headman, district rep). The lack of patrols may contribute to poaching (Village headman). Fish wardens are unpaid, and some Village 4 respondents additionally note that asking individuals (i.e., fish wardens) to assume the time and financial

burdens of securing the boundaries of the *tabu* or the fishing ground for the collective good leaves those individuals with little incentive to act (Resource management committee rep). Furthermore, though fish wardens are formally appointed by the Permanent Secretary for Fisheries, they are only authorized to hold violators until the police arrive (Village 7 and 8 management plan). In practice, the police do not always arrive; even when poachers are formally apprehended they are often not prosecuted (INGO 1 central staff). Traditional *tabus* (which make up the vast majority of no-take zones in Fijian waters, including the *tabus* discussed here) lack formal legal status, unlike nationally gazetted MPAs, making penalties for violations negligible or entirely lacking, even when poachers are caught and prosecuted (for instance, for violating the terms of their fishing license), although social sanctions can be levied on community members.

INGO 1 has further supported Village 4 by supplanting middlemen in fish value chains. In recent years, INGO 1 convened a workshop where fishers in Village 4's district were trained in safe catch handling practices, in order to improve the quality of fish brought to market (Village headman, INGO 1 field staff). INGO 1 then came to Village 4 to buy the catch, paying a premium price and transporting it directly to the capital in Suva for sale (INGO 1 project rep, village headman). This also had the effect of saving Village 4 fishers' transportation costs (Women's rep). As the bulk of fish sold in Suva now originates in Vanua Levu (INGO 1 central staff, district rep Village 5), the organization is seeking to work around traditional middlemen, get communities a better price for their catch, and decrease overfishing by "buffer[ing] some of the stressors" (INGO 1 central staff).

In addition to the fisheries-centered activities already discussed, INGO 1 has also encouraged villages across the four districts to diversify their income base (District rep), a task that has been enthusiastically embraced by Village 4 leaders (District rep, village headman) and

that is seen as a benefit of working with INGO 1 (District rep). Village 4 has instituted a requirement that all men who have left school plant crops; the village headman checks monthly to see that villagers are complying (Fisher). INGO 1 has also advised the village resource management committee on planting sandalwood trees for future harvest, in order to create long-term income flows (Chief); provided technical support for a seaweed growing/harvesting project undertaken by the women's group (Chief, women's rep); and helped the women's group identify and apply for potential funding for that project (Chief, village headman, INGO 1 field staff). INGO 1 generally does not provide funding for alternate income generation projects, but they did provide funds to buy the first box of bees for small-scale bee farming (Village headman). These activities are aligned with INGO 1's shared responsibility for supporting income generation efforts, and encouraging development, especially for women and youth, as outlined in the four-district management plan.

Finally, INGO 1 continues to work in Village 4 to support additional village needs. The village is directly on the coast, with no mangrove barrier, and erosion is a pressing local concern (Chief, village headman, district rep, fisher, resource management committee rep, women's rep, youth rep, INGO 1 field staff). The village was historically on a site nearer to the coast, but was forced to move back (Village headman), and the grounds of the school are currently threatened (Women's rep). INGO 1 is partnering with a Fijian NGO to develop a shoreline protection plan centering on mangrove planting (Chief, village headman, district rep, fisher, resource management committee rep, women's rep, youth rep, INGO 1 field staff); INGO 1 reps also visit the community to lead mangrove planting activities (INGO 1 field staff). Some respondents cite this work as the primary benefit of working with INGO 1 (Resource management committee rep).

In Village 4, adoption was driven by a strong, educated decision-maker and INGO 1 intervention at the decision-maker level (Chief Macuata and district leaders). Compliance is driven in part by unified, stable community leadership. The chief, village headman and district rep are all educated and committed, and all members of the same family; furthermore, the village headman has held his position for over a decade. Compliance is also driven by visible benefits from management, although this is now challenged by an increase in poaching and the concomitant decrease in spillover. The local representative of INGO 1 is a known quantity and a welcome visitor in the village, with close ties to local leaders; compliance is also driven by the perception that INGO 1 is actively working to help the village. The organization is seen to be providing good information as well as minor support for livelihoods, with their foray into fish buying especially valued by locals. INGO 1's role in supporting local erosion mitigation is also highly valued. However, monitoring and enforcement remain a sticking point. Although the villagers are expected to bear the costs of monitoring and enforcement, the sum total of the incentives they face lead them to not follow through. Village 4 provides support for both H1a and H1b, and demonstrates the magnitude of implementation challenges faced by communities.

4.6 VILLAGE 5: INGO 1, ADOPTION WITHOUT IMPLEMENTATION

Village 5 is a small to mid-sized (34 households) *iTaukei* village on the north central coast of Macuata Province, with very direct access to the sea. The village is semi-proximate to markets (1 hour by bus, year-round). The resource system and authorized user group are well-bounded. Village 5's traditional fishing grounds are defined at the multi-district level (shared with Village 4, as above). In Village 5 I conducted interviews with the village headman, a representative of the women's group, a representative of the youth group, and a local fisher (in

lieu of a representative of the resource management committee), as well as the district representative. The chief of Village 5 had died shortly before the time of research, and a new chief had yet to be installed.

Village 5 is highly reliant on the ocean for income (Village headman, fisher, women's rep, youth rep), food (Village headman, women's rep, youth rep) and cultural obligations (Fisher). Poaching is known to occur, as poachers are seen while on the water (Fisher, women's rep) and sometimes from the village on Sundays, when fishing is banned in the fishing grounds (Village headman). Respondents speak of decline in the health of the fishery (Village headman, fisher, women's rep, youth rep).

INGO 1 actively works with 5; Village 5 initially adopted local management, but has since ceased implementing. Village 5 thus serves as a test of H1a and H1b, based on the extent to which it follows the leftmost path on the process tracing diagram (Figure 2-1). The pathway to adoption of Village 4's local *tabu* presented above also applies to Village 5, as both villages are in the four-district traditional fishing ground. The *tabu* areas proximate to the two villages are distinct, but both *tabus* were adopted via the same process, initiated and formalized by the chief of Macuata and facilitated by INGO 1. A large, offshore *tabu* was instituted on the offshore reefs near Village 5 in 2004, but implementation failed shortly thereafter.

Upon adoption, INGO 1 placed a buoy marking the location of Village 5's *tabu* (Women's rep). However, a few months (Women's rep) to a year (Village headman, fisher) later, locals began preferentially fishing the nominally *tabu* reef once again. Although the Village 5 chief initially agreed to institute the *tabu* (Women's rep), shortly thereafter she, and much of the village, came to disagree with it (Village headman, women's rep). Some respondents attribute the *tabu*'s failure to inadequate community consultation (Village headman, fisher, district rep,

youth rep) – and some of these are careful to note that INGO 1 was not responsible for adopting the *tabu*, as the decision to adopt the *tabu* came from the chief of Macuata Province (commonly referred to by his title and province, so Chief Macuata) rather than INGO 1 (Village headman, fisher), explicitly exonerating INGO 1 from responsibility for the failure. Others attribute the failure to INGO 1 more directly, saying that as INGO 1 did not conduct outreach in the village prior to the *tabu*'s adoption, and instead sent representatives of the provincial chief to carry the message, the chief of Village 5 was strong-armed into initial agreement even though the reef where the *tabu* was located constituted Village 5's primary fishing ground (Women's rep). Still others do not explicitly attribute blame to INGO 1, but recognize that the organization was instrumental to Chief Macuata's initial decisions regarding the four districts' *tabus* (Fisher). For more details on consultation in Village 5, see Paper 3, Section 4.2.1. *Tabus* are often formally blessed with a prayer, but this step was omitted when calling Village 5's local *tabu*, which may have made locals less afraid to break the *tabu* (Fisher). Finally, the youth representative asserts that the catalyst to break the *tabu* locally was news that poachers were actively fishing it, at which time village fishers immediately left to fish there as well. The INGO 1 representatives with whom I spoke attributed the lack of implementation in Village 5 to turnover in village leadership positions and concomitant lack of institutional knowledge, as well as a general lack of commitment to management (INGO 1 central staff), or alternately to the presence of outsiders in the community (INGO project manager) (although the presence of outsiders was not evident in community interviews).

INGO 1 continues to work intermittently in Village 5. The organization visited the village to hold a workshop after the *tabu* had already failed (Fisher, youth rep), stressing the value of the *tabu* for the fishery sustainability for future generations (Women's rep, youth rep), and

incentivizing attendance with a small stipend (Women's rep). The results of the ecological survey, shared with the community, showed that the reef that was targeted with the *tabu* was rich with life (Women's rep, fisher) and an important spawning ground (Fisher), one of only two in the multi-district management area (Fisher).[10] At the workshop, INGO 1 also shared information about national fishery regulations and the fishing license terms, and recommended against destructive fishing practices (Women's rep), although respondents believe that any behavior change attributable to these recommendations was as short-lived as the *tabu* (Women's rep). According to respondents, destructive fishing practices were continuing – and common – at the time of research (Women's rep, fisher, youth rep). Conflict over the use of the *tabu*, the value of management, and the role/value of INGO 1 appears to be ongoing in Village 5 (Village headman, youth rep). Some of my respondents note, however, that the knowledge brought by INGO 1 instilled them with a sense of communal responsibility for caring for the ocean (Women's rep), and that the management information provided by the organization was valuable for scoping future choices (Fisher). Still, some in the village may resist adopting sustainable practices when the information about those practices comes from INGO 1 (Fisher).

Somewhat in contrast to Village 4, INGO 1 has provided no (Women's rep) to limited (District rep) livelihood support in Village 5. Some respondents note that there have been funds provided to the women's group to start a small business, but are nonspecific about the source of that funding, and say that INGO 1 built a nursery for hardwood tree seedlings (Fisher), both for reforestation and hillside stabilization and for eventual harvest and sale of sandalwood (District rep). According to the Village 5 district representative, livelihood support is earmarked for each village local to a *tabu* site across the four districts, but some projects have yet to be finalized.

[10] The second being the large tabu located near Village 4.

Village 5, like Village 4, is faced with shoreline erosion that threatens structures in the village (Village headman), but neither the Fijian NGO working in Village 4 nor INGO 1 appeared to working on erosion mitigation in Village 5 at the time of research.

As in Village 5, adoption in Village 5 was driven by a strong, educated decision-maker and INGO 1 intervention at the decision-maker level (Chief Macuata and district leaders). However, village level compliance and implementation were undermined by adoption decision-making structures (see Paper 3, Section 4.2.1) that left the village chief and many in the community feeling insufficiently consulted, and by the size and location of the *tabu*, which had the effect of prohibiting access to virtually all of the most productive local fishing ground in a community that is strongly reliant on the sea. Still, support for adoption and implementation of a local *tabu* remains strong within some community sub-groups. INGO 1 is noticeably less salient to respondents in Village 5; the organization has provided less extensive and less consistent livelihood support than has been provided to Village 4. Some community members appear to resent the organization, although others remain strongly supportive. Village 5 provides support for H1a, as organizational activities did influence adoption of CBM. As above, although INGO 1 activities have been limited and insufficient to inspire to fully incentivize implementation, there are those in the village who support implementation due to the information provided by INGO 1. Thus, Village 5 also supports H1b.

4.7 VILLAGE 6: INGO 2, NO ADOPTION

Village 6 is a small to mid-sized (36 households) *iTaukei* village on the west coast of Bua Province, with fairly direct access to the sea by foot (boats only useable at high tide; boat use necessitates a 5-10 minute journey downriver through mangroves). The village is proximate to

markets for fish (30 minutes by bus, year-round) but remote from markets for higher value catch like mud crab (3 hours by bus, year-round), although sometimes buyers come to the village directly (Village headman). The resource system and authorized user group are well-bounded. Village 6's traditional fishing grounds are defined at the district level. In Village 6 I conducted interviews with the chief, the village headman, a representative of the women's group, a representative of the resource management committee, and a representative of the youth group.

Village 6 is highly reliant on marine resources for income (Chief, village headman, women's rep, resource management committee rep, youth rep) and food (Chief, women's rep, resource management committee rep). Poachers are known to visit the fishing grounds, as they can be seen from local fishers' boats (Chief, village headman, youth rep), their lights are visible at night (Chief), and word of poachers' catch is passed to the village through social networks (Village headman). When outside boats are seen in the traditional fishing grounds by rights-holders, the outsiders may be asked to show their licenses; those who are not licensed receive a warning (Youth rep). Respondents disagree over the health of their fishery: some aver that it has improved (Village headman), others that it has declined (Village headman, resource management committee rep), or has declined but is still healthy (Chief), and some that it is healthy and unchanged (Youth rep).

INGO 2 actively works at the district and village level in Village 6; Village 6 has not formally adopted local management and is not currently managing locally. Village 6 thus serves as a counterfactual for H1a and H1b (INGO but no adoption) (Figure 2-1).

In 2004 or 2005, INGO 2 began working in the province of Bua (INGO 2 field staff), in a district of the province that is relatively distant from the case communities examined here (Villages 6, 7 and 8). When INGO 2 approached the district, locals there were already engaging

in informal CBM (INGO 2 field staff). In around 2011/2012, after news of INGO 2's work had travelled to other districts within Bua, the district of Village 6 approached INGO 2 for CBM support (INGO 2 field staff). Also in 2011/2012, INGO 2 conducted ecological and socioeconomic surveys in the regions of Bua where Villages 6, 7, and 8 are located (INGO 2 field staff; management plan for Village 7 specifies that surveys there were conducted in 2011, and the INGO 2 field staffer says that the surveys in all three villages were conducted around the same time). INGO 2 then shared the results of those surveys, and associated management recommendations, with Village 6 district decision-makers, including representatives from district villages (INGO 2 central staff); the information was the catalyst for district decision-makers to engage in the formal management planning process (INGO 2 field staff). Although a draft management plan exists, that plan was yet to be formally adopted at the time of research. INGO 2 representatives attribute the failure to adopt to conflicts among traditional district decision-makers, although some decision-makers strongly support the plan and there are reputational gains associated with formal adoption (INGO 2 field staff). Resistance may at least in part be due to the prevalence of poaching, and the lack of formal legal status of traditional *tabus*: "And why you are setting up this, some management aspect of resources, when you are toothless? And that is the standard block, it is a big mountain" (INGO 2 field staff).

The district of Village 6 had adopted a large offshore *tabu*, and formalized it with a prayer (Resource management committee rep) before INGO 2 began working locally (Village headman, INGO 2 central staff); the value of instituting a *tabu* at that site was reinforced during the management planning process (INGO 2 central staff). That *tabu* was originally declared by the district chief and was driven by his observations of declining fishing ground health and access to fish, but the villagers in Village 6 were opposed to it (Resource management committee

rep). However, while the INGO 2-facilitated management planning process was still ongoing (INGO 2 central staff), the district chief opened the *tabu* temporarily (for two days) in response to a death in his family (Village headman, resource management committee rep, INGO 2 central staff). Village 6 fishers have a traditional role as fishers for the district chief (Chief, INGO 2 central staff) – as a result, Village 6 was asked to fish the *tabu* to provide fish for the funeral (Village headman). After the two days had elapsed, the reinstatement of the *tabu* was unsuccessful (Village headman). Fishers from the district (including Village 6) were actively fishing the site at the time of research (Village headman, resource management committee rep), although the Village 6 chief still referred to it as a place for conservation, the village headman referred to an upcoming meeting to reinstate a *tabu* in the fishing grounds, and others hoped for reinstatement (Women's rep). There are currently no *tabus* in place in Village 6's district (Village headman).

INGO 2's focus in Bua Province has been on facilitating the management planning process and advocating for the formation of linked resource management committees at the village, district, and provincial level (INGO 2 central staff, INGO 2 field staff) (see Paper 3, Section 4.2.2). Although INGO 2 does hold workshops hosted by district villages and attended by representatives from across the district, they focus their work at the district level in practical recognition of the size of Bua province and their own resource constraints, and often rely on the nested committee structure to propagate information back to communities – the nested resource management committees are explicitly designed to form an implementation/adaptive management structure (INGO 2 central staff). INGO 2 representatives are invited to attend district meetings; this is also where the district resource management committee presents on their

work (INGO 2 central staff). INGO 2 defines their organizational strength as the science underlying management (INGO 2 central staff, INGO 2 field staff).

Unprompted, Village 6 respondents fail to identify INGO 2 specifically when asked about outside actors who work on local marine resource management with the village (Chief, women's rep, resource management committee rep); prompted, the village headman specifically denies that INGO 2 works with Village 6. Some respondents remember visits by non-specific environmental NGOs (Resource management committee rep; see below for what she attributes specifically to INGO 2) and Fisheries representatives (Chief, resource management committee rep, women's rep). Only the representative of the youth group specifically mentions INGO 2 holding a workshop in the village in 2015;[11] he agreed that Fisheries was also present at that workshop. It is common practice for INGO 2 to include other organizations in their workshops, in order to have additional experts available to provide information and answer questions (INGO 2 central staff). Although they disagree on the identity of actors who hold the workshops, respondents say that the information shared in workshops includes national, provincial and district resource management rules (Chief), including size limits and justifications for those limits, the terms of fishing licenses (Village headman), bans on dumping, and rules on the placement of pigpens (Youth rep). The workshops also cover awareness of best management practices (Village headman), including the role of mangroves and mangrove planting, information on raising clams and oysters, recommendations to avoid use of nets (Youth rep), and crab fishing methods (Resource management committee rep) as well as boat safety requirements (Resource management committee rep). While the village headman does not specifically recall

[11] The youth rep mentioned non-specific organizations coming to hold workshops in the village, but was unable to remember their names; he enthusiastically agreed that it was INGO 2 when prompted.

the INGO 2-facilitated workshop, he did take part in an INGO 2-led resource management training at another site (Village headman) – this training was targeted specifically at local leaders from Vanua Levu and included units on biodiversity conservation, participation and communication, climate change, and alternate livelihoods, among others (INGO 2 central staff). He asserts that he shared the information he gained from that workshop with others in the district, but reports that there was no behavior change in response: "I told them not to make fire around, eh? But I see fire, going that side, going this side."[12] Similarly, the youth representative asserts that the village workshop resulted in no change in the village or in conservation of the traditional fishing ground, although he also says some bought larger mesh-size nets in response to the information received in the workshop. Both the Village 6 youth representative and the INGO 2 central staff say that the benefit of working with INGO 2 is the information gained from the workshop; others note that when NGOs hold workshops in the Village 6, they pay for the food and accommodation of workshop attendees, which brings income to the villagers (Resource management committee rep; INGO 2 field staff). Respondents that recognize that INGOs work in Fiji are generally in support, as they believe those organizations help to protect the environment (Village headman) and conserve the traditional fishing grounds (Resource management committee rep, youth rep).

INGO 2 recognizes that fishery closures require alternative ways to generate income, but has limited funds to support such activities and often connects villages to other actors when such needs become apparent (INGO 2 central staff). INGO 2 has provided limited livelihood support in Village 6, primarily through a short-lived project whereby a few Village 6 women were

[12] *iTaukei* Fijians use fire to clear land for agriculture as well as to hunt wild boar.

trained at an offsite workshop to measure the mud crabs caught each week[13] and fill in a worksheet (Resource management committee rep) tracking catch per unit effort (INGO 2 field staff). The women who filled out the sheets were paid FJD 20 per week for collecting the data, and learned the need to respect mud crab size limits (Resource management committee rep). Additionally, the village has 20 beehives that were donated by the government (Village headman). The women's group also briefly ran a pearl farm with oyster fry provided by the Ministry of Fisheries; the proceeds of the harvest were used to start a number of small local businesses (Resource management committee rep).

In the event that the previous *tabu* is reinstated, or a different *tabu* adopted, village leaders hope to source a boat to patrol the boundaries (Village headman). The previous *tabu* was patrolled by fish wardens as well as marked on district fishing licenses (Village headman). Although support for monitoring and enforcement is explicitly beyond INGO 2's remit (INGO 2 field staff, INGO 2 central staff) the organization can connect villages implementing CBM to monitoring/enforcement resources offered by other actors (such as the Ministry of Fisheries) when such resources are available (INGO 2 central staff).

In Village 6 I found no adoption, likely due to resistance from district leaders who recognize the collective action and boundary enforcement issues that undermine implementation given *tabus*' current legal status. The historical district *tabu* near Village 6, adopted prior to INGO 2's involvement in the district, failed in part due to decision-making processes that failed to adequately consult community members (see Paper 3, Section 4.2.2), and with the continued use of the *tabu* to meet traditional cultural obligations. INGO 2 is barely recognized as a salient actor by those in the village, although many are able to identify the organization's local activities

[13] Mud crab is fished primarily by women in Fiji.

upon further thought or prompting. Even without adoption, markers of the implementation pickle – issues of compliance, resource reliance, and monitoring and enforcement – are obvious. The pathway demonstrated in Village 6 shows that H1a does not always hold: locals may adopt and implement management independently of INGOs (and may also cease managing without INGO intervention). Furthermore, when an INGO does become involved, INGO-identified incentives for adoption may not always be sufficient to change decision-makers' minds. Despite the absence of adoption, INGO 2 continues to make limited efforts – mostly centering around the provision of information – to incentivize implementation of CBM in Village 2, providing limited support for H1b.

4.8 VILLAGE 7: INGO 2, ADOPTION WITHOUT IMPLEMENTATION

Village 7 is a small to mid-sized (43 households) *iTaukei* village that sits on a bay on the southwest coast of Bua Province, with direct access to the sea by foot and boat (boats only useable at high tide). The village is semi-proximate to market (1 hour by bus), but the small portion of the catch that is sold is usually sold within the village (Village headman, women's rep). The resource system and authorized user group are well-bounded. Village 7's traditional fishing grounds are defined at the village and district level; the district fishing grounds are reachable only by boat, although there are only two boats in the district. In Village 7 I conducted interviews with the village headman/acting chief, a representative of the women's group, a representative of the resource management committee, and a representative of the youth group.

Village 7 is reliant on marine resources for income (Village headman/acting chief, resource management committee rep), and highly reliant on marine resources for food (Village headman/acting chief, women's rep, resource management committee rep, youth rep).

Respondents disagree on whether or not poaching occurs: some say it is known, based on observations of unfamiliar boats on the water (Village headman/acting chief, resource management committee rep) while others say there is no poaching (Women's rep), and still others note that it is not always known whether outsiders are poaching or are licensed (Village headman/acting chief, youth rep). Any presence of poachers in the traditional fishing grounds is relatively new (Resource management committee rep). Respondents note a decline in the health of their fishery (Village headman/acting chief, women's rep, resource management committee rep, youth rep), in particular fewer/smaller fish (Resource management committee rep, youth rep, women's rep), which they attribute to growing local populations and the small size of the village-level traditional fishing ground (Village headman/acting chief, women's rep) or land-based development (Resource management committee rep).

INGO 2 actively works with Village 7, focusing their work at the district level (INGO 2 central staff). Village 7 has adopted local management, but was no longer implementing at the time of research. Village 7 thus serves as a test of H1a and H1b, based on the extent to which it follows the leftmost path on the process tracing diagram (Figure 2-1).

INGO 2 initially approached the chief of Village 7 via an ex-INGO 2 employee who was living in the village, and then worked through the Bua Provincial Office to receive permission to work in the district (Village headman). The organization conducted a survey of the district's fishing grounds in 2011/2012 (Management plan, resource management committee rep), in conjunction with the baseline ecological surveys conducted elsewhere in Bua (INGO 2 field staff). INGO 2 initially reported survey results at a 2011 multi-district workshop that included representatives from Village 7's district (Management plan). Subsequent INGO 2 visits included a District Awareness workshop held in Village 7 in 2012 and attended by representatives of all

three of the district villages (Village headman/acting chief), and a District Management Support workshop held in another district village in 2013. The organization reported findings from the two workshops back to district leaders in 2013 (Management plan).

Respondents identify the beginning of the *tabu* adoption process as the 2012 workshop, reporting that it focused on the need to protect the traditional fishing grounds (Village headman/acting chief, resource management committee rep). In that workshop, INGO 2 recommended the adoption of *tabus*, and identified spawning grounds as suitable *tabu* sites (Village headman/acting chief, women's rep); this was how Village 7 leaders learned of the need for a *tabu* (Village headman/acting chief, resource management committee rep, youth rep – although note that the youth rep identifies Fisheries as the organization that provided awareness). Awareness also covered national rules, including fishing size limits (Youth rep), dumping bans, and placement of pigpens (Women's rep). INGO 2 has not returned to the district since providing the initial awareness workshops (Village headman/acting chief).

In around 2013, district decision-makers (specifically the chiefs of Village 7 and the two other district villages) called the *tabu* (Village headman/acting chief, resource management committee rep, women's rep), selecting a site near Village 7 based on the criteria provided by INGO 2 (Village headman/acting chief). Other sites were also made *tabu* at that time, including coastal sites elsewhere in the district, a river site near Village 7, and a number of offshore reef sites (Village headman/acting chief, resource management committee rep). While dates provided by respondents are imprecise, all Village 7 respondents imply, and the women's rep is explicit, that the *tabu* was adopted after the awareness workshop led by INGO 2. The *tabu* was adopted to conserve resources for the future (Village headman/acting chief, resource management committee rep, youth rep) and to provide healthy food for local students (Village headman/acting

chief). Respondents suggest there are neither individual costs nor individual benefits to local leaders from adopting the *tabu* (Village headman/acting chief).

The *tabu* local to Village 7 is just outside of the bay on which the village sits; it is coastal, but is neither visible from Village 7 nor directly adjacent to the village (Management plan). Upon adoption, the *tabu* was celebrated with a feast (Youth rep), and may (Women's rep) or may not (Village headman/acting chief) have been marked with a prayer/church service (Management plan, dated 2015, specifies that a blessing was to be conducted prior to August 2016). The *tabu* is not marked with a buoy (Village headman); although INGO 2 was supposed to come back and provide a buoy (Village headman, management plan) they have yet to do so (Village headman). Nonetheless, *tabu* boundaries are identifiable based on land-based visual reference points (Village headman/acting chief, women's rep). In addition to the *tabu*, the district also adopted bans on destructive practices (diving at night, leaving nets out overnight, fishing with longlines and removing coral) (Management plan), although local respondents did not reference any of these rules. The management plan specifies that resource management committees were to be established in each village in the district prior to July of 2016; Village 7 does have a resource management committee (Resource management committee rep, women's rep).

Respondents say that the *tabu* local to Village 2 is still in place, but that compliance is poor across all three of the district villages (Village headman/acting chief, resource management committee rep, youth rep), perhaps because the lack of buoy allows people to claim uncertainty over the *tabu* boundaries (Village headman/acting chief), or perhaps on occasions when fishers are unable to catch sufficient fish in the non-*tabu* areas (Resource management committee rep). The women's rep is the only respondent who says the *tabu* is well observed; even she admits that the sight of a delicacy sometimes proves too tempting to resist. Costs of the *tabu* were

immediately noticeable for community families: “Because we had just a small *qoliqoli* [traditional fishing ground], and we think about which place we are going to eat” (Village headman/acting chief). Other *tabus* in the district are also poorly observed (Resource management committee rep) and known to be fished by outsiders (Village headman), although the youth rep says that locals do not fish the offshore *tabus* (perhaps unsurprisingly, given the dearth of boats). The management plan assigns responsibility for promoting awareness of and compliance with the rules to district leaders. In line with the specifics of the management plan, reminders about the *tabu*, and of the need for compliance, are included in every village meeting (Resource management committee rep). In addition to sharing copies of the management plan with the clans, and working with neighboring districts, the management plan also specifies display of posters or other materials showcasing rules; none of the preceding were spoken of by respondents or visible in the village at the time of research. The Village 7 *tabu* can be opened by the village chief to provide food for a village or church event (Resource management committee, youth rep, women’s rep, management plan) – catches are rich when the *tabu* is opened (Youth rep), but the catch, or at least portion thereof, must be given to the chief (Youth rep).

Although they provided a map of the *tabus* (Women’s rep), INGO 2 does not directly support monitoring or enforcement (Village headman/acting chief; INGO 2 field staff; INGO 2 central staff), and the management plan explicitly assigns responsibility for monitoring and enforcement to the district-level resource management committee, who in turn rely on information provided by fish wardens and users. There are fish wardens in the village (Women’s rep) who may be patrolling the local *tabu* intermittently (Women’s rep), but who may not be patrolling much or in more distant waters due to lack of a boat (Resource management committee rep, women’s rep). Locals have directed district leaders’ attention to the extent of

non-compliance with the *tabus* (Village headman), but the strong implication from multiple respondents is that little has been done in terms of enforcement or sanctioning – this may at least in part be true because violators are coming from all three villages (Village headman). In general, and across contexts, all district leaders agree to the terms of the management plan at the time of adoption, but the plan is nonbinding and follow through is sometimes lacking (INGO 2 central staff). The INGO 2 central staff attributes the lack of follow-through in Village 7 to the lack of a functioning traditional hierarchy at the district level; although this was not alluded to by village respondents, it is worth noting that there was no mention of the district chief in any interview in the village, as well as no village chief present in the village at the time of research.

INGO 2 has not provided livelihood support in Village 7 (Village headman/acting chief, resource management committee rep, women's rep), though the organization did pay the village money to cover the food and lodging of workshop participants when the 2012 awareness workshop was held, and may have helped support a workshop training local fish wardens (Women's rep; this may refer to the 2013 workshop mentioned above). Elsewhere in the district, INGO 2 has supported the construction of mud crab fattening cages, whereby mud crabs that are caught early in the week can be held and fed so that they do not lose weight prior to being brought to market at the end of the week (INGO 2 field staff, FLMMA field staff).

The primary benefits of working with INGO 2 is the knowledge that they bring (Women's rep), and that the organization offers a way for Village 7 to maintain the resources on which the village relies (Village headman/acting chief) and to address the fishery decline that locals have noticed (Village headman, resource management committee rep). Respondents would like INGO 2 to visit more regularly, and to continue to provide awareness to the people in the village (Village headman/acting chief); they would also like INGO 2 to help with aid (Women's

rep), particularly the boats and outboards that the fish wardens need to do their work (Resource management committee rep).

The adoption process in Village 7 was driven by direct observation of resource loss and reduced fishery catch, combined with INGO 2 intervention at the decision-maker level (chiefs of three district villages). Compliance with *tabus* is undermined by the high reliance on marine resources for food, combined with the small size of the traditional fishing grounds, the relatively extensive areas annexed for protection, and the lack of boats that would enable displacement of efforts away from coastal areas. Implementation is further undermined by wide recognition of compliance issues as well as a lack of resources for monitoring and enforcement. INGO 2 is recognized as a salient actor in Village 7, but is not perceived to be currently active at the village level. Village 7 thus provides support for H1a, and limited support for H1b, but demonstrates that INGO implementation support is likely to be unsuccessful in tipping the scale towards implementation where organizational efforts are minimal and local short-term incentives drive intensive resource use.

4.9 VILLAGE 8: INGO 2, IMPLEMENTATION

Village 8 is a mid-sized (50 households in the village proper, with another 60 households in nearby settlements) *iTaukei* village on the southwest coast of Bua Province, with direct access to the sea by foot and boat (boats only useable at high tide). The village is proximate to market (30 minutes by bus). The resource system and authorized user group are well-bounded. Village 8's traditional fishing grounds are defined at the village level and sub-district levels.[14] In Village

[14] The district of Village 8 contains two distinct traditional fishing grounds, only one of which is managed under the management plan cited here.

8 I conducted interviews with the chief, the assistant village headman, a representative of the women's group, a representative of the youth group, and a representative of the resource management committee.

Village 8 is highly resource reliant on the sea for income (Assistant village headman, women's rep, youth rep), although reliance for income has decreased since a national ban was instituted on the sea cucumber export fishery in 2017 (Chief). Resource reliance is also high for food (Chief, assistant village headman, women's rep, youth rep), and respondents here note the importance of the ocean for their conception of self: "So when we have our *qoliqoli,* it's our identity" (Youth rep). Poaching is not seen as an issue by some Village 8 respondents (Chief, women's rep) although others disagree (Assistant village headman, resource management committee rep, youth rep), citing interactions with unlicensed outsiders (Resource management committee rep) and unfamiliar faces seen in district waters (Assistant village headman). Most respondents agree that, prior to local management, the health of the fishery was declining (Chief, assistant village headman, youth rep), necessitating the use of bamboo rafts in coastal areas to allow fishers to reach deeper waters (Youth rep). There are only two motorized boats in Village 8 (Resource management committee rep). Some respondents note recent improvements in resource state (Assistant village headman, resource management committee rep) and say that the fishery is now healthy (Women's rep, resource management committee rep).

INGO 2 actively works with Village 8. Village 8 has formally adopted local management and is actively implementing. Village 8 thus serves as a test of H1a and H1b, based on the extent to which it follows the left-most pathway on the process-tracing diagram (Figure 2-1).

The process leading to adoption of CBM in Village 8 began in 2011/2012 with a Peace Corps volunteer stationed in the village (Resource management committee rep). That volunteer,

who was coordinating with INGO 2, conducted a survey of the corals in the waters near the village, assisted by the now resource management committee rep (Resource management committee rep; the management plan says that INGO 2 conducted in-water surveys in 2012). The survey was motivated by the Peace Corps volunteer's concern about the health of the local marine environment; she reported her findings to the village as whole during a village meeting (Resource management committee rep). At the same village meeting where she reported the survey results, the local Peace Corps volunteer conducted one-on-one interviews to identify individuals particularly interested in marine resource management, in order to form a village-level resource management committee (Resource management committee rep), an approach that locals had heard of from friends and family in the district of Bua where INGO 2 had first worked in 2004/2005. Committee members were then confirmed in the village meeting (Women's rep). The Peace Corps volunteer also served as a link between the village and INGO 2, selecting one member of the village resource management committee to attend the INGO 2-facilitated multi-district awareness raising workshop referenced above (see Villages 6 and 7) (Resource management committee rep), and connecting the village to INGO 2 senior staff (INGO 2 central staff). Respondents credit that workshop, and INGO 2, with the origins of the idea of instituting a *tabu* locally (Resource management committee rep; the assistant village headman says the idea came from within the village, but credits the Peace Corps volunteer).[15] At this time, the village also decided to move the village piggery away from the coastline (Resource management committee rep), likely also in response to advice received at the multi-district workshop.

[15] As was also observed in other case villages, some respondents in Village 8 are unclear about the identities of the organizations that held the workshops: the resource management committee representative is clear that the workshops discussed here were led by INGO 2, but a number of other village respondents identify the salient organization as Fisheries (Chief, women's rep).

The Village 8 *tabu* was initially adopted in 2012/2013 (Resource management committee rep) by the chief of Village 8, in cooperation with the leaders of the village clans (Women's rep, assistant village headman), after information gained at the multi-district workshop was shared in a village meeting (Resource management committee rep). The *tabu* site, in the coastal waters directly adjacent to Village 8 (the portion of the fishing ground accessible by foot), was selected by village decision-makers in congruence with INGO 2's advice to protect a fish spawning ground (Resource management committee rep). Adoption was driven by recognition of the relatively small area of the traditional fishing grounds and increasing resource pressure exerted by a growing population (Women's rep), and out of concern for coming generations (Chief, resource management committee rep): "It is a gift for them, the schoolchildren. I'm thinking of them, so they can have a source of income for school" (Chief). The initial *tabu* was intended to last for five years (Chief, assistant village headman).

After the *tabu* was initially adopted, INGO 2 liaised with the Bua Provincial Office to begin officially working in Village 8's district (INGO 2 central staff). After the multi-district workshop, INGO 2 held three workshops in Village 8's district: an awareness raising workshop in 2013, a management support workshop in April 2014, and a workshop to finalize management (held in Village 8) in July 2014 (Management plan; the resource management committee rep identifies the date of the final workshop as 2012); the resource management committee representative notes that another workshop was held in the district just the month before my visit in August 2018. Representatives from Village 8 attended all three workshops (Resource management committee rep). The workshop held in Village 8 focused on the use and benefits of instituting a *tabu*, also covering the ecological role of mangroves, the ban on mangrove cutting, the need to plant mangroves, and the dumping ban (Assistant village headman). The assistant

village headman explicitly says that the information provided in the workshop changed behavior in the village.

About four years after initial adoption (Chief, assistant village headman), the village decided to extend the *tabu* for another five years (Women's rep). At that time, the *tabu* was formalized with a celebratory feast (Women's rep) attended by representatives from the Ministry of Fisheries (likely actually Fisheries in this case, as informing the Ministry of a *tabu* is part of the dual governance formal adoption process), as well as the district chief (Chief, assistant village headman). The *tabu* was also blessed with a prayer at that time (Women's rep, management plan).[16] The village chief directly attributes the awareness workshop, in combination with observed resource decline, with helping people in the village to decide that they wanted to extend the *tabu*; the women's rep agrees (both women refer to Fisheries as the salient organization but are almost certainly referring to INGO 2 in conjunction with Fisheries, as they refer to the workshop held in the village particularly). In addition to the *tabu*, the management plan (dated 2016) includes district level-rules covering riparian, river, and coastal area management (no clearing or burning of riparian areas, livestock/piggeries banned from riparian areas and from coastlines, introduction/farming of invasive fish banned). These rules were identified during the 2013 district-level workshop (Management plan), but – with the exception of moving piggeries away from the coast, which was done prior to the management plan being formalized – were not referenced by Village 8 respondents. The management plan also includes district-level marine resource management rules prohibiting destructive practices

[16] The *tabus* formalized in the 2016 management plan include two coastal areas, one of which extends offshore; based on my respondents' answers, the most salient of these for the people of Village 8 is the coastal *tabu* directly adjacent to the village.

(no night diving, no nets left overnight, no longline fishing, and no removing of coral). Again, these rules were not referenced by respondents.

Upon initial adoption, the costs of the *tabu* were immediately felt by local families, as the closed area constitutes nearly half of the fishing ground reachable by foot (Women's rep), albeit a small proportion of the total fishing ground (Chief). Compliance with the *tabu* was initially poor, but is now good (Resource management committee rep, women's rep, assistant village headman), although non-compliance is still sometimes observed (Assistant village headman, youth rep), and at least one individual affiliated with one of the outlying settlements is known to be breaking the *tabu* regularly, then selling his catch to the village women who subsequently take the fish to market (Chief). Over time, as the *tabu* has remained in place, some respondents feel that spillover from the closed area has mitigated the initial costs of the closure (Women's rep), making compliance more palatable. Respondents also attribute improved compliance over time to ongoing INGO 2-led workshops, associated efforts to provide the villagers with awareness of the rules and their justification (Resource management committee rep), and to the official ceremony marking the *tabu* (Assistant village headman). Non-compliance is reported to the village fish wardens, who are quick to respond to any reports of violations: "They go straight away to talk to them… they go quickly, they don't wait" (Assistant village headman). INGO representatives attribute the successes in Village 8 to a well-functioning traditional hierarchy, especially the steadiness of the village chief's decisions, the respect that villagers have for her authority, and the active involvement of the village resource management committee (INGO 2 central staff).

Some respondents agreed that, at the time of research, spillover effects from the *tabu* had recently become noticeable, where more fish are now caught more quickly in nearby non-*tabu*

waters (Women's rep; assistant village headman: "Before, when there wasn't a *tabu,* there were only small ones here, eh? And now that there is a *tabu,* when we go fishing [gasps]…very big, a really big change!"), and attribute this improvement directly to INGO 2 (Resource management committee rep). Others believe that spillover benefits have yet to be fully realized (Youth rep). The *tabu* and associated increases in fish catch have also helped to improve nutrition among the village children, and respondents value the information provided at workshops (for example, size limits and their justification) (Resource management committee rep, assistant village headman). According to the management plan, awareness materials (e.g., copies of the plan, posters) should have been distributed across the district, but these were not visible in the village at the time of my visit.

Monitoring of the most proximate *tabu* is relatively easy due to its coastal location and proximity to the heavily used primary fishing ground. The *tabu* site is marked with a series of buoys (Resource management committee rep, assistant village headman, management plan – these were likely not put in place until the *tabu* was formalized) that were provided by Fisheries (Chief), and villagers are encouraged to report violators (Assistant village headman). Village fish wardens exist and are active, although interview responses did not include information on the regularity and locations of patrols. At the time of research, it had just been proposed (Youth rep) or decided (Assistant village headman) that anyone found breaking the *tabu* would be exiled from the village (Assistant village headman) or perhaps from the entire district (Youth rep) for a year. Villagers have also been warned that if they are caught fishing the *tabu* they will be taken to the police (Assistant village headman). Outsiders are not believed to be fishing in the *tabu* area (Chief).

When the *tabu* is first opened, the income generated goes to the village council of elders, who decide how to divide shares between the village clans (Resource management committee rep). At the time of research, Village 8 had planned a village-wide celebration to be held in December 2018 (Assistant village headman – it is unclear if this is the first opening referred to by the resource management committee rep; while the INGO 2 central staff says the *tabu* has been opened for a similar event previously, the chief says it has remained closed). The *tabu* was to be opened for just this one day in order to provide for the feast (Assistant Village headman). The INGO 2 central staff hypothesizes that having a concrete plan for how to use the income generated by temporarily opening a *tabu* area helps communities prioritize compliance and implementation.

Direct support for livelihoods is limited in Village 8. Fisheries provided a breeding stock of baby clams to seed the waters, in order to support a later clam fishery (Women's rep, assistant village headman), although these were all killed by Cyclone Winston (Women's rep);[17] the agency also provided oyster spawn to start a pearl farm (Women's rep, assistant village headman), which was successfully harvested in 2016 (Assistant village headman). Women in the village have also received small government grants to start small businesses (Chief). According to the chief, other plans have been made, but follow through can be lacking: "They talked about giving honey, but we're still waiting." Respondents value this kind of support and would like to see more of it in the village (Youth rep, women's rep).

In contrast with all the other villages examined here, Village 8 has secured a FJD 90,000 grant from the Global Environment Facility of the United Nations (Resource management

[17] Cyclone Winston was a Category 5 storm that ravaged Fiji in February 2016; Winston hit fishing communities in western and southern Vanua Levu particularly hard (see, for example, Thomas et al. 2018).

committee rep, INGO 2 central staff). The process of identifying the funding opportunity and applying for the grant was facilitated by INGO 2 and the local Peace Corps volunteer (Resource management committee rep, INGO 2 central staff). The Village 8 resource management committee, which is responsible for implementing the management plan (Management plan), has used the funds to buy a boat and outboard motor for monitoring and enforcement of the traditional fishing ground boundaries, to construct and stock a greenhouse and grow sandalwood for eventual sale, and to fence the local water source (Resource management committee rep).

The process of adoption in Village 8 was driven by a strong, collaborative leader and local observations of resource loss, combined with a coordinated effort by an embedded aid worker (Peace Corps volunteer) and INGO 2 to provide management information in the village and at the multi-district workshop. Respondents also attribute the maintenance of the *tabu* past the date at which the village initially intended to re-open in large part to the district-level awareness offered by INGO 2. Although INGO 2 has provided little direct implementation support, the organization successfully connected the community to substantial funding for implementation. Village 8 thus provides support for H1a and H1b, although the importance of the Peace Corps volunteer, who was by all accounts an active advocate for management and valued local resource, and who was embedded in the community over the course of multiple years, should not be underestimated. Village 8 further demonstrates that – with adequate support – challenges to implementation are not insurmountable, although the extent to which the offshore *tabu* and the coastal *tabu* not directly visible from the main village are being implemented remains uncertain.

	Village 1 (n=5)	Village 2 (n=4)	Village 3 (n=5)	Village 4 (n=7)	Village 5 (n=5)	Village 6 (n=5)	Village 7 (n=4)	Village 8 (n=5)
INGO	None	None	None	INGO 1	INGO 1	INGO 2	INGO 2	INGO 2
Other actors	NGO 3 (historically)	NGO 3 (historically)	Fisheries (historically)	Government and other partners	Government and other partners	Government and other partners	Government and other partners	Government and other partners
# HH	19	10	50	40	34	36	43	50 (village only); 110 (with settlements)
Distance to markets	Remote	Remote	Semi-proximate	Semi-proximate to remote	Semi-proximate	Proximate to remote	Semi-proximate	Proximate
Resource reliance	High	High	High	High	High	High	Medium to high	High
Perceived resource state	Good	Good	Declining	Declining	Declining	Varied	Declining	Improving
Perceived level of poaching	Medium	Unknown	High	High	High	High	Varied	Varied
Locus of CBM decision-making	District	District	Village	Multi-district	Multi-district	District	District	Village
Activities								
Information gathering	Previously, by NGO 3	Previously, by NGO 3	Previously, by Fisheries	Yes: Ecological surveys	Yes: Ecological surveys	Yes: Ecological/ socioeconomic surveys	Yes: Ecological surveys	Yes: Ecological surveys
Information sharing	Previously, by NGO 3	Previously, by NGO 3	Previously, by Fisheries	Yes: Multi-district workshops	Yes: Multi-district workshops	Yes: Multi-district and district workshops	Yes: Multi-district and district workshops	Yes: Multi-district and district workshops
Recommending management	Previously, by NGO 3	Previously, by NGO 3	Previously, by Fisheries	Yes: Tabu adoption, fishing license terms	Yes: Tabu adoption, fishing license terms	Yes: Tabu adoption, management practices	Yes: Tabu adoption, management practices	Yes: Tabu adoption, management practices
Existing livelihood support	None	None	None	Yes: Catch handing training and buying	None	None	None	None

Alternate livelihood support	None	None	None	Yes: Sandalwood, seaweed farming, bee farming	Limited: Sandalwood	Limited: Mud crab CPUE tracking	Very limited: Reimbursing workshop expenses	None
Closure boundary marker support	None	None	N/A	Yes: Marker buoy at *tabu* site (historical)	Yes: Marker buoy at *tabu* site	N/A	None	None Marker buoys supplied by Fisheries
Monitoring and enforcement support	None	None	N/A	None	None	N/A	None	None
Other aid/ assistance	None	None	None	Yes: Shoreline protection, management plan/grant writing, aiding in identifying funding	Limited: Management plan writing	Limited: Management plan writing	Limited: Management plan writing	Yes: Management plan/grant writing, aiding in identifying funding
Stable funding for local management	No	No	No	No	No	No	No	Yes: GEF, facilitated by INGO 2
***Tabu* site**	Previously offshore Coastal	Previously offshore Coastal	Previously coastal/ nearshore	Offshore	Offshore	Previously offshore	Coastal	Coastal
INGO salience	N/A	N/A	N/A	High	Low	Low	Medium	Medium
Process tracing								
INGO preceded adoption (Hoop test)?	No	No	No	Yes	Yes	No (historically); Yes (current process)	Yes	Yes
Activities influenced (perceived) costs of adoption (Smoking gun)?	No: Adoption perceived to be costless	No: Adoption perceived to be costless	N/A	No: Adoption perceived to be costless	No: Adoption perceived to be costless	No: Adoption preceded INGO 2 involvement	No: Adoption perceived to be costless	No: Adoption perceived to be costless
Activities influenced	No	No	No	Yes: Primarily through	Yes: Primarily through	No: Adoption preceded	Yes: Primarily through	Yes: Primarily through

(perceived) benefits of adoption (Smoking gun)?	Previous information, experience of *tabu* as beneficial	Previous information, experience of *tabu* as beneficial	Previous information, experience of *tabu* as beneficial	information provision	information provision	INGO 2 involvement	information provision	information provision
Activities influenced (perceived) costs of implementation (Smoking gun)?	No: Costs are limited due to visible coastal *tabu* location	No: Costs are high due to more distant *tabu* site	N/A	No: Costs are high due to more distant *tabu* site	No: Costs are high due to *tabu* extent relative to *qoliqoli* size	No: *Tabu* broken during INGO 2 engagement	No: Costs are high due to *tabu* extent	Yes: Connecting to GEF funding underpinning implementation
Activities influenced (perceived) benefits of implementation (Smoking gun)?	No Previous info, experience of *tabu* as beneficial	No Previous info, experience of *tabu* as beneficial	N/A	Yes: Primarily through information provision	Yes: Primarily through information provision	Yes: Primarily through information provision	Yes: Primarily through information provision	Yes: Primarily through information provision
Other factors	Prime decision-maker presence in village as pressure; active social sanctioning	*Tabu* area shared with Village 1, where monitoring is low cost; free-riding possible	Historic *tabu* not intended to be permanent, no implementation failure	Livelihood/other support may be lost if village ceases cooperation	Adoption driven from above (multi-district level) without local consultation	Adoption driven from above (district level) without local consultation		Peace Corps volunteer instrumental in facilitating *tabu*; social sanctioning
Adopted?	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Implemented?	**Yes**	**No**	**No**	**Yes**	**No**	**No**	**No**	**Yes**
Hoop test	**-**	**-**	**-**	**Pass**	**Pass**	**Fail**	**Pass**	**Pass**
Smoking gun	**-**	**-**	**-**	**Pass**	**Pass**	**-**	**Pass**	**Pass**
Doubly decisive	**-**	**-**	**-**	**Pass**	**Pass**	**-**	**Pass**	**Pass**

Table 5-2. Summary of findings across case villages. The findings reported here include only the findings on which there was agreement between respondents; where disagreement between respondents exists, it is either noted above as "varied" (e.g., disagreement among village respondents on the health of their fishing grounds) or not reported (e.g., disagreement between village and NGO respondents on whether or not a socioeconomic survey was conducted in the village).

4.10 HYPOTHESIS TESTING

4.10.1 Hypothesis 1a: Supported, with alternate pathways

My results show that the arguments that INGOs advance for adopting local management – especially *tabus* – are convincing to communities. INGOs' information provision activities are especially salient for adoption because respondents generally perceived CBM adoption to be costless. This is perhaps unsurprising, given that fisheries management *tabus* are based on pre-existing cultural practices, CBM decisions are made within existing traditional hierarchies, and collective discussion of decisions is a cultural norm (for more discussion of traditional and collective decision-making, see Paper 3). Since my respondents almost universally perceive adoption costs as non-existent, it follows that adoption incentives are relatively easy to shift. In the case of Villages 7 and 8, for example, villagers just needed information about options to manage the resource issues they had already identified among themselves.

Furthermore, respondents consistently attach significant value to the knowledge provided by INGOs – in many cases labeling that information as the primary benefit of working with the organizations studied here. Providing support for H1a are the respondents who credit INGO-provided information with positively influencing adoption in Villages 4, 5, 7 and 8 (Table 2-2). Villages 1, 2, and 3, where CBM was adopted (historically) as a result of local NGO/government involvement, and Villages 1, 2 and 6, where CBM was adopted absent concurrent external impetus, demonstrate other pathways to adoption (Table 2-2). Finally, as management plans are compiled and printed by INGOs, it is clear that, where formal adoption is signaled by a management plan, INGOs have a role in formal adoption.

4.10.2 Hypothesis 1b: Supported, with alternate pathways

Village respondents indicate that INGOs incentivize implementation simultaneously with adoption by sharing information about the benefits of CBM and how those benefits depend on monitoring, enforcing, and complying with closures, undertaking terrestrial management activities, and otherwise implementing local management. Thus the information INGOs provide changes not just the perceived benefits of adopting CBM, but also how community members understand the daily choices they make about using and managing their marine resources (i.e., CBM implementation).

Results show that in addition to providing information, INGOs connect communities to funding opportunities and resources to support implementation – in some case significant resources, and in many cases more limited resources, but in all cases resources that the community would otherwise not have. INGOs create links to, and sometimes provide, livelihood support, both for existing livelihoods and for alternate ones. These schemes tend to be small across case villages, and are likely insufficient to significantly shift reliance away from marine resources, although there is some evidence that the extent to which they successfully supplant or shift existing livelihoods increases over time, and INGOs have intentions to institutionalize support (INGO 1 conservation rep).

INGOs do offer at least some support for implementation across the villages in which they work, and respondents in Villages 4 and 8 attribute gains in implementation to activities undertaken or facilitated by INGOs, or to knowledge INGOs provide, offering support for H1b. INGO 2 and Village 8's success in securing significant GEF funding is of particular note. Village 1 serves as an example of an alternate pathway to implementation, where the strong authority of an in-situ decision-maker and the proximity of the *tabu* area to the village underpin

implementation success. Written management plans in Villages 4, 5, 7 and 8 are explicitly designed to be revised every 1 to 5 years, with support from INGOs. INGOs thus have a clear role to play in enabling adaptive management, a key component of long-term CBM implementation (see Section 4.11 for more on adaptive management). Furthermore, in some cases (Villages 4 and 5) management plans assign some components of implementation to INGOs. Note, however, that in other cases (Villages 7 and 8) specifically define implementation activities as the responsibility of the local resource management committees across levels.

4.10.3 Hypothesis 1c: Supported

Across the villages examined here, primary INGO activities are knowledge provision, bridging, and facilitating creation of advisory/implementation structures to support decision-making and implementation (see Paper 3 for more on advisory/implementation structures). As discussed above, many of these activities incentivize both adoption and implementation. However, my respondents' input make it clear that implementation is far more complex than adoption. Furthermore, community respondents experience implementation as far more costly.

Community-level incentive structures that challenge implementation are well known and well documented: they are specifically called out in management plans, and were explicitly discussed by both community respondents and some INGO field staff. INGO central staff, in contrast, tended to frame lack of community implementation as a response to national-level institutions, or a lack of the will to manage, rather than as an understandable response to incentive structures faced at the village level.

The organizations studied here assign responsibility for implementation in large part or entirely to communities in their management plans, but village respondents indicate that

community resources are scarce and local costs of management are real and immediate. In the case of *tabu* areas, these costs take the form both of direct implementation costs (e.g., the costs of monitoring and enforcing closures) as well as loss of, or increased costs of, resource access associated with *tabu* institution.

There were notable unmet needs for financial and in-kind resources to support monitoring and enforcement across all but one of the adopting villages studied here. Current monitoring relies on fish wardens and/or boat owners. However, these individuals are expected to use their own time, benzene, and boats to undertake enforcement; village respondents commonly cited the costs of monitoring and enforcement as a significant barrier to successful implementation. Village respondents indicate that when monitoring and enforcement is non-existent and poaching by outsiders is known to be prevalent, local compliance is likely to suffer. The lack of monitoring and enforcement support leave even the most well-intentioned and conservation-minded villagers in a Catch-22: existing Fijian law makes enforcement of traditional *tabus* problematic, which is magnified by the lack of collective village resources to go out on the water and interdict unlicensed non-rights holders.

Where INGOs do act to support implementation, including monitoring and enforcement, the level of support provided is notably uneven across case communities (see Table 2-2). INGO respondents offer some explanation for this. In most of the cases examined here, access to external implementation funding is mediated by INGOs. According to INGO respondents, INGOs select villages for access to funding based the extent to which the community demonstrates commitment to CBM (INGO 2 central staff).

In my cases, INGOs' current answers to immediate resource access losses relies mainly on small income generating projects, which, like INGO implementation support more generally,

are distributed unevenly across communities. Furthermore, alternate livelihood support is complex, necessitates training, and can be slow to start up (INGO 1 central staff). In all the cases studied here these projects have so far been too small, slow to develop or short in duration to make up for income and subsistence opportunities lost in the short term.

In sum, I find support for Hypothesis 1c when I compare across the case villages. While INGO activities do incentivize both adoption and implementation, existing INGO activities do not consistently or sufficiently address the high costs of implementation experienced by village respondents.

4.11 OTHER CHALLENGES

Multiple respondents specifically cited the "toothless" legal status of traditional *tabus* as systematically undermining compliance among rights' holders (due to local knowledge of free riding by poachers) as well as enforcement (as outsiders using the *tabu* cannot be adequately subjected to the social sanctions on which traditional enforcement relies, and police response is slow to nonexistent when villagers report violations that could be sanctioned legally) (Chief Village 1, District rep Village 4, INGO 1 central staff). These challenges are magnified where *tabu* areas are located at (extremely productive) offshore reefs rather than in coastal areas: more distant areas are by their very nature harder and more costly to patrol.

In addition to the above issues surrounding compliance and enforcement, adaptive and local management (as we understand the terms in the West) remain somewhat foreign concepts in more rural parts of Fiji. Adaptive management may be especially challenging in traditional *iTaukei* contexts. Paradigms of adaptive management – embraced in both management plans and by the INGOs studied here – posit that management efforts should be regularly re-evaluated

against preset goals, and changed or refined as necessary based on the extent to which those goals are being met. Such approaches may be challenging for *iTaukei* communities that are used to a system that hinges on a single decision point and the final say of a single actor (the chief paramount at the level where decision-making occurs) (see Paper 3). This may create reluctance to install a *tabu*, for example, among community members who are concerned about the associated loss of catch, and who don't understand that management is expected to be refined as time progresses and effects are felt (INGO 2 field staff). In addition, the idea that rules should govern marine resource use is entirely new to some rural *iTaukei* Fijians: respondents in Villages 6 and 7 noted that having rules about how to use their fishing grounds was a new phenomenon (Youth rep Village 6, Village headman Village 7, Resource management committee rep Village 7, women's representative Village 7). Furthermore, even where the idea of making local rules is more familiar, the need for formal implementation may not be obvious. Under traditional decision-making structures and historical use patterns, adoption led directly to implementation with no additional effort: the chief said it, and it was so (Youth rep Village 2). However, the rise of fishing technologies that allow non-rights holders to access and intensively fish traditional fishing grounds has created a need for formal implementation (Youth rep Village 2).

5. Discussion

Authors studying marine and coastal management note that incentives matter (Jones, Qiu, and De Santo 2013; Allison et al. 2012), and it is common for authors studying CBM and related strategies to note that the community-level management benefits must outweigh management costs in order for CBM to succeed and endure (Adams and Hulme 2001; Pomeroy, Katon, and Harkes 2001; Govan 2009; Aceves-Bueno et al. 2015). However, even where authors explicitly

discuss incentives, they may focus their study on positive incentives while neglecting negative incentives (Govan et al. 2009; Aceves-Bueno et al. 2015). Others acknowledge that the balance between CBM costs and benefits matter without examining those costs and benefits in detail (Adams and Hulme 2001; Pomeroy 1995; Govan 2009). The cases examined here provide a novel lens on how INGO activities affect CBM incentives and thus influence the adoption and implementation of local management.

5.1 ADOPTION AND IMPLEMENTATION

The science underpinning INGOs' preferred strategies of networks of linked closures, combined with banning destructive practices on land and in the water, is solid, although the effects of periodic harvesting of closures vary with context (e.g., Clements et al. 2012; Klein et al. 2014; Carvalho et al. 2019). INGOs and other organizations (as well as interpersonal networks, as demonstrated in Village 8) are successfully diffusing knowledge of these techniques, and their potential benefits, across communities.[18]

As demonstrated above, across these cases information is commonly sufficient to incentivize adoption, but does little to address the much higher costs of implementation. Despite livelihood support and the creation of structures designed to support implementation – for example, village and district resource management committees, which are often set up with the assistance of INGOs – existing INGO efforts do not always successfully incentivize implementation. Furthermore, it is clear that INGOs and other facilitators of Fijian CBM are not

[18] INGO 2's management plans do not focus on either marine resource management or *tabus* per se, but rather on reef-to-ridge, ecosystem-based management, of which *tabus* are one only component (Management plans Village 7 and 8). INGO 1's management plan does focus on marine resources, specifically fisheries, but includes *tabus* as only one component of management.

engaging in depth with who implementation costs fall on, how they are distributed across the community, and how they can be defrayed. Contrary to the prescriptions of early CBM work that notes that resources for implementation are critical to CBM success (Agrawal and Gibson 1999), communities in my sample consistently lack such resources. Collective action problems reinforce that lack: for example, although increasing fish warden patrols has been offered as a way to improve management outcomes (Clarke and Jupiter 2010), fish wardens are expected to incur private costs to secure the collective benefits of an enforced *tabu* sufficient to create spillover effects. As is this is the very definition of a collective action problem, it is unsurprising that monitoring and enforcement suffer. And although livelihood support may in some cases result in significant livelihood gains (Veitayaki et al. 2011), such support has not yet developed sufficiently to attain such gains in the cases examined here.

INGOs' reluctance to assume responsibility for implementation support is understandable, given organizational agendas, the need to demonstrate success in short time frames (Krause 2014) and the need to prepare for eventual disengagement. Furthermore, INGOs have recently been excoriated by the press for allegedly enabling torture and murder in the process of funding monitoring and enforcement (Warren and Baker 2019). As INGOs rely on their reputations to signal legitimacy to funders (Steffek and Hahn 2010), such exposées may have a chilling effect on organizations' willingness to engage in such practices in the future. INGOs gatekeeping of external implementation support is also understandable from an organizational perspective – organizations' reputations with funders and others are on the line, and community grant management requires skills such as financial literacy that are in short supply in many Fijian villages. However, choices to limit implementation support ignore the real and immediate costs that adopting communities face. Communities find themselves stuck in a

vicious circle in which it is extremely challenging to demonstrate commitment to CBM without some external funding, but to be connected with external funding, they must demonstrate commitment to CBM.

Meanwhile, resource reliance, and the concomitant short-term costs of closing areas to fishing, continue to increase. In many of my case villages, the ocean provides the bulk of local income. Across villages, and in common with previous research (Muehlig-Hofmann 2007; Veitayaki et al. 2011), respondents noted that selling catches is a relatively recent phenomenon. The rise of markets drives increased reliance on marine resources for income, increasing resource pressure (Teh et al. 2009); increased access to markets has been found to undermine both customary and community-based co-management of marine resources in Pacific Island nations previously (Cinner, Sutton, and Bond 2007; Clarke and Jupiter 2010). Although some Fijian community-driven marine area closures have successfully attracted tourism income (Namena Marine Reserve in Kubulau District of Vanua Levu is one example (Clarke and Jupiter 2010)), tourism-associated benefits from management are unlikely where fishing grounds and closures are small.

Beyond income, many villagers in the communities studied here still rely on marine resources for subsistence. Respondents across villages noted that local population growth creates additional pressure on the use of resources for subsistence (see also Govan 2013), especially where boats are scarce and/or fishing grounds are small. Subsistence use is challenged immediately when the majority of a primary fishing ground is closed. Where reliance for subsistence is high, formulaic policy responses that rely on simplistic understandings of common pool resource management incentive structures are likely to fail (Allison et al. 2012). Prior discussions of community-level CBM costs and benefits (e.g., Adams and Hulme 2001;

Pomeroy 1995; Govan 2009) do not include any acknowledgement of the temporal distribution of those costs and benefits. In contrast, INGO representatives and other respondents are alive to the immediate losses incurred by communities that implement CBM, noting that when a community is asked to accept a *tabu* on their fishing ground, they are being asked to give something up, and positing that they should receive something in return. Here I find that where resource systems are already depleted (i.e., where CBM is especially attractive), CBM community-level costs (e.g., from area closures) are immediate, while benefits (e.g., increased catch, alternate livelihood support) are slower to manifest. This finding, while somewhat self-evident, has important repercussions for management. Allison et al. (2012) note that security and power differentials, both those endogenous and those exogenous to the community, are likely to influence how responsive fishers are to simplistically understood community-level incentives for management. Indeed, where lower income fishers rely on their daily catch to meet their subsistence needs, immediate costs from a *tabu* are likely to lead to widespread non-compliance and a failure to implement, as is the case in Village 7.

In the face of INGO resource constraints and the limited-term nature of INGO engagement (explicitly recognized among community respondents), it likely makes sense to leave implementation in local hands. The government may lack necessary resources and capacity (Veitayaki et al. 2011): respondents perceived INGOs as more likely to be able to provide resources, especially in remote areas, than the government. But given the collective action problems and time horizon issues highlighted above, more can be done to enable successful CBM to flourish at the village level (see Conclusion to the Dissertation).

5.2 SALIENCE AND PERCEPTIONS OF INGOS

It is notable that the salience of the INGOs working locally varies widely across communities (see Table 2-2). Respondents know that an organization visits their village or district, but in common with previous findings (Austin and Eder 2007; Benson 2012), in some communities respondents confuse actor identity, especially the Ministry of Fisheries and INGOs. This is at least in part due to the fact that workshops – most often convened by INGOs – bring together multiple organizations, including government agencies like Fisheries. The misunderstanding is likely compounded by the fact that Fisheries staff present to district meetings annually, in order to share and reinforce national fishing regulations. Nonetheless, where local organizational presence is less noticeable and/or regular, Fisheries often gets the credit for work that is organized or guided by an INGO, at potential costs to the organization in terms of local support for organizational agendas.

Where INGOs are salient actors, they are generally well regarded. As noted above, the knowledge they provide is particularly highly valued by respondents. However, some INGO activities might be seen to primarily incentivize working with INGOs rather than the adoption/implementation of CBM per se. As a result, some of the positive regard in which communities hold locally salient organizations may be due to the benefits of working with INGOs rather than the benefits of management (see also Lawson-Remer 2013). While activities such as alternate livelihood development may be seen as intrinsically related to management, in that they are an attempt to address incentives (and to the extent that they are sustainable without indefinite ongoing support from external actors), the non-management value that accrues to communities is directly evidenced, for example, by the value local respondents place on INGO 1 erosion mitigation activities in Village 4. A number of local and INGO respondents also noted

that INGOs historically have provided stipends to community members who attend workshops as well as paying costs of food and lodging to the hosting village. Again, incentivizing attendance at a workshop in which the information and/or training needed to underpin local management is provided may be seen as intrinsic to management. However, there can be no doubt that paying people to learn creates incentives to keep the teachers around at least as much as it incentivizes applying the lessons. All the NGO respondents interviewed here maintained that this was no longer common practice in their organization, and some expressed concern that this and related practices had created a dependence mentality among villagers, with some community-level CBM participants motivated primarily by monetary benefits rather than a genuine interest in management. These observations mirror findings of rent seeking behavior among community participants in other fisheries co-management contexts (e.g. Béné et al. 2009). Relatedly, respondents across villages were noticeably reluctant to criticize INGOs, even when asked directly. There was some indication that a subset of respondents experienced, but were reluctant to discuss, indeterminate costs from working with INGOs. If this reluctance transcends cultural norms, and is at least in part a reflection of reluctance to alienate organizations that supply resources, the implication is that the benefits of working with INGOs – regardless of CBM adoption and/or implementation – outweigh the costs. The further implication is that the costs reported here are likely an underestimate of the costs actually experienced by community members.

Furthermore, it is clear that, in the Fijian context, INGOs are not the only actors incentivizing the adoption and implementation of CBM. Each village that was selected to represent an area where INGOs did not work had a history of external actor intervention (a local NGO in Villages 1 and 2, and a government agency in Village 3), and all external actors

followed similar approaches to those followed by INGOs. In other community-based natural resource management contexts, NGOs and government have been found to have complementary roles, with government providing resources and NGOs connecting communities to those opportunities (Gupta and Koontz 2019). There is some evidence of that in these cases as well: INGO respondents spoke of connecting communities to resources provided by government agencies and others as a primary activity, and cited awareness of and access to those resources as a primary benefit of their work. It is perhaps unsurprising that, in a context where a network organization (FLMMA) exists and strives to coordinate approaches and share information, approaches would diffuse between different classes of actors. It is also in INGOs' strategic interests for other organizations, especially those that don't directly compete for funding (e.g., local NGOs, government) to make use of similar approaches and/or work as INGO partners, as this should be expected to maximize the reach, capacity, and ideally impact of the INGOs themselves. Yet the study of INGO activities in particular remains valuable for three reasons, even in the Fijian context. Firstly, INGOs have specifically been targeted for criticism, especially criticism of their work with communities, by some authors (e.g., Chapin 2004). Secondly, INGOs are relatively well-resourced when compared to local NGOs, and even some government agencies, and (as discussed above) are perceived to be so by local respondents. Lastly, INGOs often drive both the work and forms of other organizations – especially local NGOs – through their power to allocate secondary funding and to exert isomorphic pressures towards professionalization and more hierarchical organizational structures (Lang 2013). It is therefore unsurprising that INGOs and other organizational actors' approach to CBM are similar.

5.5 LIMITATIONS AND FUTURE DIRECTIONS

This study is subject to a number of limitations. Firstly, efforts to include counterfactual cases and full variation were not entirely successful. Village 3 offers an insufficient pure counterfactual, given that the village had adopted and implemented local management previously. In cases where multiple study villages share a traditional fishing ground (e.g., Villages 1 and 2, Villages 4 and 5), shared adoption processes limit the variation in one dependent variable. Relatedly, while selection of adopting villages relied on the presence of a management plan, at least where INGOs are active, it is worth noting that local management may be ongoing absent a management plan. This is true not only where no INGOs are present (e.g., Villages 1 and 2), but may also be true where INGOs are actively working – even villages who have not adopted a management plan may have village closures that are in place and well respected. Thus, while this study does represent a step towards a better understanding of how adoption and implementation of CBM vary both in the presence and absence of INGO activity, further work is needed to collate a complete picture.

Secondly, the sample of village respondents likely suffered from selection bias, as selection was largely mediated by the village headman, in line with *iTaukei* village protocols. This became apparent in Village 5, for example, where I learned by chance that conflict over the desirability of the local *tabu* was ongoing: the Village 5 women's representative, the respondent who was most forthcoming about the nature of that conflict, was selected for inclusion opportunistically rather than in a process meditated by the village headman. It is almost certain that, due to mediated selection, additional useful information was omitted from interview responses in other case villages. However, given both the legal and cultural necessity of working within village protocols, it is difficult to see how this issue could be better addressed.

Thirdly, the scarce, scattered, and largely single case-based previous literature on INGOs in CBM did not support *a priori* development of hypotheses that were specific as to causal mechanism – that is, which types or levels of INGO engagement (types of activities, level/frequency of engagement, etc.) truly influence the costs/perceived costs and benefits/ perceived benefits of CBM adoption and implementation, and how they do so. Based on the research reported here, however, it seems clear that different activities influence incentives for adoption and implementation differently. Future work should build on the progress made here to develop and test specific causal mechanism hypotheses: e.g., implementation is more likely where institutions exist or are created to either defray privately incurred costs of monitoring and enforcement or to share those costs across the entirety of the group that directly benefits from management; implementation is more likely where organizations and/or their representatives are seen as involved, active, and helpful at the village level.

Finally, CBM becomes difficult to define when action is taken across levels (Aswani, Albert, and Love 2017). What, in fact, constitutes a community, or community participation, when traditional leaders are the primary targets of INGO activities, and when CBM is adopted at the district/tribal level but implemented at the community/individual level? Per Ostrom (1990), to what extent is decision-making actually communal and under what conditions do users have a say in management? Finally, based on the results reported here, to what extent does lack of participation/consultation lead to lack of implementation? These questions are addressed in more depth in Paper 3.

6. Conclusion

The above examination of the role of INGOs in CBM implementation demonstrates that community-level incentives matter for the adoption and implementation of Fijian CBM. Despite other authors' recognition of that incentives matter for marine and coastal management success (Jones, Qiu, and De Santo 2013) – and that, consistent with common pool resource theory (Ostrom 1990), community-level incentives are particularly critical for CBM (Adams and Hulme 2001; Pomeroy, Katon, and Harkes 2001; Govan 2009; Aceves-Bueno et al. 2015) – I have been unable to identify previous work that explores incentives in a detailed and systematic way. This paper usefully supplements the existing literature by unpacking how communities experience the costs and benefits of CBM, by beginning to document how those costs and benefits vary over time, and by examining the causal links between costs and benefits and the adoption/ implementation of CBM.

My findings demonstrate that Fijian CBM faces significant challenges, especially in implementation. There is a glaring gap in the current approach to facilitating CBM examined here. INGOs and other organizations are working, often very effectively, to convince communities and decision-makers of the benefits of adopting local marine resource management. But all things considered, adoption is a relatively easy sell. The hard work – and the cost that accrues to communities – lies in the implementation phase. Successful implementation is necessary to secure the management benefits valued by all actors, yet adequate implementation support is in most cases lacking. INGOs are in many ways the obvious players to address these issues, as international environmental organizations can be understood as linking communities to a larger, global system (Austin and Eder 2007) – or indeed, as mediators of wealth transfer from the developed world to the developing world, in recognition of the global value of intact

ecosystems, food security, and the like. Benefits of implemented local management do not, in fact, accrue only the communities – they are a public good, shared with INGOs, donors, and the world as a whole. In other words, INGOs, donor, and even governments are, by their very nature, representatives of the "global lens of biodiversity conservation (that it is a global commons)," and those actors' instrumental choices to reflect only local perspectives on the value of conservation and management activities ("local commons for livelihoods") (Berkes 2007, 15188) are disingenuous at best.

However, the lack of adequate implementation support documented here is less an institutional or organizational failure than it is a systematic failure. Fijian CBM is facilitated by networks of actors across sectors and levels, and INGOs cannot be held solely responsible for the gaps elucidated above. Indeed, previous reports suggest that the FLMMA network model was designed to assign the provision of ongoing support to the government, but that the government has not yet stepped into that role (Govan, Jupiter, and Comley 2012); indeed, as noted above, government resources and capacity are known to be lacking (Veitayaki et al. 2011). Given organizational resource constraints, which have only increased with the recent announcement that the primary funders of INGOs' work in Fijian CBM will withdraw in 2020, it may not be possible for INGOs to extend their work to actively help communities bear the costs of implementation.

Nonetheless, the need is real and the obstacles are known and surmountable. In order to meet their self-professed goals, the network of actors funding and facilitating CBM in Fiji has a collective responsibility to better specify the full suite of interventions they undertake, in order to defray the private or village-level costs of implementing management and fully realize the benefits valued by all parties.

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Appendix 2-1. Semi-structured interview protocol.

-Introduce lead researcher and assistant; Provide participant information sheet and answer any questions; Secure consent a) to be interviewed and b) for the interview to be recorded; Remind participants they're free to skip any question or stop the interview at any time

Community characteristics: I'll start with a few questions about your village.

□1. How many people live in [village name]? How many households are there here?
- 1a) Has your village always been about the same size? How and when did it change?

□2. Who lives in your village? Where do the people who live here come from?
- 2a) Have the families who live here always lived here? How and when has who lives here changed? (Ethnicity, long-term residents/recent immigrants)

□3. How are the reef, the fish and the sea important to the village and people who live here?
- 3a) Has how people use the reef, the fish and the sea changed? How and when?

□4. How many of the households here go fishing and/or gleaning?
- 4a) Has that changed over time? How and when?

□5. How much of people here's food comes from fishing or gleaning?
- 5a) How much of the money people earn?
- 5b) Has that changed over time? If so, how and when?

□6. How else does the village, or people who live, here get food and money?
- 6a) Has this changed over time? If so, how and when? (Reef-centered tourism, aquaculture/mariculture)

Resource system: Now I'll ask about the reef, the fish and the sea around your village.

□7. Where do people here go fishing or gleaning?
- 7a) Have those places changed? How and when?
- 7b) Is that the traditional qoliqoli?

□8. Can you describe the boundaries of the area where people are allowed to fish or glean? How do people know where the boundaries are?
- 8a) Has how people know where the boundaries are changed? How and when?

□9. How do people here know if outsiders come and fish or glean here without permission?
- 9a) Has this changed? If so, how and when?

□10. What about [other activity mentioned in Q6]? Where does that happen?
- 10a) Would people here know if outsiders did that without permission? How?

□11. What are the reef, the fish and the sea like here? How healthy are they?
- 11a) Has the health of the reef, the fish or the sea changed? How and when?

Decision-making: Now I'd like to know about how you make decisions about using the reef, the fish and the sea here.

□12. How are decisions about where, when and how people can use the reef, the fish and the sea made here?
- 12a) Who makes the decisions? Who advises?
- 12b) How do people here choose who makes and advises on the decisions?
- 12c) Has how those decisions are made changed over time? If so, how and when?
- 12d) How did your grandparents make those decisions? Their grandparents?

□13. Once a decision is made, what happens then?

□14. When [you/other decision-maker] make decisions about using the reef, the fish and the sea here, why do [you/they] decide as [you/they] do?

14a) What influences [your/their] decisions? What helps [you/they] make up [your/their] mind?
14b) Has why [you/they] make the decisions [you/they] do changed over time? How and when?

□15. What [does/would] it cost people here to make decisions about how to use the reef, the fish and sea locally?

□16. How [do/would] people here benefit from making those decisions locally?

16a) Have those costs or benefits changed? How and when?

□17. What about you? [Are there/would there be] costs to you personally of making those decisions locally?

□18. [Are there/would there be] benefits to you personally of making those decisions locally?

18a) Have the personal costs or benefits to you of making those decisions changed over time? If so, how and when?

□19. Do any outside people or organizations work to help people here make decisions about how to use the reef, the fish or sea here? Which organizations?

□20. If no one from outside works here now, have any people or organizations worked or tried to work here in the past? What happened then?

Organizational activities – to be repeated for each organization mentioned in response to Q18, if time allows (if time is short focus on INGO activities): Now I'd like to ask you about [organization/s just mentioned].

□21. What does [organization] do?

21a) When did they being working here? How did that start?
21b) Who from [organization] works here? Do you talk to anyone else at [organization]?
21c) Does [organization] do any other kinds of work in your village? If so, what do they do, and when did they start?

-Funding (percentage; restrictions on use); information/learning (type of info); training/capacity building (type); technical support/direct expertise (type); personnel (monitoring/enforcement/other)

□22. What does [organization] say about people here making their own decisions about how to use the reef, the fish and the sea?

22a) Who do they say should be involved in making those decisions?

□23. Has working with [organization] changed who makes or helps make those decisions? How and when?

□24. What does [organization] say about the health of the reef, the fish and sea here?

□25. Does working with [organization] make it easier or harder for people here to make rules about using the reef, the fish and the sea? If so, how?

25a) What about you personally? Does [organization] make it easier or harder for you to make those decisions?

□26. Does working with [organization] make it easier or harder for people here to make sure everyone follows the rules? If so, how?

26a) What about deciding what to do when people break the rules?
26b) What about changing the rules?
26c) What about when there is conflict?

□27. What does [organization] say you should do to take care of the reef, the fish and the sea?

27a) Why do they say you should do that?
27b) How do they say you should do that?
27c) What do they say will happen if you take their advice? What if you don't?

27d) Has what they say changed what people do here? How and when?

Decision-maker attitudes: Last I'd like to ask you a few questions about your own thoughts and experiences.

□28. Whose job is it to take care of the reef, the fish and the sea here? Whose should be responsible?

28a) Why?

28b) Did you always think that? How and when did your thoughts change?

□29. What do you think about local people making decisions about their local reef and sea?

29a) Who do you think should be involved in making those decisions?

29b) Did you always think that? How and when did your thoughts change?

□30. How do you feel about international conservation organizations like Worldwide Fund for Nature, Wildlife Conservation Society, and Conservation International?

30a) Have your feelings changed over time? Why?

□31. Do you like working with [organization], or having them work here? Why or why not?

31a) Is there anything you wish they would do, or that you wish they would do differently?

31b) Have your feelings changed? How and when?

Wrap-up:

□32. Is there anything else you'd like to say, or that you think I should know?

□33. How was it for you to visit with me today?

Appendix 2-2. Coding scheme.

APPLY MULTIPLE CODES WHENEVER NECESSARY (THIS WILL BE THE NORM)

Location		Apply to every coded quote: either the interview where the village is taking place, a note saying the quote refers not to the village per se, but to the broader context, or (rarely) both
1	Village 1	
2	Village 2	
3	Village 3	
4	Village 4	
5	Village 5	
6	Village 6	
7	Village 7	
8	Village 8	
9	Non-case village	
10	Broader context	
Primary variable		
100	Decision-making structures	Institutional structures, decision-maker identities or types, locus of decision-making - all references, even absent activities/targeting. Also used for the identities of NGO liaisons. Use actor codes in conjunction whenever possible
200	CBM adoption	Management plan, tabu, or other management measures; code focuses on process of adoption. Do not apply to management that does not originate with the community (e.g., regulations such as set sizes that come from Fisheries)
300	CBM implementation	Monitoring and enforcement, compliance/non-compliance, adaptation, conflict resolution of community-based management only - (e.g., enforcing the boundary of a tabu, yes, but enforcing the boundary of the qoliqoli, which is not set by the community, no) ; code focuses on process of implementation (also implementation failures)
400	Attitudes	Towards need/responsibility for management, towards participation in decision-making, towards INGOs (including understanding of INGO limitations), towards government
Activities		
2100	Information/knowledge	General references to how information travels between actors, especially within communities
2110	Information gathering	Ecological or socio-economic surveys, etc.
2120	Information provision	Sharing information as a specific activity: research findings, awareness raising, informational presentations, giving (non-specific) advice etc.
2200	Management resources	Direct resource provision
2210	Providing funding	Direct funding provision

2220	Providing in-kind support	Boats, motors, benzene, in-water markers, etc.
2230	Providing expertise	Providing expertise to actively support management or related activities (e.g., filling out grant paperwork, trainings, etc.)
2300	Bridging/connecting	Connecting to resources
2310	Connecting to funding	Connecting to funding opportunities or funders
2320	Connecting to in-kind support	Connecting to in-kind resources
2330	Connecting to expertise or other information sources	Connecting to expertise
2400	Management recommendations	Recommending specific management measures
2410	Marine/coastal recommendations	Recommending fishing license terms, tabus, other marine resource management (include mangroves)
2415	Monitoring and enforcement recommendations	Recommending better policing, monitoring of the qoliqoli or resource use practices
2420	Terrestrial recommendations	Recommending forestry practices, agricultural practices, waste management practices, etc.
2500	Management activities	Management practices, including damaging use practices, also including leading or taking part in specific management measures
2510	Marine/coastal management activities	Fishing regulations, fishing license terms, no-take zones/MPAs/tabus, mangrove planting, etc.
2515	Monitoring and enforcement activities	Qoliqoli/tabu patrols, marking tabu areas, speaking to or apprehending poachers, etc. Also references to inability to monitor/enforce.
2520	Terrestrial management activities	Waste management, reforestation, etc.
2530	Formal recognition activities	Blessing of the tabu, soqo/celebration of the tabu, gazetting the tabu, etc.
2540	Conflict resolution activities	
2600	Decision-making structure recommendations	Recommending specific decision-making structures or changes to structure, changes to participation, etc.
2700	Development aid or support	Development or livelihood support
2710	Existing livelihoods	Fish handling, fattening cages, etc.
2720	Alternative livelihoods	Handicrafts, aquaculture/mariculture, apiculture, etc.
2730	Other aid	Building or supporting schools, building seawalls, etc.
Actor		All these codes should also be used to indicate actor when identity of actor is not enclosed in quote (for purposes of analysis)
3100	Community	Use only when reference is unclear - prefer code 3110 or 3150
3110	Community collective	Community acting as a whole (bosse va koro/village meeting, etc.)
3150	Community sub-group	Yaubula committee, women's groups, etc.
3200	Community leaders	Village chief(s), turaga ni koro, , etc.

3300	District leaders	District chief(s), yaubula committee, etc.
3400	Provincial leaders	Provincial chief(s), yaubula committee, Yaubula Management Support Team, etc.
3500	NGO	Non-specific references to NGOs
3511	NGO 1	Direct reference to INGO 1
3512	NGO 2	Direct reference to INGO 2
3513	NGO 3	Direct reference to NGO 3
3520	Other INGO	Any other INGO
3530	National or local NGO	Any other local or national NGO
3540	Embedded aid worker	Peace Corps volunteers, etc.
3600	Government	Fisheries, Forestry, Agriculture, Environment, Provincial Office, police, etc.
3610	IGO	Intergovernmental organization (SPREP, etc.)
3700	Church	Church or other religious organization
3800	Private sector actors	Companies or corporations
Incentives and changes to incentives		
4000	Known predictors	
4100	Resource state	Health of the resource system
4200	Resource reliance	Reliance on the resource system for food, income, cultural value, etc. Also code for non-resource reliant food or income-generating activities (e.g., farming, copra/coconut, handicrafts, etc.)
4210	Distance to market	
4300	Community size	Number of households, etc.
4400	Community heterogeneity	Demographic/social composition of the community
4500	Resource system boundaries	Traditional qoliqoli, demarcation of use, no-take, etc. areas
4600	User group boundaries	Demarcation of allowed users (bounds of groups, poaching, licensing policies, etc.)
4700	Knowledge/traditional knowledge/institutional knowledge	Knowledge of the resource, the importance of the resource, how to manage the resource, impacts of harmful activities, etc.
4800	Alignment with other levels of governance	Per Ostrom, existing rules are supported (or at least not actively challenged) by higher levels of governance
5000	Costs and benefits	Of management, of working with NGOs, of decision-making; also of use practices (destructive or otherwise).
5100	Material costs and benefits	
5110	Money costs and benefits	Management associated financial commitments, changes to income from management or associated activities, etc. Do not apply to general mentions of money or income (e.g., resource reliance)
5120	In-kind resources costs and benefits	Physical resources for management (boats, benzene, etc.)
5130	Time costs and benefits	Management associated time commitments, time required to meet food/income needs, etc.

5200	Livelihood/cultural costs and benefits	
5205	Resource access costs and benefits	General references to costs or benefits framed as more or less fish catch, etc. (specifically not income or food - for that use 5210)
5210	Food and food security costs and benefits	Food, food security, nutrition, etc. as a cost or benefit of management (do not use for references in the context of resource reliance)
5215	Public health costs and benefits	Public health benefits other than those associated with nutrition
5220	Cultural obligations costs and benefits	Soqos/traditional events, village celebrations, cultural tithes, etc.
5230	Cultural/livelihood identity costs and benefits	iTaukei (Fijian) identity, fisher identity, tribe/clan/family identity, etc.
5240	Knowledge costs and benefits	References to knowledge or traditional knowledge as a cost or benefit of management. For general references to knowledge in other contexts, use 4700 (or possibly 2100)
5250	Sustainability costs and benefits	Especially references to future or future generations
5300	Social costs and benefits	
5310	Conflict costs and benefits	Conflict, disagreement, or harmony
5320	Authority costs and benefits	Authority of/respect for decision-makers and their decisions, specifically as a cost or benefit of management
5330	Autonomy costs and benefits	Collective or individual decision-maker autonomy, specifically as a cost or benefit of management
5340	Ownership costs and benefits	Formal or informal resource ownership, access/use rights, etc., as a cost or benefit of management (not for references to taking ownership of management (use code 400))
5350	Equity costs and benefits	Applied to discussions of whether or not costs/benefits of management are distributed equitably throughout the community
5360	Status costs and benefits	Status other than decision-maker authority -- for instance, status associated with having a formal management plan in place
5400	Environmental costs and benefits	Environmental damage, spillover effects, improved breeding, etc., as a cost or benefit of management (do not use for health of resource in the context of resource state)
5410	Climate resilience costs and benefits	

Are there causal claims made?

7000	Causal claim	Any causal claims connecting actors/activities to incentives, or the either of the former to decision-making structures/adoption/implementation/attitudes; code for implication when causality is strongly implied. Also applied when respondent directly claims the absence of causality.

PAPER 3. WHO DECIDES, WHO ADVISES? PARTICIPATION, INTERNATIONAL NON-GOVERNMENTAL CONSERVATION ORGANIZATIONS, AND COMMUNITY-BASED MARINE RESOURCE MANAGEMENT DECISION-MAKING

Abstract

Many lower-income nations, especially small island developing states, rely increasingly on fish and marine resources, making findings that improved coral reef ecological outcomes are associated with local involvement in management particularly compelling. Community-based marine resource management (CBM) seeks to increase local involvement in management, often with the assistance of non-community actors including international non-governmental conservation organizations (INGOs). CBM has been proposed as a way to improve and maintain developing-world fish stocks and food security. Despite compelling evidence that participation matters, however, much of the existing empirical work on CBM incompletely specifies what local involvement looks like in practice. That question is salient given the combination of increasingly supportive rhetoric regarding local participation emerging from both funders and INGOs, and the complexities and challenges that broad user participation incurs in practice. Here I report findings from process-tracing and content analysis of interviews with community members (n=40), NGO representatives (n=6), and CBM management plans (n=4) across eight coastal Fijian communities. I find that, despite some effort to establish user-inclusive advisory structures, INGOs have not broadened user participation in decision-making in the cases examined here. User participation in decision-making happens only at the discretion of traditional decision-makers, and appears less likely where users are further removed from decision-makers, despite both traditional mechanisms and INGO-facilitated advisory structures that are intended to link users to decision-makers across intervening levels.

Keywords: community-based management, NGO, participation, decision-making

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1. Introduction

Participation has become a buzzword in natural resource management in recent decades (Jentoft, McCay, and Wilson 1998; Reed 2008; Nelson and Agrawal 2008; Evans, Cherrett, and Pemsl 2011). Resource users, in particular, are seen to have rich contextual knowledge that can improve management, and participation is believed to increase user buy-in, including improved compliance with management measures; rules are more likely to be suited to local context, and less likely to be perceived as unreasonable or overly burdensome, when those who are affected by those rules participate in their creation and alteration (Jentoft, McCay, and Wilson 1998; Fanning 2000). Participation is particularly lauded where central governments are unable to enforce command-and-control approaches to resource management, either because of the nature of the resource, a lack of government capacity, or both. Participation, then, has been embraced by governments, funders, and facilitators of common pool resource management, especially marine and coastal resources, and in particular in the developing world (see Maliao, Pomeroy, and Turingan 2009; Weeks and Jupiter 2013; Abernethy et al. 2014; Cohen, Evans, and Govan 2015 among others).

In many cases, participation in marine and coastal resource management takes the form of community-based management, in which resource users govern their own resource use. Community-based management is inextricably linked to common pool resource theory, in which users self-organize to manage their own resource use (Ostrom 1990); here I CBM that occurs due to pure community self-organization "traditional community-based management." Across Pacific Island Nations, however, traditional community-based management of marine and coastal resources has given way to community-based co-management of marine and coastal resources (CBM), in which communities share management responsibilities with government, non-

governmental organizations and/or private sector stakeholders (Jentoft, McCay, and Wilson 1998; Cohen, Evans, and Govan 2015). Instead of self-organizing, communities now often institute local management at the suggestion and/or with the input of non-community actors, especially international environmental conservation organizations (INGOs).

But, consistent with predictions of NGO theory (Prakash and Gugerty 2010, Lang 2013), alliances between communities and CBM facilitators like INGOs are not always straightforward, and do not always lead to the outcomes sought by either party (see Paper 2). Although scholars of common pool resources are clear that CBM and co-management inherently involve broad resource user participation in decision-making (Ostrom 1990; Berkes 2009), how CBM actors – including INGOs – are approaching and facilitating or undermining that participation is less clear. Based on the discussion of common pool resource theory, theories of NGOs, and work on participation presented below, this paper seeks to answer the question: How do international non-governmental organizations impact community-based marine resource management decision-making structures, in particular user participation in decision making?

This paper presents results of process-tracing and content analysis of documents and original interview data collected across eight *iTaukei* (Native Fijian) communities selected to vary on INGO involvement and the adoption and implementation of CBM. I begin with a synthesis of salient literature outlining the theory and empirics of NGOs, CBM, common pool resources, and participation in management and decision-making. An overview of case selection, data collection and the process tracing and content analysis methodologies used here follows; that overview is in turn followed by findings outlining whether and how INGOs influence user participation in CBM decision-making. I close with a discussion of the findings, their implications for theory and practice, and a short conclusion.

1.1 BACKGROUND AND LITERATURE

1.1.1 Participation and the CBM literature

Ample evidence demonstrates scholarly and managerial interest in tracking participation and its effects in natural resource management, but participation is not always clearly or consistently defined. A recent meta-analysis found "participation" to be the most commonly used process indicator in studies of fisheries co-management (Evans, Cherrett, and Pemsl 2011). Furthermore, participation appears to improve management outcomes. Across studies of community-based conservation,[1] an emphasis on local participation in project design is associated with improved user attitudes towards management as well as improved ecological outcomes (Brooks, Waylen, and Mulder 2013). In particular, low-income individuals who actively participate in decision-making are more likely to perceive improved livelihoods from management (MacNeil and Cinner 2013), and coral reef sites that are home to higher-than-predicted fish biomass tend to have higher levels of local participation in management (Cinner et al. 2016). In line with these findings, marine and coastal decision-makers and managers are advised to "improve and enhance participatory processes" (Govan 2009, 10) and told that "investments that strengthen fisheries governance, particularly issues such as participation and property rights, could help communities to innovate in ways that allow them to defy expectations" (Cinner et al. 2016, 418).

However, seemingly simple formulations of increased local participation in management obscure a wealth of complexity. Firstly, halo effects – whereby stakeholder participants are more likely to both approve of and perceive benefits from management – are well-established

[1]See Paper 2 for a discussion of terminology; here, community-based conservation can be considered a synonym for CBM

(Coglianese 2002). Secondly, and of direct relevance to this study, broad calls for increased participation do not engage with common critiques of participation, in particular concerns that participation may not mitigate (or may even exacerbate) pre-existent power differentials between participants (Coglianese 2002; Lynam et al. 2007; Reed 2008; Wesselink et al. 2011). Furthermore, despite the fact that supporters and scholars of CBM identify "strengthen[ing] community participation" as a common objective of the approach (Jupiter et al. 2014, 168), there is little discussion of the different dimensions of community participation.

As discussed below, scholars of CBM do not always clearly distinguish between different types of participation. However, scholars of decision making offer valuable contributions to understanding participation. In particular, Archon Fung's (2006) work usefully establishes three dimensions of citizen participation in decision-making: who participates/how participants are selected, how and to what end information is communicated and used in decision-making, and the extent to which participants have power and authority in decision-making.

Per Fung's (2006) framework, then, in order to understand participation in CBM, we must begin by asking who is participating. Common pool resource scholars, at least, are clear in their answer to this question. Elinor Ostrom's canonical work on the design principles that underpin lasting self-organized common pool resource management includes the principle of "Collective choice arrangements: Most individuals affected by the operational rules can participate in modifying the operational rules" (Ostrom 1990, 90). Thus, individual participation by those affected by the rules – at least primary users, and perhaps secondary users and all those who receive benefits from use – is definitional to community-based management/co-management (Berkes 2009), at least to the extent that CBM is grounded in common pool resource theory. This is the definition of user participation in CBM that I use here. However,

CBM participation by a majority of users may be problematic due to increasing transaction costs (Béné et al. 2009), especially as INGOs seek to scale-up their impacts from hyper-local to ecosystem scales (Sievanen, Gruby, and Campbell 2013). In agreement with Fung's (2006) framework, this results in a need to identify participant selection processes to establish some form of representative governance (Béné et al. 2009). In the context of within-community heterogeneities (Agrawal and Gibson 1999), however, and especially where downward accountability is lacking (Béné et al. 2009), reliance on representatives may result in a system that does not meaningfully reflect the full suite of user perspectives, undermining the foundations of CBM.

To compound these issues, much CBM scholarship is less rigorous in defining the community portion of community participation. A long history of work acknowledges that definitions of community are often problematic in CBM, and that within-community heterogeneity may challenge efforts to engage with "the community" as an idealized, small, homogenous, unified group, and outcomes when community homogeneity is assumed (Agrawal and Gibson 1999; Allison and Ellis 2001; Muehlig-Hofmann 2007; Allison et al. 2012). Nevertheless, incompletely specified definitions of community persist in CBM scholarship. Some studies focus their analysis at the co-management system level and discuss the range of interests and balance of power between co-management partners (e.g., government and community) rather than examining variation within a given co-management actor (e.g., community) (Jones, Qiu, and De Santo 2013; Fischer et al. 2014), treating the community as homogenous by default. In other cases, where data are combined across studies, dimensions and differences within individual communities are obscured: for example, a 2013 meta-analysis of factors that influence successful community-based conservation operationalizes community

participation as an ordered categorical variable including no community, some community, or complete community (Brooks, Waylen, and Mulder 2013). While this makes for clean analysis, the "some community" formulation likely masks differences in the identities of those who participate across communities; in other words, it is more likely to measure "some participation from the (assumedly homogenous) community" rather than participation from "some of the (in fact heterogeneous) community." Alternate formulations of community stakeholders (Aceves-Bueno et al. 2015) or community groups (Beger et al. 2004) are an improvement, but come with complexity of their own when selection mechanisms remain unexamined.

Both the common pool resource scholars (Ostrom 1990; Berkes 2009) and scholars of participation (Fung 2006) reviewed above focus their discussions of participation on participation in decision-making. However, scholars of CBM are often less clear in defining that in which participants are taking part. In particular, studies of CBM often rely on measures of participation that conflate (Allegretti, Vaske, and Cottrell 2011; Brooks, Waylen, and Mulder 2013), or fail to distinguish (Austin and Eder 2007; Armitage, Marschke, and Plummer 2008; Govan et al. 2009; Pita, Pierce, and Theodossiou 2010; Evans, Cherrett, and Pemsl 2011; Aceves-Bueno et al. 2015), participation in decision-making and participation in implementation. Studies that are clearer in their scoping of participation include Fanning (2000), Beger et al. (2004), and Berkes (2009); Cinner et al. (2016) explicitly extend Ostrom's (1990) lens. One study that specifically examines village-level perceptions of participation in Fijian CBM decision-making measured perceptions of personal influence, and inequities in personal influence, over management decision-making, level of consensus in decision-making, and clarity of communication (Middlebrook and Williamson 2006). That study finds large differences in perceptions of influence over CBM decision-making across two sites, with randomly-selected

survey respondents indicating greater and more equitable influence over decisions in one village than the other (Middlebrook and Williamson 2006). Despite these exceptions, and even though participation in decision-making and participation in implementation have both been found to be associated with successful CBM (Pollnac, Crawford, and Gorospe 2001), failing to recognize the two as separate entities is especially problematic in light of findings that even where participation appears to succeed, participation in implementation often supplants participation in decision-making, leading participatory management reforms to fail to meaningfully empower users to drive their own management and development (Béné et al. 2009).

In other examples, the term participation is also applied to user or representative engagement in capacity-building activities, either in conjunction with participation in decision-making and/or implementation (Espinosa-Romero et al. 2011) or on its own (Crawford et al. 2006). Similarly, participation may be measured in part according to the extent that participants feel informed about management (Pita, Pierce, and Theodossiou 2010) – surely a low bar for participation, although typologies of participation often include the possibility that participants' role are to be passive receivers of information (Fung 2006; Reed 2008; Fung 2015; Reed et al. 2018). Some scholars paint passive reception of information as an appropriate role for participants in certain processes, especially where a decision has already been made (Reed et al. 2018), while others (in agreement with common pool resource theory), assert that participants should be empowered to decide the aims of management as well as select appropriate solutions (Lynam et al. 2007; Reed 2008).

Even when participation in what is clearly defined, the end goal or result of participation is less clear – and, as Fung (2006) points out, the aims of participation are very salient to the design of participatory processes. When learning by resource users is held to be a prime benefit

or goal of participation (Berkes 2009), one-way information sharing or firmly bounded participation in pre-determined management activities (e.g., beach cleanups) are appropriate tools (Beger et al. 2004). However, where participation is meant to increase stakeholder buy-in – that is to say user ownership of, compliance with, and support for management – as is often the case in CBM, simply sharing information without empowering users' voices in the decisions that affect them is unlikely to realize those aims (Adams and Hulme 2001). Again, for this paper, I focus on broad user participation in decision-making, in recognition of with the design principles elucidated by Elinor Ostrom's (1990) work on common pool resources, and the extent to which this ideal form of participation is realized in INGO-mediated CBM.

1.1.2 INGOs, local leaders, and CBM participation

INGOs who seek to facilitate or encourage CBM are faced with conflicting pressures and organizational needs when determining how to approach participation. Prominent donors like the World Bank have called upon civil society organizations to focus their efforts on broadly connecting grassroots users to management efforts (Selfa and Endter-Wada 2008). INGOs and other co-management partners have embraced the agenda: studies of Pacific Islands CBM in particular claim that recognition of the importance of local input, as well as within-community heterogeneity, have led co-management partners to seek to increase community participation or the representativeness of existing participation (Govan 2009; Cohen, Evans, and Govan 2015). Given the emphasis on participation by funders and others working in CBM, NGO theory predicts that INGOs are likely to prioritize broad and influential participation by users, due both to a rational approach to meeting organizational needs for continued funding (Prakash and Gugerty 2010), as well as to normative pressures to conform to expectations set in fields of

similar organizations (DiMaggio and Powell 1983; Lang 2013). However, broadening participation takes time that INGO funding models may not allow (Krause 2014). Donor pressures for INGOs to demonstrate measurable successes in limited time frames (Blaikie 2006; Krause 2014), for example, conflict with the effort needed to ensure that heterogeneous interests are represented in decision-making processes (Béné et al. 2009).

One common answer to this conundrum, as previously discussed, is representative governance (Béné et al. 2009). However, pre-existing or imported decision-making structures may challenge representativeness. INGOs may rely on local elites to act as or select representatives, in *real politik* recognition of where the power to foment or hinder meaningful management change actually lies (Béné et al. 2009). However, local elites may in fact lack accountability, be opposed to democratization and/or power-sharing, or use existing societal divisions (e.g., gender or ethnic group membership) for their own ends (Béné et al. 2009). Where INGOs build or work with existing community-based organizations as proxies for the community as a whole, the mass of community members may be locked out of participation as a result (Selfa and Endter-Wada 2008).

Beyond questions of representation, the attitudes and preferences of leaders have been found to be a major influence on the adoption and implementation of CBM across varied contexts. A systematic review of community-based co-management in marine fisheries identified the support and engagement of local leaders as a critical determinant of management success (Gutiérrez, Hilborn, and Defeo 2011). In African wildlife management, the influence of management gatekeepers – i.e., those who control and benefit from access to game prior to devolution of management – was found to influence the success of efforts to institute reforms towards local management (Nelson and Agrawal 2008); a similar dynamic may be at play when

INGOs encourage local leaders to expand community participation in decision-making processes. Findings in African inland fisheries support this contention: Béné et al. (2009) found that the personalities and interests of local leaders, and the ways in which external brokers interfaced with those leaders, affected the implementation of local management. In the study context of Fiji – in particular *iTaukei* (Native Fijian) communities – decision-making power is known to rest with the chief, but added complexity arises from knowledge that chiefly authority is evolving, declining or under challenge in some contexts (Muehlig-Hofmann 2007; Clarke and Jupiter 2010; Veitayaki et al. 2011; Hassall et al. 2011).

2. Research question and hypotheses

Based on the foregoing synthesis of common pool resource theory, theories of participation, and theories of NGOs, this research seeks to answer the following questions: How do international non-governmental conservation organizations impact community-based marine resource management decision-making structures? How do local leaders perceive INGO efforts to transform decision-making? And how do INGO activities that influence decision-making structures affect implementation of CBM? In line with common pool resource theory, which posits that user participation in decision-making is critical to the success of local management efforts (Ostrom 1990), I focus here on participation in decision-making rather than in implementation (for additional discussion of user participation in implementation, see Paper 2). In line with the known presence of INGOs in the study system, the predictions of NGO theory (Prakash and Gugerty 2010, Lang 2013, Krause 2014), and evidence that those organizations embrace increased participation as one goal of their engagement (Govan 2009; Cohen, Evans, and Govan 2015), I examine the roles of INGOs in transforming or reinforcing decision-making

structures. In light of findings that highlight the importance of local leaders to external actors' efforts to broaden participation (Nelson and Agrawal 2008; Béné et al. 2009), I include the role of local leaders in mediating INGOs' influence.

Donor preferences and/or instrumental concerns may drive INGOs to engage primarily with preexisting within-community power structures, which may result in elite capture of CBM processes and undermine implementation (Béné et al. 2009; Nelson and Agrawal 2008). Alternately, normative pressures for broader participation in decision-making, or simple recognition that elites lack full information on resource status, may drive INGOs to press local elites to include traditionally marginalized community subgroups in CBM decisions (Flinton 2003). In general, broader participation in CBM processes may make successful implementation of CBM more likely as a wider variety of voices are heard and a broader swathe of the population feels invested in implementing local management. In particular, where collective action is undermined by local perceptions of inequality between fisher or community sub-groups (Fabinyi, Foale, and Macintyre 2015), CBM that increases participation may lead to better buy-in to rules by those who might otherwise fail to cooperate due to concerns about the distribution of costs and benefits.

However, INGO engagement is subject to local influences (Béné et al. 2009; Nelson and Agrawal 2008). The extent to which INGO involvement reinforces, challenges and/or refines pre-existing community-level decision-making structures is a function of both the engagement choices made by INGOs and the attitudes of existing local leaders. Where INGO engagement in CBM encourages broader participation in decision-making than would be the case without INGO involvement (by, for instance, establishing that women should have input into resource management decisions), the attitudes of existing local leaders become key. Where preexisting

decision-making structures are challenged by INGO engagement, but local leaders support broadened participation, implementation of CBM becomes even more likely. Local leaders who are opposed to broadened participation may still respond to incentives to adopt CBM, but are less likely to follow through with implementation. For the purposes of this study, I define implementation as community compliance with, monitoring of, and enforcement of management rules, plus a focus on diversifying livelihoods and income sources away from marine resources (see also Paper 2). From the above discussion, I derive the following three hypotheses.

H1a. INGOs encourage broad resource user participation in CBM decision-making. INGOs seek to broaden participation by creating new, user-inclusive decision-making structures.

H1b. Implementation of CBM is more likely where INGOs encourage broad participation in CBM decision-making. Users who feel included in CBM decision-making are more likely to support and implement management decisions.

H1c. Where INGOs seek to broaden participation in CBM decision-making, CBM implementation is most likely where local leadership supports broadened participation rather than opposing broadened participation. Local leaders whose preferences align with INGO's participatory agendas are more likely to encourage or mandate meaningful user participation in decision-making, reinforcing users' ownership over decisions and hence their willingness to implement. Conversely, leaders who oppose broadened participation may not fully support decisions made under new or altered structures and may lack the will to implement as a result.

3. Methods

3.1 SITE SELECTION

I conducted field research in Fiji between May and September, 2018. Fiji is an ideal study site for a number of reasons. Firstly, *iTaukei* villages inherently meet design principles established by Ostrom (1990) as predictive of self-organization for common pool resource management, in particular boundedness of both the resource use area and the user group. Legally guaranteed access rights to long-established *iTaukei* fishing grounds, the boundaries of which are established by both tradition and national law, are determined by tribal membership, also long-established by both patrilineal familial ties and national law. In addition, coastal *iTaukei* villages are generally small in size, highly reliant on marine resources, and racially homogeneous (Biturogoiwasa 2001). Secondly, CBM is common in Fiji, with 450 Locally Managed Marine Areas reported in Fiji in 2017 (Aswani, Albert, and Love 2017). Thirdly, multiple INGOs are known to work on CBM in Fiji, and adoption and implementation of CBM are known to vary between otherwise (at least superficially) similar *iTaukei* communities (Sloan and Chand 2015). Indeed, the strength and success of INGO-led participatory processes has been lauded as one reason why CBM has proliferated in Fiji and other Pacific Island nations (Govan and Jupiter 2013). For more extensive discussion of site selection, see Paper 2, Section 3.1.

3.2 CASE SELECTION

Data were collected across eight *iTaukei* villages purposively selected through a combination of diverse cases (cases selected to vary on INGO involvement, adoption of CBM, and implementation of CBM) and most similar cases (cases matched on other known explanatory dimensions) (Seawright and Gerring 2008; Yin 2013). All case villages are located on Vanua Levu, Fiji's second-largest island; cases were limited to *iTaukei* villages on Vanua Levu in order to control for possible differences in community homogeneity as well as regional cultural

differences. As discussed above, limiting the sample to *iTaukei* villages also ensured that the associated user groups and use areas were well-bounded. In order to reduce the likelihood of confounding explanations for adoption and implementation, and in accordance with factors known to predict successful community self-organization (Ostrom 1990; Agrawal 2001), I enlisted the help of local experts to match case villages on community size and dependence on marine resources. In a departure from most existing CBM studies, which tend not to include counterfactuals, I included villages with no INGO presence in order to improve my ability to make causal claims For further justification of case selection, see Paper 2, Section 3.2.

3.3 DATA COLLECTION AND ANALYSIS

Visits to case villages lasted between four and six days. I selected my respondents to represent the seats of both traditional decision-making and governmental administrative power, local expertise on marine resource decision-making and management, and traditionally marginalized groups. Based on these criteria, I targeted five individuals for interviews in each village: The chief, the village headman, a representative of the village resource management committee, a representative of the village women's group, and a representative of the village youth group (village residents ages 18-35). I sampled other individuals (fishers, district representatives) as necessary to replace absent individuals, or for additional insight. In accordance with village protocols, I was hosted by the village headman or his delegated representative in each of the villages I visited; in accordance with village protocols, the village headman also helped identify individuals and arrange for interviews. In total, I conducted 40 interviews with village representatives (on average five per village, ranging from four to seven).

Interviews were conducted primarily in English, with a Fijian field assistant in attendance at all village interviews to assist with interpretation.

In order to triangulate findings, I conducted an additional four interviews with representatives of the INGOs working in the case communities (one central staff and one field staff for each of two organizations; INGO 1 works with Villages 4 and 5 and INGO 2 works with Villages 6, 7 and 8) and two interviews with representatives (again, one central staff and one field staff) from the Fiji Locally Managed Marine Area network (FLMMA) (organizational representative interviews n=6). FLMMA partners consist of local communities, international and local NGOs, and government ministries; FLMMA staff often work directly with partners on CBM issues. Both of the INGOs represented in this study are FLMMA members; both also work in multiple communities not included in the study. I also collected management plans, as applicable (n=4). In addition to interviews, I gained data from participant observation at FLMMA headquarters in Suva and during village visits. All respondents were guaranteed anonymity, including non-disclosure of village and organization names.

I conducted interviews primarily in English, with Fijian interpretation to help navigate complex responses. A small number of respondents preferred to conduct all or the majority of the interview in Fijian; in those cases I relied on the interpreter entirely. Where interviews were conducted primarily in Fijian, or the interview and/or transcription process led me to believe that initial interpretation was incomplete or not fully consistent with respondents' answers,[2] a Fijian speaker re-translated from the original audio recordings. After transcription and secondary translation as needed, I coded interviews and management plans using a multidimensional

[2] Neither interpreter I worked with was professionally trained as such; both worked for FLMMA and were familiar with the contexts and processes of interest, and both sometimes summarized or supplemented responses.

coding scheme developed from common pool resource theory, theories of NGOs, and existing work on CBM, as synthesized above. I added new (sub)codes as necessary to capture information not reflected in the initial coding scheme. I coded for primary variables of interest (adoption, implementation, and decision-making structures); attitudes (towards CBM, INGOs, and decision-making); activities (management activities by type); actors (identities of actors and decision-makers); and causal claims. A second coder independently coded five randomly selected interviews using the same coding scheme. Percent agreement between the two coders was 90%, and Cohen's kappa was 0.75, indicating substantial intercoder agreement and good reliability. For the full coding scheme, please see Appendix 2-2.

For this paper, I compiled responses by filtering coded data by the two decision-making codes (decision-making structures and decision-making structure recommendations, both of which encompassed information on participation in decision-making and changes to participation in decision-making over time), in combination with each village code as well as the code for broader context. I also cross-checked against the actor codes for INGOs 1 and 2 and FLMMA as well as the code for attitudes. I draw conclusions about adoption and implementation of CBM reported here from the research presented in Paper 2.

I used process-tracing analysis of coded data to determine the influence of INGOs on decision-making structures within each case community. Process tracing is a method whereby qualitative data can be analyzed to establish causality: case data is analyzed to establish the causal links between events that lead to an outcome of interest (e.g., CBM implementation), and the links thus established compared to pre-established hypotheses (Mahoney 2012). The method is well-suited to establishing causal chains in real-world environments that do not easily lend

themselves to other methods of examining causality, CBM in particular (Thomas and Koontz 2011). For additional discussion of process tracing methodology, please see Paper 2, Section 3.3.

4. Results

I begin presentation of my results with an overview of traditional decision-making in the context of Fijian CBM; this information is necessary to make sense of village-level findings. I then present findings for case villages without INGO involvement (Villages 1, 2, and 3). I then introduce findings for case villages where INGOs work with findings on how INGOs themselves frame participation and their engagement with decision makers. This is followed by findings for villages with INGO 1 involvement (Villages 4 and 5) and for villages with INGO 2 involvement (Village 6, 7 and 8). As Fijian CBM decision-making occurs at diverse levels, depending on how the definition of the *vanua* in a given context maps onto administrative units of village, district and province, communities that share CBM decision-making structures are explicitly noted and combined in the findings I report below. A brief section presenting findings about FLMMA's organizational approach to participation in decision-making and a summary of village respondents' own decision-making preferences follow; the results conclude with hypothesis testing. In order to preserve respondent confidentiality, I designate organizational respondents by organization (e.g., INGO 1) and position (e.g., field staff), and village respondent by position (e.g., Chief) and village (e.g., Village 1) when attributing direct or indirect quotes.

4.1 OVERVIEW: TRADITIONAL HIERARCHIES AND CBM DECISION-MAKING

Across Fiji, *iTaukei* life and decision-making rely on the concept of the *vanua* (Sloan and Chand 2015).[3] The *vanua*, in this context, means the tribe or confederation of tribes, and the land and sea areas associated with those tribes, as well as the traditional relationships between and within tribes, the traditional relationship between tribal members and the land, and the cultural norms through which all of the preceding relate (Ravuvu 1995). The *vanua*, in this sense, can vary in geographical extent, and may map well or less well on to governmental administrative units of district and/or province, which are served by governmental officials such as the district representative and the Provincial Office. Although mismatch between administrative boundaries and traditional boundaries is common, the chief of the *vanua* is often referred to as the district chief or paramount chief; he makes decisions for the *vanua* with a council made up of the chiefs of the district villages, the *Bose Vanua*.

> So our culture is very unique in Fiji. As you understood, it's very unique to us. We have traditional structure. We have a quorum, eh? From the *Bose Vanua*, there's the chiefs of the tikina of [district], the chief from each village. They form a quorum. *Bose Vanua*. And that is the final of the authority of the *vanua*. Where all the decision comes and goes down to the people (Chief Village 1).

Decisions can also be made at the village level, by the chief of the village (Hassall et al. 2011). This level of decision-making is generally less salient for marine resource management, as the *qoliqoli* (traditional fishing grounds, the legal bounds of which are established in Fijian law) are most commonly defined at the *vanua* level rather than at a lower level. However, village chiefs may elect to manage their hyper-local, traditionally recognized village fishing grounds (*ikanakana*, which lie within the *qoliqoli* but have no additional formal legal status, although they are generally recognized as the domain of the village). Even in this case, however, local representatives will take word of the closure or other management measures to the district/*vanua*

[3] For a glossary of Fijian terms, please see Appendix 2.

level, so that the closure can be reinforced by the district chief and word of the closure will spread among other district villages.

4.1.1 Identities of traditional decision-makers

Chiefdoms are passed through the chiefly clan, normally through the patrilineal side. Chiefs are traditionally male, although female chiefs do occur. In general, however, women and youth (ages 18-35) have less institutional voice than adult men under traditional decision-making structures (Govan and Meo 2011; Veitayaki et al. 2011). For example, in a traditional village council meeting, men may speak openly, but protocol dictates that women and youth speak in their respective groups, after which the leaders of those groups may share their concerns with the village council: "They [women and youth] are unable to voice their concern in the village council meeting. It is through the meetings of the two groups that they are able to voice their concerns." (INGO 1 field staff). In practice, women may not have an opportunity to participate in CBM decision-making at all, despite the fact that women constitute a major user group:

> Most of the time when the, when there is a, like there's a big meeting in my village. And there's a meeting, the village meeting, and the chief said okay, the men said okay you ladies, you go and look for the, you go and catch fish for the meals and you also do the cooking. And during meetings to put a *tabu* [area closure], only the men are having their meeting, they just decide this is a place to put the *tabu*, and there, and there. And the women's voices are not heard. And some of the ideas that come up from the women, they are, they are good ideas but they are not heard. (FLMMA field staff)

According to some respondents, however, participation by women is increasing:

> Just an example, is during the, the, our provincial meeting. Our provincial meeting, before there was no ladies. Now, at the moment in Bua [Province], there are three of us […] Because Fiji's a male-dominant area, country. And also in some of the communities, now there are women leaders. (FLMMA field staff)

Members of the chiefly household are also constrained in their ability to express dissent; protocol requires them to show respect in public and provide the chief with critical input only in their family or household meetings (INGO 1 field staff).

4.1.2 Challenges to traditional decision-making

Under Fiji's dual system of governance, *iTaukei* Fijians, their lands and their waters are governed both by traditional *iTaukei* hierarchies and the national government of Fiji. The dual system can result in confusion and tension (Muehlig-Hofmann 2007; Hassall et al. 2011). In particular, traditional fishing ground ownership rights have been hotly contested in recent years. The 2006 Qoliqoli Bill proposed returning legal ownership of traditional fishing grounds to the *iTaukei* tribes who hold customary tenure; shortly after the bill was proposed, the latest in Fiji's long line of coups overthrew the then-government, and the bill was subsequently tabled (Muehlig-Hofmann 2007; Lawson-Remer 2013).

Under current Fijian law, the national government asserts ownership over traditional fishing grounds, assigning the tribes associated with those grounds use rights only (Sloan and Chand 2015). This is in contrast to the handling of native lands, most of which remain communally owned by clans (sub-tribe level) (Sloan and Chand 2015). In villages, this has resulted in some confusion over who has ownership in the traditional fishing grounds: "But I've heard now, at the moment, we don't have any rights to our *qoliqoli*. Eh? So I think everything is owned by the… eh? That's what we've heard" (Youth rep Village 7), and "They keep saying, that's my *qoliqoli*, as compared to, they don't get it that it belongs to the state. The state has ownership, the state hasn't reverted ownership back to them." (INGO 1 central staff).

In this context, and consistent with previous findings (Muehlig-Hofmann 2007), my respondents note that who holds and exerts decision-making rights can be a source of tension:

> You must have heard that the government wants to enforce laws, in regards to our fishing ground. We want to be the decision-maker, you know. So we oppose all those moves, all the community. Because we believe this is ours, it has been given by God to our ancestors, and we passed down generation to generation from our fathers to son, and we must, the decision must, must be ours. *Io* [Yes]. So we appreciate that now, nothing comes up. Now we're still making the decisions, *io*. We're giving the consent for people to open fishing license. So we are opposing those moves. (Chief Village 1)

4.1.3 Decision-making structures absent INGOs: Villages 1 and 2

Three of the communities I studied had no INGO involvement in recent CBM efforts: Villages 1, 2, and 3. Village 1 has adopted CBM and is implementing; Village 2 has adopted CBM but was not contributing to implementation at the time of research; and Village 3 had not adopted CBM at the time of research.[4]

In Villages 1 and 2, decisions have historically been made at the *vanua*/district level (Villages 1 and 2 share a district and a traditional fishing ground; they are both small, remote, marine resource dependent villages on the north coast of Macuata Province). Marine resource management decisions are made by the *Bose Vanua*, the traditional convening of the heads of the local tribes. In 2008, the *Bose Vanua*, after previous experience with local management that was facilitated by a local NGO (see Paper 2, Sections 4.2 and 4.3), decided to institute a series of

[4] For detailed descriptions of the case villages examined in this paper, including their experiences with CBM adoption and implementation, please see Paper 2, Sections 4.2-4.9. For a summary of INGO presence/absence and adoption/implementation status, please see Table 3-1.

tabus in district waters. One of these *tabus* is located directly adjacent to Village 1; Village 2 is also very proximate to that *tabu* as Village 2 neighbors Village 1.

The chief of Village 1 also serves as the paramount chief of the district, and thus head of the *Bose Vanua*. He speaks of consultation with people across the district prior to instituting the 2008 system of *tabus*: "We did thorough consultation with the people to hear what is their views and opinions. What do they wish, what do they need," explicitly framing the 2008 decision-making process as bottom-up, rather than top-down: "We let the decision be theirs. Because they are the ones who are going to protect this *tabu* […] Not from the decision up there, like that kind of approach, from top to bottom approach. We the bottom to top, up. That's how we did the *tabu*." The chief recognizes that one of the benefits of a bottom-up approach is increased stakeholder buy-in to management, which underpins successful implementation: "We are the ones who should implement this *tabu*. For us to protect the *tabu,* we are the one responsible for that," and "So it's not anybody's responsibility, it's ours. We take this *tabu* as ours. We take ownership. That's why we took it down to the people, consultation from bottom up. So that we want to give ownership to them." The idea of a bottom-up approach marks a change from the way that decisions are usually made in an *iTaukei* context:

> In Fiji, not only in [district], in Fiji, I don't whether you, whether you know it, whether you have come about this issue, it's a top bottom approach. The decision is made by the chief. So whatever they decide, whatever their choice, whatever they want, it's final. So whether you like or whether you don't like it, that is the choice. (Youth rep Village 2)

In contrast to how the chief frames it, respondents in Villages 1 and 2 perceive the district chief to be a very strong leader with a virtual monopoly over CBM decision making: "Here's only one, only one thing we have to listen about the chief, what he said. No one else. If the chief says it's *tabu*, that's *tabu*. It's *tabu*," (Women's rep Village 1) and "Here is a village, only one

say. If the chief say yes, we do. […] Right or wrong, do it. That's all." (Village headman Village 1). The Village 2 youth rep explicitly challenges the notion that the 2008 process was bottom-up:

> Normally in our village setting, in the olden days, the decision is coming from the top. So it's kind of like, it's normal to us. Whatever the chief says, whatever this decision-making body says, it's final. Everybody accepts it. […] That's what normally happens in Fiji. And it happens in [district], too. Top-down approach.

Furthermore, some of what the chief himself offers reinforces the idea that he, or at least the *Bose Vanua* as a whole, exert firm control over decision-making, and that participation is in some ways limited. "[Prior to consulting the villagers] We informed them of the objectives," and "The decision went down from the top," "We [the *Bose Vanua*] make the final decision." The Village 1 chief maintains sole authority over decisions to open the *tabu* temporarily (Village headman Village 1).

Nonetheless, some respondents aver that some participation in decision-making does occur. According to the Village 1 youth rep, the chief primarily consults with the elders (heads of the local clans): "Whatever the chief says in the village, everybody has to follow. So that was the decision made by, made by the elders and the chief. Make the *tabu*." Per the Village 2 village headman/acting chief, consultation was among the three villages that share Village 1's *tabu* (Village 1, Village 2, and one other): "They make all the decisions, they're sitting down, talk about it, giving issues, what else they need, and they make the *tabu*." Regardless of the extent to which participation/consultation occurs, in contrast with the Village 1 chief's assertion that the 2008 decision-making approach represented a departure from usual practice, two respondents specifically say that decisions in Villages 1 and 2 today are made the same way they've always been made (Women's rep Village 2, Youth rep Village 2).

The Village 1 village headman perhaps best captures the muddy and somewhat contradictory realities of participation in traditional decision-making:

> All the time he [the district chief] just calls a meeting when he needs to make a decision. From there then he decides. We decide as a whole village, then he told us what he wants to, what's the reason he wants to do this, do that, and look from every angle, if it's okay. And if there is a disagreement between some people, then he just say what he know, and what to be done. It's the final say.

4.1.4 Decision-making structures absent INGOs: Village 3

In Village 3, resource management decisions have historically been made at the *vanua*/district level and the village level (Village 3 is a small to mid-sized, semi-remote, marine resource dependent village on the north-central coast of Macuata). Interview responses focused on village-level decision-making in this context. Village 3 has no CBM measures currently in place (no adoption/no implementation). Nonetheless, decision-making structures are in place, have navigated historic efforts, and could underpin future efforts.

In Village 3, most respondents agree that marine resource management decisions are made by the village chief. According to the village headman, the chief speaks with the villagers, and then gives the final word; according to the village chief: "The chiefs mostly decide the thing." As in Villages 1 and 2, the chief maintains sole authority to institute or open *tabus*, either temporarily or permanently (Village headman).

Again as in Villages 1 and 2, the extent to which the Village 3 community as a whole has a voice in decision-making or is meaningfully consulted is unclear. The resource management committee rep avers that decision-making is functionally communal: "All the people we get together, it's like a village meeting, so we sit all together, we give our views, and whatever we say we will be asked who goes for this, who goes against it. And all agreed that that is the rule for the village." Other respondents, however, frame it differently. Some respondents say that the chief may consult with advisors, especially the village headman, and come to a decision before

speaking to the village as a whole (Women's rep): "The chief decides with the *turaga ni koro* [village headman], and the *turaga ni koro* makes a call to all the villagers, and we sit, the whole village, and we talk about it, and decide" (Youth rep). The youth representative, when presented with a scenario in which a hypothetical individual disagrees with the chief during the village meeting and asked whether that individual would speak up, replied forcefully "No!" Then added, "He [the individual] can say it, but if the chief says it's *tabu*, we should all obey it. Abide by that." Regardless of how they frame participation in decision-making, and again in common with Villages 1 and 2, Village 3 respondents agree that current decision-making is consistent with how resource management decisions have always been made (Chief, village headman, youth rep, resource management committee rep, women's rep).

Decision-makers themselves perceive little to no cost of being involved in decision making across the three villages (Chief Village 1, Chief Village 3) but agree that they receive benefits, specifically that their decision-making role reinforces respect for their leadership among the *vanua* (Chief Village 1, Chief Village 3).

4.2 DECISION-MAKING STRUCTURES IN THE PRESENCE OF INGOS

In recognition of the nested decision-making structures that form traditional Fijian hierarchies, both INGOs work across levels. In the case of INGO 1:

> It's unusual in the sense that the four districts have collective ownership of that space […] Yeah. So we have to work with all 27 villages – because if you're talking about governance, then all 27 villages have to be involved. So by default we have to work at the village level, and then at the four district level, and then ensure that, because it would fall under the space of the province, you have to have engagement with the provincial sort of discussions. (INGO 1 central staff)

Similarly, for INGO 2:

> In Bua [Province], like, we just work at *tikina* [district] level, like getting workshops done, we always get representatives from each villages. It's much easier for us, like funding-wise or time-wise, rather than going to villages because there's like 55 villages in Bua. So it's easy for us to work at a *tikina* level. But we always involve the provincial level, the provincial administrators and everybody, into our workshops. So we always liaise with all the villages, heads of the villages, the *turanga ni yavusa* [tribal chief], we call them, and then also with the sub, the clan. Yeah. So we always liaise with the clan, the tribal head, and then the district head. (INGO 2 central staff)

Furthermore, in instrumental recognition that certain actors hold final coordinating and/or decision-making power, both INGOs focus much of their engagement on traditional and administrative leaders across levels. According to INGO 1:

> The fact is the people we work with are the key people that actually coordinate other members within the community, so by default you'd have to work with them. Like for instance if it's the *mata ni tikina* [district representative], or the *turaga ni koro* [village headman], your rate of interaction with them would always be higher than a normal member within the community. So it's just how the system works. […] In most cases it's directly – because remember, 27 villages, one person [i.e., one INGO field staffer]. (INGO 1 central staff)

And:

> So with the four districts that collectively own one *qoliqoli*, they have a committee, a management committee that works together with [INGO 1] in all the activities that are involved within the four districts. […] So that's how we work here, we work through the *Qoliqoli* Cokovata [the four-district *qoliqoli*], but that doesn't stop us from working with the district representative, and with the *mata ni tikina*. You've heard of the *mata ni tikina*? And the *turaga ni koros*, or the village headman. Through the *mata ni tikina* to the village headman, and assist the villages with conservation activities. (INGO 1 field staff)

INGO 2's approach is again similar:

> Usually in the Fijian setting the decision comes from the chiefs. So what we do, when we do workshops, at the initial stages we involve these chiefs, so they are aware of what's happening. Because we know at the end of the day, like for the final product, they will need to endorse it. Like the decision comes from them. […] We are trying to empower communities, and mostly traditional leaders, to make wise decisions, huh?" (INGO 2 central staff)

Focusing on traditionally defined decision-makers is not without its drawbacks. In some cases traditional leaders may resist CBM adoption, either because of conflict among themselves or because of questions about the value of their efforts in the context of enforcement uncertainties associated with Fiji's dual system of governance (see Paper 2). INGOs have limited power to overcome such obstacles:

> We really can't force them to do it. […] So they have their own ways of doing things […] And we just can't force them, can't tell them just to do it our… you know? So this is what it is. […] There are some barriers… that, which is, we can't break it. And that's how it is […] but what we're trying to do it is to brought all those pieces together, put it on the table, for them to buy, to eat it, you know? […] And those barriers are, you know, some of those decision makers who are for [i.e., in support of adoption], they couldn't even break it. […] And even… imagine us. We couldn't even afford it [laughing]. […] It is an internal matter for them. And we, you know, as a third party, we can only hear, you know, just the outside of that nutshell." (INGO 2 field staff)

4.2.1 INGO 1 and communities

INGO 1 is involved in recent CBM efforts in two of the communities I studied (Villages 4 and 5, both small to mid-sized, remote, marine resource dependent villages on the north-east coast of Macuata Province). Villages 4 and 5, although they reside in different districts, share a traditional fishing ground. The *Qoliqoli* Cokovata stretches across the waters of four districts in Macuata Province, as well as including two villages in neighboring Bua Province – that is, in this case, the *vanua* is defined across four full districts plus two additional villages that lie across higher level administrative (provincial) boundaries. INGO 1 began to work with the *vanua* in 2004, at the invitation of the then paramount chief (now deceased); in alignment with INGO 1's recommendations, the paramount chief and the chiefs of districts established a system of *tabus* across the traditional fishing grounds in 2004/5 (see Paper 2, Sections 4.5 and 4.6, for a detailed

overview of this process). Village 4 has adopted and is implementing CBM measures, while Village 5 has adopted CBM but was not implementing at the time of research.

Prior to the involvement of INGO 1, marine resource management decisions were made solely by the chief of Macuata Province (referred to by his title and the name of the province, so Chief Macuata; the paramount chief of the *vanua*) and the chiefs of the four districts (Chief Village 4, District rep Village 5). However, in 2005, INGO 1 helped to set up a joint resource management committee, the *Qoliqoli* Cokovata Management Committee (QCMC) (District rep Village 5, Village 4/5 management plan). Respondents say that INGO 1 advised on the structure of the QCMC (Chief Village 4, Village headman Village 4), although Chief Macuata is reported to have made the final decision on composition (District rep Village 5). The mandate of the committee is "to safeguard interests for the sustainable management and development of the *Qoliqoli* Cokovata fishery and all targeted fisheries resources" (Village 4/5 management plan).

The composition of the committee is a source of some confusion among respondents. Some say it is composed of the chiefs from each village, the village headman from each village, and the district representatives (Chief Village 4), others include a Provincial Office Conservation Officer, a representative from the Ministry of Fisheries (Fisheries), and a representative from INGO 1 on the list (Village headman 4). Others say that it includes only the district chiefs, district reps, women's representatives, and youth representatives (District rep Village 5).

According to the Village 4/5 management plan, the QCMC is chaired by Chief Macuata, who oversees an additional 15 core members, seven of whom have voting rights. Core members include the Chair, the district representatives from the four districts included in the traditional fishing grounds (2 each from two larger districts, and one each from two smaller districts), one representative from the two villages that lie in a neighboring province (the chief of the tribe

resident in those two villages, or his nominee), the heads of the district youth groups from the four districts, and the heads of the district women's groups from each of the four districts (Village 4/5 management plan). District representatives are selected by the Minister of *iTaukei* Affairs (the head of the government agency responsible for Native Fijian affairs) to represent members of a district; they are government administrators responsible for coordinating communications and decision-making across parties under the dual system of governance, and across a broad range of issues (Sloan and Chand 2015), only one of which is natural resource management. Women and youth representatives to the QCMC may participate in discussions, but do not have voting rights; their interests are meant to be reflected in the votes of the district representatives from their district (Village 4/5 management plan). Representatives from external actors, including NGOs, government, and private sector organizations, may be invited to provide expert input (Village 4/5 management plan).

The QCMC is specifically an advisory body (Village 4/5 management plan); formal decision-making remains with the *Bose Vanua* headed by Chief Macuata. The committee is charged with analyzing management activities yearly, and initiating a review and/or altering the plan if they deem it necessary (Village 4/5 management plan). The committee's powers are specified as amending the QCMC constitution (conditional on majority agreement and support from the *Bose Vanua*); raising and overseeing the use of funds and other resources to support committee activities; advocating on behalf of communities across the traditional fishing ground; contracting with third parties; endorsing or rejecting development proposals (in partnership with district development committees and district councils); and "tak[ing] whatever action that, in the opinion of the committee, is conducive to achieving the goals, objectives and functions of the QCMC" (Village 4/5 management plan). However, even after the advent of the QCMC, some

respondents perceive that CBM decisions are still made the way they have always been made (Resource management committee rep Village 4).

INGO 1 works closely with the QCMC. Although not represented formally on the committee, INGO 1 may set the terms of discussions by generating proposals (for example, for fishing license terms) and then taking the proposal to the district chiefs, Chief Macuata, and Fisheries (District rep Village 5). However, the extent to which CBM decision-making is by consensus across co-management actors versus driven by Chief Macuata is less clear. According to the chief of Village 4, and consistent with co-management actor consensus, INGO 1 gave advice to the QCMC when the committee was discussing the possibility of adopting *tabus*, with the decision to institute a series of *tabus* across the fishing ground made by the chiefs of the four districts and Chief Macuata working together with Fisheries and the NGOs. According to the Village 5 district representative, however, Chief Macuata made the final decision on *tabu* location, but all members of the QCMC had a voice in the decision-making process (District rep Village 5). Overall, Chief Macuata's status as paramount decision-maker seems secure, as he is both the Chair of the QCMC and the head of the *Bose Vanua*.

INGO 1 believes that the committee structure allows the communities to have a say in the content of the management plan: "What [INGO 1] does is facilitate the discussions. But everything has been put together by the communities, and then there are advisors from the relevant partners, or stakeholders, like the Ministry of Fisheries, Forests. […] That management plan is being developed by representatives from all these communities" (INGO project manager). Indeed, in the Village 4/5 management plan, responsibility for stakeholder engagement is assigned to the QCMC, in partnership with other actors. Specifically, the QCMC should "identify relevant Stakeholders for Participatory Planning," undertake "co-management with

relevant stakeholders," and hold "quarterly Stakeholder meetings," all of the above in conjunction with Fisheries, the Macuata Provincial Office, INGO 1 and the Commissioner's Office (Village 4/5 management plan). For a graphic depiction of the advisory and decision-making structures described above, see Appendix 3-2, Figure A1.

Respondents across Villages 4 and 5 experienced the decision to adopt *tabus* as originating from the top, from the paramount chief and the *Bose Vanua* (Youth rep Village 4, village headman Village 5): "Chiefs of the four districts, and the *Tui* [Paramount chief] Macuta […] They make that decision [to institute *tabus* in the fishing grounds]. And they work together with the Ministry [of Fisheries] and the NGOs […] after that they passed to our villages" (Chief Village 4); "Actually, for the *tabu*, there's a… it's the *tikina*, eh? So for the villagers, there's a village meeting, and they have to, they announce it, for the people to know there's a *tabu* going on […] They [the villagers] just listen" (Women's rep Village 4); "Yeah, so the *qoliqoli* is controlled by the chief [Chief Macuata]. The chief instituted a *tabu* before." (Youth rep Village 5).

Together, this evidence suggests that both Village 4 and Village 5 were told, absent much participation, to install a *tabu* in their local areas (both villages are close to large, rich spawning grounds that are otherwise unique in the four-district *qoliqoli* (District rep Village 5)). The extent to which Village 4 community members had a voice in the decision about whether, and where, to place their local *tabu* is unclear. In a statement that brings the true nature of local participation in decision-making into question, the Village 4 resource management committee representative asserts: "We were advised to decide to conserve the fish" (Resource management committee rep Village 4). However, the Village 4 village headman asserts that the location of the *tabu* near Village 4 was chosen in a village meeting, albeit in alignment with advice from INGO 1.

Village 5 respondents, in contrast, are clear that they did *not* have a voice in whether, or where, to place their *tabu* (Village 5 village headman). Per the Village 5 district representative: "So the chief [Chief Macuata] decide from the top, but the villagers are not aware of anything about the *tabu* […] For the *tikina*, and Chief Macuata, decide the *tabu* area […] Only one way, eh? They not coming down to the villages" (District rep Village 5). Similarly:

> Was a *tabu*, and they didn't make it properly, you know, to set up. To arrange it, to set all the villages around here, like to go to the chief of this village here, and to tell them, there's a *tabu* here. So that we can't go and fishing there. But they didn't arrange it properly. But that's only one year, and then they break it. (Fisher Village 5)

Respondents directly attribute the implementation failure of the Village 5 *tabu* to the lack of participation in decision-making: "The decision came from the chiefs. Yes, there was no… there was no agreement with the people of the village..." and, as a result "They broke… they broke it [the *tabu*]!" (Village headman Village 5). The youth representative agrees that the *tabu* was not respected by people in the area because "there was a failure in discussions about it."

Despite the fact that they widely agree that the previous decision-making process was top-down, respondents in Village 5 are clear that existing decision-making structures can enable village-level participation in decision-making (Women's rep Village 5):

> So it's… like that. You go to the village, eh? The chief. Go to the village, go to the *Tui* Macuata and say, we have a *tabu* here. And okay, the chief will call his people, and they said to them, this a *tabu*, [Village 5] Village. So before, she [the Village 5 chief] go to the chief of Macuata, she will call us first, eh? Yeah, she will call us first to the meeting, so we all agree to do the *tabu* to that reef, so she will lift it up, go to the top. […] Go to Chief Macuata, and Chief Macuata will tell the people, there's a *tabu* in [Village 5]." (Fisher Village 5)

In practice, INGO 1's stance on bottom-up/participatory versus top-down decision-making is not entirely clear. It is clear that INGO 1 worked closely with Chief Macuata and *Qoliqoli* Cokovata decision-makers on initial plans to adopt *tabus* across the fishing grounds,

implicitly enabling top-down decision making. But even if there was no consultation on whether *tabus* were advisable, some Village 4 respondents state that INGO 1 did undertake community consultation about the location of the Village 4 *tabu* (Village headman Village 4). Further, the Village 5 fisher asserts that INGO 1 only came to Village 5 after the Village 5 *tabu* was already broken; on that visit, the fisher maintains (when asked if INGO 1 says decisions should be taken down from the top or up from the bottom): "They say to the chief, come up. Before we was have a meeting at our chief's house, and we talk about how the *tabu* was, how to *tabu* the reef."[5]

Most Village 5 respondents explicitly preclude INGO 1 from blame over the failure of community consultation they identify, as they do not hold INGO 1 responsible for Chief Macuata's decision or failure to consult them or their chief. This judgment is based on the community visit that occurred after the failure of Village 5's *tabu*: "The people from [INGO 1] came here…and they didn't say to make a *tabu*. They researched," and "They [INGO 1] said it's not their role to make the *tabu,* eh? To place a *tabu,* is important for the *qoliqoli*. They only come here to research" (Village headman Village 5). Likewise, "they didn't like to, to push us to… make this, to make that [*tabu*] there. They just told us to, how to do, and they say, this, if you do this, our ocean will, you know… will healthy and, how to attack, eh?" (Fisher Village 5). In contrast, the Village 5 women's representative attributes the failure of local consultation at least in part to INGO 1, and believes that the organization directly challenged village-level decision-making: "They trying to make a point to explain, they trying to make a point… [INGO 1] and the villagers. Because they trying to overrule the villagers. […] Like, the [INGO 1] facility, the

[5] The implication here is that INGO 1, faced with an implementation failure, sought to increase local buy-in to management by seeking user participation after the decision was initially made. This implication is supported by post-study communication from the INGO 1 field staff: Village 5 has now designated and is implementing a new tabu at a different site.

facility they're supposed to come right to the village and talk with them. And they were sending some other peoples to come and talk with them. [People] from Naduri, from where the Chief of Macuata is." The implication here, elucidated in response to subsequent questions, is that the Village 5 chief was essentially coerced into accepting the *tabu* when representatives of Chief Macuata brought the news of it to Village 5 without any prior consultation.

INGO 1 representatives perceive the Village 4 chief as responsive to community members' input (INGO 1 field staff), and the traditional and administrative leaders in Village 4 as stable, strong, and supportive of management (INGO 1 field staff, INGO 1 central staff). They attribute ongoing implementation efforts to those characteristics (INGO 1 central staff). The Village 5 leadership is also perceived to be strong, and open to community input (INGO 1 field staff), but turnover in administrative leadership has been common, and commitment to CBM lacking: "You come to [Village 5], that village has had so many *turanga ni koros*, they haven't been doing handover and so forth. And plus, they haven't been the most active in terms of supporting [INGO 1] with protected areas. One year they want to close it, one year they want to open it, it's not consistent."

Leaders in Village 4 experience no costs to being involved in decision-making (Chief Village 4); the Village 5 district representative agrees that there are no costs to his involvement in decision-making via the QCMC. In Village 5, in contrast, the village headman experienced a personal cost associated with local conflict over the *tabu*: "Yes… it's difficult because so many people have opinions to share with me."

4.2.2 INGO 2 and communities

INGO 2 is involved in recent CBM efforts in three of the communities I studied. Villages 6, 7 and 8 all lie on the southwest coast of Bua Province and are all marine resource dependent. Village 6 is small to mid-sized, proximate/remote to markets (distance depending on the nature of the market); Village 7 is small to mid-sized and semi-proximate to markets; and Village 8 is mid-sized and proximate to markets. INGO 2 began working in Bua Province in 2004/2005, but did not begin working in Village 6, 7, and 8's districts until 2011/2012 (INGO 2 field staff). The three villages lie in three different districts, and in each case, INGO 2 works primarily at the district level. Thus, while the villages are not members of the same *vanua*, as discussed below, INGO 2's approach, including the organization's approach to participation in decision-making, is consistent across the three villages. INGO 2 has focused much of their effort in setting up resource management committees at the village, district and provincial levels across the areas in which they work. Across levels, actual marine resource management decision-making power remains with traditional leaders (most often the district chief and the *Bose Vanua*). At the time of research, Village 6 had not adopted CBM, Village 7 had adopted but was not implementing, and Village 8 had adopted and was actively implementing CBM (see Paper 2, Sections 4.7-4.9 for additional details). All three villages and all three districts have village- and/or district-level resource management committees in place.

At the village level, resource management committee representatives are selected in a village meeting, with selection criteria left up to the village (INGO 2 central staff, FLMMA field staff). Village-level committees can serve as a brake on otherwise unregulated terrestrial development:

> When they're moving into a community, they don't come at the district level, these developments, they go down to village level, like when it comes to logging, they go to the respective clans. So if they are not aware of all these impacts of logging, excessive logging and all, so they won't be able to know […] So that's

> why we're informing them, like, it's important for you to have a resource management committee so they look after the resources around you, and when logging company comes in, they know who to get advice from, rather than just wavering money to them and they be all, everybody bought it. (INGO 2 central staff)

From the village level, at least one member of the resource management committee is selected to serve on the district resource management committee (INGO 2 field staff, FLMMA field staff); the district committee advises district decision makers (district chiefs and the *Bose Vanua*). As above, in the INGO 1 cases, the composition of the district resource management committee is a source of confusion to some respondents; for example, the chief of Village 6 says that he does not sit on the committee, while the village headman believes the chief to be a member. Respondents are also uncertain whether a representative of INGO 2 sits on the committee (Village headman Village 6). Per INGO 2, there are no NGO representatives on district-level committees: "We usually go and set them up, everything from the chairman right down to the members is just them. So we just help them design their roles and responsibilities, and how often they should meet, which is all in the plan" (INGO 2 central staff).

In general, the responsibilities of the district-level management committees are as follows:

- "To coordinate implementation of the management activities identified in this management plan;
- "To raise awareness of the management rules and activities set out in this management plan;
- "To coordinate enforcement of the management rules set out in this management plan;
- "To assess proposed resource use and development activities, to ensure they are consistent with this management plan, national laws and ecosystem-based management principles;
- "To provide information and advice on resource management and alternative livelihoods;
- "To organise training on sustainable resource management and alternative livelihoods;

- "To liaise with stakeholders, including resource users, conservation partners and donors;
- "To transparently manage and distribute funds for resource management and other activities;
- "To monitor and report to resource owners and stakeholders on implementation of this plan." (Village 7 district management plan; wording in the Village 8 plan is nearly identical)

The provincial resource management committee (Bua *Yaubula* (Resource) Management Support Team; BYMST) was established in 2010, with the support of INGO 2 (2015). The central committee consists of representatives from each of the nine districts in Bua Province, the Provincial Office Conservation Officer, representatives from the Ministry of Fisheries (including from the Forest Department), representatives from three NGOs (including INGO 2), and representatives from the private sector (2015). The team's work covers all districts of Bua Province, and thus all three INGO 2 villages studied here. For a graphic depiction of the advisory and decision-making structures described above, see Appendix 3-2, Figure A2.

Respondents in Village 6, 7 and 8 do not uniformly perceive the various resource management committees as especially salient. Only the chief and the village headman discuss the committee in Village 6. In Village 7, with the exception of the women's representative, no respondent mentions the committees at all; the women's representative says only that INGO 2 advised that committees should be set up: "They said that they should… they have the teams, or the *yavusa ni qoliqoli*, to look after the *qoliqoli* so that they protect our *tabu*." In contrast, all Village 8 respondents mention the village resource management committee, and many discuss it in great depth (Chief, assistant village headman, women's rep, resource management committee rep). Additionally, among those for whom the committees are salient, not all are clear as to the committee's functions. In Village 6, for example, the village headman says that the committee makes resource management decisions, rather than the district chief, but then – in response to

questioning about whether the committee can overrule the district chief, adds: "But when the chief said this [gesturing], that's all." The district resource management committee in this context is relatively new (about a month old at the time of research) (Chief Village 6).

INGO 2 both chooses to work with traditional leaders, and to support the setting up of the nested committee structure, in the belief that doing so allows a two-way exchange of information between communities and higher levels of governance (INGO 2 central staff). According to the FLMMA field staffer, who has worked extensively with INGO 2:

> Once you know something from there, you share it to the next level. Like the top people, who are from the provincial level, they will, whatever they know they can advise the district level. And from the district level, what they understand, they're just take it down. […] And also these people, whenever they want something, they'll go through this meeting, this village meeting, from that meeting up to the *tikina* level, from that level then up to the provincial level. So that's how the process is going."

And workshops and training are directed towards committee members and decision-makers under a similar rationale:

> When the *turaga ni yavusa* [head of the tribe, often the village chief] goes back, he will call his clan. He will call all the heads of the clans. And then these, these are members of his hierarchy committee. So we have the village here, so this village can have like five of these. So then when we come to a workshop we can get some of them, like the *turaga ni yavusa*. So they'll go back, inform the rest of the *turaga ni yavusa* in the villages. So these *turaga ni yavusa* will then inform their clans, so the clan will then call members of the clan, which are heads of each household, and they will pass on the message to them. (INGO 2 central staff)

At the district level, the committee structure is intended to allow communities to have a say in the final management plan: "The management plan is what was brought up by the communities, you know? So the rules and the guidelines within the management plan is from them" (INGO 2 field staff); the plan "represent[s] a synthesis of community rules and national laws relevant to ecosystem management. The community rules are based on extensive

consultation and have been endorsed by the [respective *Bose Vanua* of Village 7 and Village 8 districts]." (Village 7 management plan, Village 8 management plan).

INGO 2 representatives recognize, however, that even with these nested committee structures, connections between levels may not always work as designed, leading actors at various levels to preferentially approach INGO 2 rather than work through the committees:

> We always encourage them to go from village resource management committee to district level, […] and we'll just liaise from the Bua *Yaumbula* Management Support Team, just so that they're all aware of what's happening. But usually when they have issues like that they just go through to [INGO 2]. The district resource management committee does not know, the Bua *Yaumbula* Management Support committee does not know, and then, when they call us and then we always inform them, okay, go through your district rep, and then tell the district rep to inform the BYMST, they said no, but we can't, like, it's very hard because he doesn't have a phone. (INGO 2 central staff)

Across Villages 6, 7 and 8, there is no wide agreement on the extent to which marine resource management decisions are made by a bottom-up versus top-down process. This may in part be due to the different levels at which the *vanua* is defined in these three contexts. Village 6 and 7's *vanua* are defined at the district level: Village 6 is the sole primarily marine resource dependent village in a larger district, while Village 7 is part of a very small (three village) district. In contrast, Village 8's *vanua*, while formally defined at the district level, is defined primarily at the village level for the purposes of management (Village 8 management plan; see also Paper 2, Section 4.9). Village 6 respondents perceive marine resource management decisions as coming from their district chief and the *Bose Vanua* (Chief, village headman, resource management committee rep). According to the Village 6 women's rep, "We just listen to what he [the district chief] says. We won't disagree." Indeed, some Village 6 respondents assert that previous *tabu* was put in place at the instigation of the district chief, although the local community was not in favor of it: "But the *tabu* from the bottom, we didn't want it, eh? Here we

didn't want… a *tabu* on our *yaubula*" (Resource management committee rep).[6] Similarly, respondents in Village 7 perceive that decisions about their local *tabu* were made at the district level, by the heads of the three district villages and heads of each village's clans (Women's rep). "Like the *tabu* before, like [place] and the one up in here – it was set up by the *tikina*, eh?" (Village headman/acting chief). The Village 7 resource management committee representative says the idea to have the *tabu* arose in response to awareness provided by INGO 2, while the village headman/acting chief asserts that INGO 2 helped to make the decision to create district *tabus*, including the one near Village 7. However, no respondent in Village 7 explicitly attributes the implementation failure of the local *tabu* to a lack of participation, instead attributing it primarily to the small size of the traditional fishing ground, high local levels of resource reliance, and widespread non-compliance with *tabus* across the district (see Paper 2, Section 4. 8). In Village 8, respondents similarly note that the idea for the local *tabu* came from outside the village (Women's rep), specifically from an awareness workshop coordinated by INGO 2 (Resource management committee rep), but – in contrast with Villages 6 and 7 – say that once the ideas were brought back to the village, the village itself made the decision to institute a *tabu* (Assistant village headman, resource management committee rep), after which the village's decision was shared with, and approved by, the chief of the district (Chief).

Although they experienced the decisions to place *tabus* near their villages as originating from the top, respondents in Villages 6 and 7 agree that traditional hierarchies enable community participation and bottom-up decision-making (Village headman Village 6, youth rep village 6). In Village 6, the youth representative says community members can push for consideration of

[6] Village 6 had a tabu area that was adopted at the district level, but located near to the village, prior to INGO 2 involvement; however, that tabu was broken, and implementation ceased, during INGO 2's initial consultations with the district (see Paper 2, Section 4.7).

issues they experience: “Because the complaint from the village, like that […] From the village to the *bose* [meeting] in the village, and the spokesman go and speak to the *Bose*… the *tikina*” (Youth rep). Similarly, according to the chief of Village 6: “If there’s a problem, if we want to put a *tabu*, the heads of the village [chiefs] discuss and bring it to *Buli* Dama [the district chief] […] It’s how the *yavusa* is organized” (Chief). Village 7 respondents agree. Local decisions may be made in the village meeting, where everyone sits together and “decides the rule, so that people can follow what’s the rule, eh? If decided by one, you know…” (Village 7 village headman). After a decision is made locally it is shared with the other two villages in the district (Village 7 village headman). The resource management committee representative puts a slightly different spin on it, saying that the Village 7 chief makes decisions himself, but only after speaking with the community; the youth representative says that the village elders (the village chief and heads of clans) make decisions after consulting the villagers, but agrees that decisions are made with community input. Village 8 respondents perceive local decision making to be primarily the hands of the Village 8 chief (Assistant village headman, youth rep). According to the Village 8 chief herself: “It’s me and all the leadership of the *mataqali* [clans]” who make decisions about the *tabu*. However, according to some respondents, Village 8 decisions are made in the context of discussions during village meetings and in the resource management committee (Assistant village headman, women’s rep).

Although INGO 2 explicitly supports stakeholder participation in resource management under a co-management approach (Village 7 management plan, Village 8 management plan), the organization is careful to recognize existing decision-making structures. As already noted, INGO 2 focuses their engagement primarily at the district and provincial levels and, in particular, on the resource management committees; these committees are advisory bodies and INGO 2-facilitated

management plans are clear that neither the management plan nor the committees challenge existing, traditional decision-making structures like the *Bose Vanua* (Village 7 management plan, Village 8 management plan). Village respondents agree that INGO 2 supports existing approaches to decision-making (Village headman Village 7); the Village 8 assistant village headman even provides the organization's rationale: "They say it's good [that decisions are made locally], because if they [the government/INGO 2] make decisions, the leadership of the *vanua* will think it's bad. But if the people in the *vanua* make decisions, then it's better than if the government tries to make decisions. To do it traditionally, it will be respected." Respondents also agree that decision-making structures remain unchanged (Chief Village 6, village headman/acting chief Village 7, youth rep Village 7, women's rep Village 8, resource management committee rep Village 8) although some note that the resource management committees now provide input to decision-makers (Chief Village 6). As above in Village 5, one respondent shared that INGO 2 focuses solely on providing information, rather than interfering in or challenging decision making: "So they [INGO 2] will be the ones who come to do the surveys. The [INGO 2], they just do workshops. They don't tell them, okay, you put the *tabu* here. They never say that. But the village council, the *tikina* council and the village council, they all agreed to put up a *tabu*" (Resource management committee rep Village 8).

INGO 2 respondents perceive strong differences in the approaches of leaders across the three villages. In Villages 6 and 7, INGO 2 respondents attribute adoption/implementation failures at least in part to local decision-makers. Village 6 district decision-makers are perceived to be inconsistent, as the district chief undermined the agreed-upon decision-making process during negotiations over the content of the management plan:

> Although it's stated in their plan, in order for their protected area to be open it needs approval not only from the *Buli* Dama, from their chief, the district chief, it

> needs approval from all the *turanga ni yavusa*, from all the tribal chiefs. But he [the district chief] just went ahead and did it. But then it's so unfair to the other chiefs because he didn't follow what was in the plan, which is what he approved the first time, and then he signed off. (INGO 2 central staff)

Village 7's district hierarchy council is perceived to be subject to conflict:

> They have this conflict that, at the moment, they haven't had a hierarchy council meeting for the last couple of years. So with us, that really weakens the committee themselves to work. Because if the committee, because with all the committees they have a chief inside that committee. To strengthen it, to strengthen the relationship, eh? And then with us we feel secure when there's a chief inside, because the chief will just say something and then they move around to do it, but when there's no chief on that committee, when there's no, when the hierarchy council is weakened, it just loosens the whole thing. (INGO 2 central staff)

In contrast, INGO 2 representatives frame Village 8 decision-making hierarchies as strong, functioning, and well-led by the village chief:

> She [the chief of Village 8] is a very nice lady, you've met her, she's a very nice lady, she's soft spoken, and she's very supportive of conservation […] Yeah. So that's why she is well-versed with what's happening. And then when decision like that comes, not that she just makes her own decision, but then she's got her other members of the hierarchy committee that she meets with, and she's got the resource management committee that she gets advice from. Advises her on the development that's going to happen, eh? (INGO 2 central staff)

Across Villages 6, 7 and 8, decision-makers experience their participation in decision-making as costless (Chief Village 6, village headman Village 6, village headman/acting chief Village 7, chief Village 8, assistant village headman Village 8, resource management committee rep Village 8). There may be individual benefits to being the decision-maker – according to the Village 8 resource management committee representative, for example, the leaders of the *vanua* receive the first catch when the *tabu* is opened, and decide how it is allocated between the clans. Or perhaps decision-makers are primarily motivated by concern for community as a whole: "The only thing they, they think about – the chief, you know – to think about their people so that they

can, you know, have a good survive about, for their future, and everything like that" (Village headman/acting chief Village 7).

4.3 FLMMA AND DECISION-MAKING STRUCTURES

None of the communities studied here were actively working with FLMMA organizational representatives directly at the time of research.[7] However, FLMMA representatives shared details of how the current focus of the organization's approach to CBM decision-making differs from the approaches of INGOs 1 and 2.

FLMMA works exclusively at the district level, and their policy is not to engage with the district unless they are explicitly invited in by at least one district village (FLMMA central staff). Upon invitation, FLMMA staff conducts scoping exercises in district as a whole. In particular, FLMMA representatives currently focus on "strengthening ties within our community hierarchy […] Within that hierarchy we have a part to play. Like we have different clans,[8] in what to play. […] We don't come up to tell them what to do, but just to strengthen the hierarchy within the community" (FLMMA central staff). The central staffer continues:

> The chiefs in the village, actually they are there to rule. But if you want to be a good ruler you have to serve. You know you cannot just sit down on top every time and just bark out instructions for people to follow. When you go down to villages, when you go down to villages, and tell them […] the chief's role in the village, this is mainly what the people really tell us. When you want to be a chief, you have to serve. So this has to be a component within a chief, if you want to be a chief you have to serve. […] And as the chief's spokesperson in the village, the *mata ni vanua*, these people […] This is a different clan. These people's clan,

[7] Note that FLMMA is a network organization. In theory, all the villages studied here work with FLMMA, as both INGO 1 and INGO 2 are members (also sometimes referred to as partners) of FLMMA. However, as INGO 1 and INGO 2 often carry out their work without any involvement of FLMMA organizational representatives, and the three organizations pursue approaches that are distinct, despite their overlaps, FLMMA is treated separately here.

[8] In iTaukei society, each clan within a tribe has traditional responsibilities: for instance, the chiefly clan, the chief heralds, the warriors, the fishers, etc. (Veitayaki et al. 2011).

> they are the chief's spokesperson. They go out and tell things to other people to follow. The chief herald, eh? So this is what they do. So they have to be good listeners in anything that they do. They have to keep their mouth shut every time. They have listen more than talk more. They have to talk all what has been told to them. So this is when you go to the village, we don't have to tell them, it's a community-based thing that we go and kind of revive. We go down with the workshops and revive them. We bring the elders in the family, we let them all sit down in the village, and we tell elders please, what do you know about the chief's family, what are their, what are their backgrounds of being a good chief? And these things are brought out and put on the board, and people tend to see, and see that this is been lost, the chief has been barking instruction all the time, a bit instruction. They have never been serving us. So this is what we do. […] You know, when people are responsible, when you are responsible in things that we do, like the chief has, he has every rights that in a village, to allow and disallow things to happen. So when he knows his role as a chief, he doesn't do that. He calls people, and people makes the decision. It's a collective decision in anything that has to be done. (FLMMA central staff)

4.4 LOCAL PREFERENCES FOR PARTICIPATION ACROSS CONTEXTS

Across villages, many respondents misunderstood questions about attitudes towards and the costs and benefits of, decision-making structures; their responses instead focused on attitudes towards and the costs and benefits of management. Among respondents who correctly understood these questions and responded accordingly, many shared a preference for local/traditional decision-making (Chief Village 1, women's rep Village 3, resource management committee rep Village 3, youth rep Village 3, village headman Village 6, resource management committee rep Village 6, youth rep Village 6, youth rep Village 7, women's rep Village 8, resource management committee rep Village 8). Per the Village 7 women's rep, for example: "The head of the clan, eh? They should all agree, for the *qoliqoli* to make the *tabu* and to watch over the *qoliqoli* [… In the] Fijian way." In these respondents' ideal world, traditional decision-making structures are locally appropriate, legitimate, and accountable:

> I think the community should make the decision or the rules. […] Because this is the one they staying in the village, and they are the one go out fishing. And they

> are the one who is the head of our village, who is accountable, who appoint the head of the village. So I think it's the community itself. (Youth rep Village 8)

Chiefs in some villages are clear that chiefly status as the primary decision-makers should be respected, even in the context of traditional decision-making. In particular, in response to questions about whether or not community members themselves should help decide: "The leaders of the *mataqalis*, and myself [should make the decisions]" (Chief Village 8); and "It is correct to have our [the chiefs'] meeting, then share with the village meeting how we're going to conserve the *qoliqoli*" (Chief Village 6).

Some chiefs are supportive of co-management approaches. In Village 4, the chief specifically supports cooperative decision-making across users, traditional leaders and NGOs (Chief Village 4), and the village headman believes that co-management actors, including INGOs and chiefs across levels, may reinforce compliance by their ongoing, vocal support. Similarly, the Village 6 chief supports cooperation with co-management actors, in the context of traditional decision-making: "It should be all the chiefs' responsibility to make these rules about the *qoliqoli* […] They should go up to the *Buli* Dama, and the Fisheries people. About how to conserve the *qoliqoli.*"

A number of respondents, however, would prefer greater user participation and a more bottom-up approach to decision making (District rep Village 5, women's rep Village 5).

> I like that approach. Bottom up approach. To gather all the views of the people like going to every household, visiting them, interview them, what they like, what they don't like, all those things, then you can take it up. It's more, because these are the people who will be affected by the, because these are the very ones who go out fishing every day, so the people that have their income, their money from the sea. We need to have their views. (Youth rep Village 2)

This is especially true in villages where recent marine resource management decisions were perceived to be imposed from above. The Village 5 fisher agrees that bottom-up decision-making is preferable:

> It's better to come to the community […] Because Chief Macuata, he has his food, his people, and he have his money. So us people in the community, all of our income is come from the ocean, and our food and everything is from the ocean. So it will… […] If we say yes, all yes, in the community, right, okay, we do this. Talk about, say, yes, okay. It's good to do the *tabu*.

And, per the Village 7 village headman, decisions should be made in a process that starts in the family: "We have to sit family, then the *bose ni vakoro*, then goes to the *bose ni tikina*" (TnK Village 7), although he goes on to imply that this process should be functionally top-down within each level:

> Especially the parents supposed to talk to their children, you know, to keep the *qoliqoli* […] Because the awareness, how to keep our things in the sea, you know, only the parents of the leaders they know. The awareness should go down. Especially for the youth […] and the children too. That's all I can say.

4.5 HYPOTHESIS TESTING

Based on the findings presented above, I reject Hypothesis 1a: INGOs encourage broadened participation in CBM decision-making. Both INGO 1 and INGO 2 have focused their work on creating purely advisory structures that have no decision-making power, and that replicate existing avenues of user influence, rather than by creating new, user-inclusive decision-making structures as hypothesized. Respondents consistently maintain that marine and coastal resource management decisions are made the same way they have always been made (although

some note the resource management committees now exist), both in the presence and absence of INGOs, and a comparison of the data across villages supports that contention (see Table 3-1).

Across the eight villages studied here, I found little variation in INGO efforts to encourage broad participation in CBM decision-making (see Table 3-1). This is in part because the loci of decision-making are generally at the district rather than village level, and in part because INGO strategies are remarkably consistent across both organizations and sites; the result is a lack of counterfactual cases. Due to the lack of counterfactuals, and as both H1b and H1c depend on support for H1a, I am unable to test the remaining hypotheses.

Findings do indicate substantial variation in users' and community members' perceptions their influence on decision-making. As noted above, this variation is not attributable to the work of INGOs. However, a number of interesting and compelling findings about how decision-making structures influence implementation in the context of INGOs and traditional leaders emerge from the above results. These are discussed below.

	Village 1 (n=5)	Village 2 (n=4)	Village 3 (n=5)	Village 4 (n=7)	Village 5 (n=5)	Village 6 (n=5)	Village 7 (n=4)	Village 8 (n=5)
INGO	None	None	None	INGO 1	INGO 1	INGO 2	INGO 2	INGO 2
# HH	19	10	50	40	34	36	43	50 (village only); 110 (with settlements)
Distance to markets	Remote	Remote	Semi-proximate	Semi-proximate to remote	Semi-proximate	Proximate to remote	Semi-proximate	Proximate
Resource reliance	High	High	High	High	High	High	Medium to high	High
Perceived resource state	Good	Good	Declining	Declining	Declining	Varied	Declining	Improving
Perceived level of poaching	Medium	Unknown	High	High	High	High	Varied	Varied
Locus of CBM decision-making	District	District	Village	Multi-district	Multi-district	District	District	Village
Hypothesis testing								
INGO-facilitated resource management committee?	N/A	N/A	N/A	Yes, at the village and multi-district level	Yes, at the village and multi-district level	Yes, at the village and district levels	Yes, at the village and district levels	Yes, at the village and district levels
User-inclusive decision-making structures?	At the discretion of the *vanua* and village chief; in practice, no	At the discretion of the *vanua* chief; in practice, no	At the discretion of the village chief; in practice, no	At the discretion of the *vanua* chief; in practice, limited	At the discretion of the *vanua* chief; in practice, no	At the discretion of the *vanua* chief; in practice, no	At the discretion of the *vanua* chiefs; in practice, no	At the discretion of the *vanua* and village chief; in practice, yes
Broadened user participation due to INGO involvement?	N/A	N/A	N/A	No	No	No	No	No
Adopted?	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Implemented?	**Yes**	**No**	**No**	**Yes**	**No**	**No**	**No**	**Yes**

Table 6-1. Summary of results across communities.

5. Discussion

5.1 FACTORS FACILITATING AND CHALLENGING USER PARTICIPATION IN FIJIAN CBM DECISION-MAKING

In current iterations of Fijian CBM, both representative selection mechanisms and superficially addressed power dynamics preclude full participation by some groups, particularly women. This is consistent with existing theories of participation that draw attention to participant selection processes (Fung 2006) and differences in power and voice (Reed et al. 2018). Similarly, marine spatial planning processes, some of which are used by the INGOs working in Fijian CBM, have been criticized for failing to explicitly recognize the political nature of participation and decision-making, resulting in exclusion of some stakeholder voices and challenging legitimacy of management (Flannery, Healy, and Luna 2018). Prior work on participation (Reed et al. 2018, Fung 2006) also draws also our attention to the ways in which current representation is limited and hierarchical and attenuated advisory structures fail to carry the voices of those at the bottom to decision-makers at the top.

5.2.1 INGOs and representative participation in Fijian CBM

INGO advisory structures that are intended to ensure representation of users in do not always successfully do so. Both INGOs work with locally-constituted resource management committees; according to the INGOs themselves, as documented above, the committees exist to advise decision-makers through upwards representation of resource users from the village and higher levels, as well as to bring decisions and information down from the levels at which decisions are made. However, neither INGO's approach includes mechanisms to ensure that advisors at the *vanua* level, who are often relatively removed from daily concerns of the various

individuals they are meant to represent, both solicit information from their communities and higher levels of governance and share that information accurately at both ends. Thus the communication and use of information in decision making (Fung 2006) – especially, but not only, upward communication – is likely to vary both between sites and over time, as it relies entirely on representatives' willingness, capacities, and opportunities. This is especially problematic in the context of previous studies of CBM that highlight the possibility that representative structures, like the advisory committees examined here, may be inappropriate to Pacific Islands contexts and actually undermine feelings of ownership of management at the community level (Govan 2009).

Furthermore, the processes by which committee members are selected may challenge their ability to fully and accurately represent the varied concerns of grassroots-level users (Fung 2006). The core of the INGO 1-facilitated *Qoliqoli* Cokovata Management Committee comprises high-level representatives, each of whom serves multiple communities throughout the region, and who may be chosen for their positions independently of their qualifications, ability, or desire to work on CBM. Some effort has been made to institutionalize voice for traditionally marginalized user groups by including women and youth representatives in the committee composition; however, those representatives remain structurally disenfranchised due to their lack of voting power. Due at least in part to the differences in extent of the *vanua* across the contexts in which the organizations work, INGO 2's committee structures are embedded across the village, district and provincial levels. While district and provincial representatives are chosen from the ranks of those serving on the committee one level below, village-level representatives are selected in a process determined by the community. Where the community establishes a representative structure that either intentionally includes, or does not preclude, participation by

traditionally disenfranchised groups, INGO 2's approach may broaden participation in decision-making, but this is entirely at the discretion of traditional community leaders, consistent with the preeminent role for traditional leaders throughout CBM decision making discussed in more depth below.

5.2.2 User participation and traditional decision-makers

Despite noting the potential (Govan and Meo 2011), and intentional efforts (Cohen, Evans, and Govan 2015), of Fijian CBM to increase participation by women and other marginalized groups – previous studies have found that the majority of CBM decisions are still led by male traditional decision-makers, and that individual decision-makers' attitudes determine the extent to which participation in decision-making is inclusive and equitable (Cohen, Evans, and Govan 2015). This is consistent with the above findings. As evidenced by the cases examined here, traditional (post-colonial) decision-making remains the core approach to CBM decision-making in Fiji both in the presence and absence of INGOs.

Under traditional structures, as today, the final authority is the chief or chiefs of the *vanua*, and that authority is absolute. There is no formally institutionalized mechanism for user participation; indeed, certain user groups, most especially women, are commonly either hindered or outright precluded from participation in decision-making. Thus the extent to which user participation takes place under traditional decision-making is solely determined by the chief paramount at the level where decisions are made – that is, the level of power and authority ceded to participants' voices (Fung 2006) is at the discretion of decision-makers. Where no INGO works (Villages 1, 2 and 3), user participation in decision-making is determined by the chief's openness to input and desire to seek consensus in decision-making, either within the village or

among the *Bose Vanua*, and users' willingness to implement appears to depend in part on their respect for chiefly authority as well as their proximity to that authority.

Absolute chiefly authority over decision making does not change where INGOs engage. Where INGO 1 works, user participation in CBM decision-making is entirely reliant on the willingness of Chief Macuata to allow his decisions to be guided by input from an incomplete set of stakeholders who are far removed from the users they represent, by INGO and national government input, and/or by his fellow (district) chiefs on the *Bose Vanua*. How the ultimate decision balances the input of these varied stakeholders remains unexamined here, but there is some indication (in particular from Village 5) that the user voices believed to be so critical to successful CBM are not always heard, and that when those voices are not heard, implementation suffers. INGO 2's approach similarly relies on the (in most cases) district chief's willingness to consider information provided by user representatives who may be selected democratically, by elite fiat, or by some other mechanism determined by local leaders, or to be guided by the other members of the *Bose Vanua* or input from INGOs or government. Again, how these voices are balanced in practice is uncertain, but community voices may not always be heard, nor community needs met – as seen in Village 7's inability to maintain their *tabu* due to the constraints on resource access it imposed. While Village 7 respondents – in contrast with those in Village 5 – did not directly attribute implementation failures to a lack of participation in decision-making, it seems likely that additional user input could have at least better specified management to avoid it being overly burdensome, and at best created the sense of ownership and commitment to management that is currently lacking. These findings are in common with previous work in the region that has established that users' voices and the effects of management on users are not always effectively considered in CBM decision-making (Govan 2009).

Relying on elite's willingness to share power by listening and acting on advice is especially problematic given the many instances my respondents cite of an *iTaukei* culture that discourages dissent in the face of chiefly authority. Relatedly, and in contrast to Western constructions of participation in decision-making (see also Cohen, Evans, and Govan 2015), many of my respondents construct listening to the chief's pre-determined decision, discussing it in the village meeting, and then approving it (without, apparently, a meaningful alternative to doing so) as participation, or even as bottom-up decision-making. In most cases examined here community members do perceive themselves as participating in village-level decision making. However, in apparent contradiction (and reinforcing how Fijian cultural realities challenge Western understandings), even where the chiefs themselves explicitly argue for the value of community participation in, or bottom-up, decision-making, many community members do not perceive themselves to be able to influence decisions.

This seeming contradiction may be explained by revisiting common pool resource theory. Again, in a CBM context, existing, traditional CBM decision-making structures can only meet Ostrom's (1990) criterion that users have a say in making rules where the chief consults, and is willing to be guided by, community members before making the initial decision. Early studies of CBM observe that, rather than being monolithic units, communities are in fact defined by their institutional arrangements – both the right to make rules and to determine the content of rules (Agrawal and Gibson 1999, see also Jentoft, McCay, and Wilson 1998). Where the chief of a Fijian village supports and is responsive to participation from the users he or she governs, while rule-making power is held solely in chiefly hands, the content of the rules may be decided by the community as a collective (or at least by male community members over the age of 35). Indeed, this approach would seem to work extremely well when chiefs faithfully functions in their

traditional role of listening and responding to community needs, as described by the FLMMA central staffer. My findings suggest that where chiefs' ties of duty, responsibility, accountability, and legitimacy with the community they serve are intact and direct, as in Village 8, villagers feel a stake in rules, compliance, enforcement, and benefits, and successfully implement CBM. Across villages, even where their experience does not match the description just provided, respondents acknowledge that the possibility of this kind of participatory decision-making does exist.

5.2.3 Nested structures and attenuation of user participation

My findings indicate that factors challenging meaningful user participation in decision-making are magnified where the decisions are made at a level that aggregates many users via multiple layers of representative governance. This observation is related to previous discussions of Fijian CBM that have noted that CBM and ecosystem-based management, an approach often favored by INGOs, focus at different levels and give users different roles at different stages in the management process (Sievanen, Gruby, and Campbell 2013).

My results show that even within a given decision-making level (e.g., the village), user participation in management decisions as defined by Ostrom (1990) is not the norm. In accordance with factors predicting successful self-organization to manage a common pool resource, both traditional decision-making and INGO-facilitated advisory committees are connected across levels in nested structures (Ostrom 1990) (see Appendix 3-2, Figures A1 and A2). However, traditional elite or representative selection processes (Fung 2006), the lack of institutionalized opportunities for representatives to aggregate and communicate the preferences of those they purport to represent, and the lack of any requirement that those preferences, even if

adequately understood and communicated, be heeded by decision-makers all undermine user participation in decision-making across levels. As a result, despite multiple representative structures that purport to reflect their interests, users do not always feel that they are consulted about traditional fishing ground rules, especially the adoption of a *tabu*, when the decision to do so is made at the *vanua* level and the *vanua* is defined across villages or even districts. In other words, neither representatives nor chiefs are held downwardly accountable under existing structures; as a result, decisions are sometimes experienced as illegitimate. This is especially the case when nested hierarchical structures or paramount decision-makers fail to consult lower-level chiefs in *vanua* level decision-making, as is the case in Village 5; the success of nested structures is clearly mediated by the attitudes of leaders towards each other as well as by the actual decisions that are made.[1] Finally, it is possible that contexts in which decision-making is removed from users are open to outright abuse of power. Where paramount chiefs are removed from users by layers of authority, chiefly accountability to users is attenuated. I did not see much evidence of direct abuse of power in the villages I visited; however, and in common with previous research in the Fijian context (Muehlig-Hofmann 2007), INGO respondents assert that it is known to happen.

Strikingly, in the cases of Village 5, and to a lesser extent in Villages 1, 6 and 7, respondents were clear that decisions made at the level of the fishing ground did not take into account their local circumstances, needs or desires. In adaptive co-management, nested structures are intended to enable learning across scales (Armitage, Plummer, and Berkes 2009), but upward

[1] Village 4, managed under the same regime as Village 5, is home to traditional leaders who are is seen as more supportive of CBM in general – but Village 4 was also allowed to select the portion of their preferred ground to close, rather than presented with a full closure (see Paper 2, Sections 4.5 and 4.6).

learning – that is, paramount decision makers' learning about the needs and preferences of resource users – is not always successful in the cases I examine, with ramifications for management success. In the cases presented here, implementation fails where INGOs engage at the *vanua* level, the *vanua* is defined in a way that is remote from users, and communities experience a failure of user consultation/participation (Villages 5, 6, and 7). Village 1 is notable for not following this pattern. Despite community members indicating that they did not feel consulted in CBM decision-making, Village 1 is successfully implementing CBM without any external support from an INGO. Rather than this success being attributable to the lack of INGO engagement, however, it is far more likely the result of the motivating power of having a strong, respected paramount decision-maker residing in and leading the village.

Thus, claims that "it is the Fijian socio-political context of customary management and chiefly centralization that facilitates the implementations of LMMAs and their success" (Aswani, Albert, and Love 2017, 383) are incomplete. Where chiefs are personally inclined towards participation and consensus, or where they are strong, respected, and proximate, the assertion appears to hold true. However, where chiefs lack participatory orientations, and especially where they are remote from the users their decisions affect, chiefly centralization is no recipe for success. Furthermore, respect for chiefly authority is known to be under challenge in some Fijian contexts (Muehlig-Hofmann 2007; Clarke and Jupiter 2010b; Veitayaki et al. 2011). A decline in respect for traditional authority in the context of a system that relies on that authority seems likely to challenge the resilience of decision-making structures, especially in light of rapid social and environmental change (Ratner and Allison 2012). Decision-making – especially where it disenfranchises the very actors meant to implement and comply with rules – may need to adapt

in the face of change in social-ecological systems in order to improve clarity, equity, adaptability, and accountability (Ratner and Allison 2012).

5.2 THE INGO-DECISION MAKER INTERFACE

In the situation documented above, INGOs take advantage of existing decision-making structures. They do so by a) targeting chiefs and government administrators preferentially with their outreach, justifying that choice by noting their own resource constraints as well as the instrumental need to target those with decision-making power; and b) framing their work with communities, which often focuses on providing information and capacity-building to community representatives, as participation without addressing issues of representativeness, accountability, or ultimate effect. INGOs argue that the content of the management plans they facilitate are generated by the communities, but they omit careful consideration of how those communities are defined, instead relying primarily on local elites, often at higher levels of aggregation than the village, to accurately reflect community priorities. This despite the fact that reliance on elites in CBM is known to create inequities and opportunities for capture of the benefits of management (Béné et al. 2009). Instrumental considerations that lead INGOs to seek to work with existing power structures at the highest possible level also lead them to buy in to – and sell – "participation" that is sometimes illusory. Indeed, it is possible that INGOs are prioritizing their preferred policy solutions over meaningful participation, focusing on their own goals at the expense of process (Ratner and Allison 2012). While both INGOs emphasize, at least in their interactions with community respondents, that they are not the ones driving decision-making, both INGOs have also focused on establishing *tabus* in the context of other, complementary approaches. Convincing a single paramount leader who is sympathetic to conservation of the advisability of closures is undoubtedly easier than convincing the users who experience the costs

of such closures directly and immediately. An approach that convinces users of the value of participation without empowering them to influence decisions risks faltering on the shoals of what Fung (2015) terms the triviality problem. Disenchantment or even outright antagonism may result when problems are pre-defined, choice sets are extremely constrained, impacts of decisions are trivial, or resources to invest in fostering participatory processes are very limited (Adams and Hulme 2001; Fung 2015).

5.3 LIMITATIONS AND FUTURE DIRECTIONS

This study is subject to a few limitations. Of particular concern in this context is the lack of variation in INGO approaches to participation demonstrated in the cases, and the resulting lack of any meaningful counterfactuals. Furthermore, the lack of interviews with *vanua*-level CBM decision-makers in Villages 4, 5, 6 and 7 leaves many unresolved questions about how participation is experienced by paramount chiefs and the *Bose Vanua*. Future work could usefully fill this gap and increase our understanding of how user participation plays out in Fijian CBM. Nonetheless, my results indicate that resource users implement CBM when they feel meaningfully consulted during adoption, and that, despite stated intentions, INGOs are not effectively stimulating that consultation.

While the work discussed here is hyper-specific to the Fijian context, many of these conclusions may hold true in other contexts as well. Survey methods could usefully supplement this research and increase its generalizability. In particular, surveys could be used to further explore a number of questions raised here. These might include the following: 1) How are INGOs defining participation in CBM? Specifically, to what extent do INGOs actively seek to broaden user participation in CBM decision-making rather than (or in addition to) participation

in implementation? 2) Where INGOs are working to broaden participation in decision-making, do they try to change existing decision-making structures, establish new decision-making structures, establish advisory structures, or take some other approach? And 3) To what extent do INGOs rely upon, reinforce, or challenge the authority of traditional or other *in situ* decision-makers?

6. Conclusion

Participation, and in particular participation of marginalized groups, continues to be framed as a desirable goal by decision-makers across the Pacific. For example, the 2008 Apia Policy, developed by fisheries officials from across the region and intended to align national-level approaches to coastal/inshore fisheries management across Pacific Island nations includes "Guiding principle 5: Promoting the participation of women and youth in all fisheries-related activities" (Govan 2013). However, in common with many academic discussions, rhetorical support for participation often fails to specify participation in what, how, and to what end. Nonetheless, there is theoretical and empirical reason to believe that broad-based user participation in decision-making is at least as important as participation in implementation (Ostrom 1990; Berkes 2009). My results support this contention, providing preliminary evidence that where users do not feel that they have a say in decision-making, implementation may not happen at all.

Furthermore, in the cases examined here, INGOs are not effectively supporting broad user participation in decision-making. Even with the INGO-facilitated creation of more-or-less participatory advisory structures, reliance on traditional decision-making, under which chiefs have absolute authority, mean that the extent to which user participation is meaningfully

achieved is entirely in the hands of the chiefs themselves. In addition, where the *vanua* is defined at the district level or higher, user input is mediated by representatives who may be neither accurately informed nor particularly accountable. And when the *vanua* is defined at the village level, individual community members may feel unable to make their voices heard under traditional decision-making structures, or out of respect for traditional decision makers.

While tempting, policy prescriptions for full-franchise, democratically elected representative structures in which representatives, as a collective, hold meaningful decision-making power are inherently problematic in the Fijian context. Such approaches are likely infeasible, given existing structures; inappropriate, given cultural considerations; and certainly represent a Western hegemonic view. In contrast, FLMMA's approach, while not examined in application in the cases presented here, appears to address some of the issues outlined above. If traditional decision-making structures are to persist in Fiji, they must adequately meet *iTaukei* needs. To meet local needs, decisions must be grounded in the legitimacy and accountability of traditional decision-makers. FLMMA's approach of "reinforcing traditional ties" reminds both decision-makers and community members that the functioning of the *vanua*, traditionally defined, relies on clear, holistic understanding of traditional roles. An empirical test of the extent to which the FLMMA approach is or could be successful is beyond the scope of the research presented here, as the approach was relatively new at the time of research. In particular, questions about how FLMMA's approach might scale up to loci of decision-making beyond the village level remain unanswered. So do concerns about how reinforcing social norms that apply within a user group can cope with norm or rule violators from outside that group. However, the approach is firmly grounded in local context and appears likely to encourage true user-participatory decision-making in at least some circumstances. Ultimately, however, the decision

of whether or not to embrace the FLMMA approach will be left in the hands of traditional decision-makers, as is so much else – at least for the immediate future.

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Appendix 3-1. Glossary of Fijian terms.

***Bose*:** Meeting; e.g., *bose vanua* (meeting of the leaders of the *vanua*), *bose tikina* (district meeting), *bose ni vakoro* (village meeting).
***Buli*:** Chiefly title (e.g., *Buli* Dama, chief of Dama district).
***Ikanakana*:** Village-level fishing grounds, normally directly adjacent to a coastal village. *Ikanakana* have no distinct status in law differentiating them from other portions of the *qoliqoli*, but are recognized by tradition as the exclusive preserve of a village.
***Io*:** Yes.
***iTaukei*:** Native Fijian.
***Mata ni tikina*:** District representative, a government administrative position. District representatives are appointed by the Minister of *iTaukei* Affairs.
***Mata ni vanua*:** Chief herald, spokesperson for the chief, position and responsibility defined by clan membership.
***Mataqali*:** Clan. Clans are a subset of a tribe; each clans has pre-defined responsibilities within traditional tribal hierarchies (e.g., chiefly clan, chief heralds, warriors, fishers, etc.). Membership in a *mataqali* is patrilineal and legally established.
***Qoliqoli*:** Traditional near-shore and coastal fishing grounds. These areas are currently legally owned by the Fijian government which assigns *iTaukei* Fijians guaranteed subsistence extraction rights to a given ground according to their *vanua*/tribal membership.
***Tabu*:** A traditional cultural practice whereby a portion of a *qoliqoli* is closed temporarily at the discretion of the chief. *Tabu* is still commonly used for cultural purposes; in addition, *tabus* are increasingly established as a marine resource management strategy analogous to establishing temporary or permanent no-take zones or marine protected areas. *Tabus*, as opposed to gazetted marine protected areas, lack formal legal status under current Fijian law.
***Tikina*:** District, a geographic and administrative division established during British colonial rule (1874-1970). Districts are smaller than and lie within Fijian provinces, but are larger than and encompass multiple villages. In general, a *vanua* is more likely to align with a district than with any other administrative division, but this is by no means universally true, and the match of the boundaries of the *vanua* and the district is usually highly imperfect.
***Tui*:** Literally king; chiefly title (e.g., *Tui* Macuata, chief of Macuata Province).
***Turaga ni koro*:** Village headman, an elected government administrative position at the village level.
***Turaga ni yavusa*:** Chief of the tribe, a patrilineal hereditary position.
***Vanua*:** Literally land, but used in this context to refer to a tribe or confederation of tribes, and the land and sea areas associated with those tribes, as well as the traditional relationships between and within tribes, the traditional relationship between tribal members and the land, and the cultural norms through which all of the preceding relate.
***Yaubula*:** Natural resources (includes both terrestrial and coastal/marine resources).
***Yavusa*:** Tribe. Members of a single tribe may or may not correspond with the population of a single village: some tribes are distributed across multiple villages, some villages are home to a single tribe, and some villages are home to multiple tribes. Membership in a *yavusa* is patrilineal and legally established.

Appendix 3-2. Advisory and decision-making structures in the presence of INGOs.

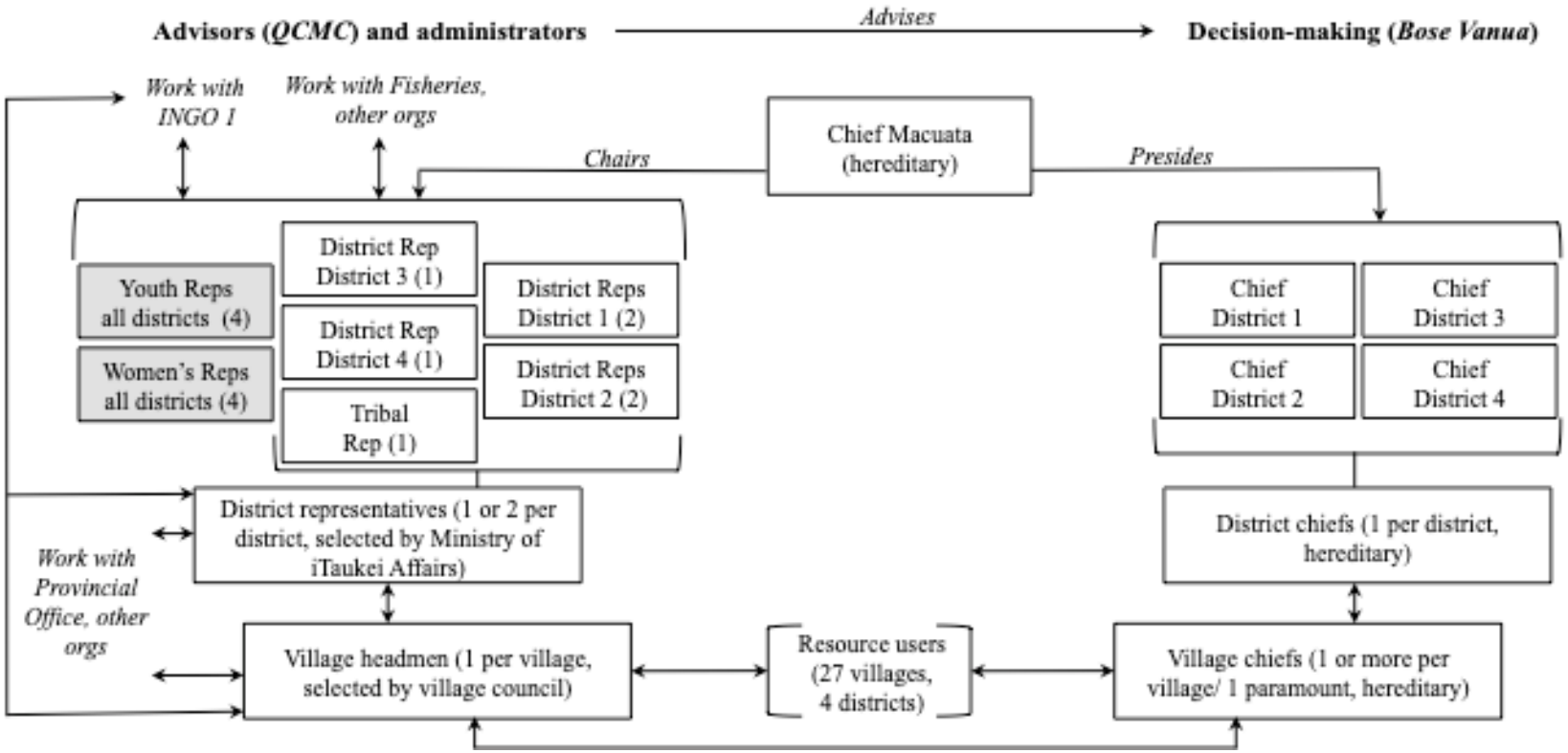

Figure A1. Simplified schematic of advisory and decision-making structures in the INGO 1 context. Arrows between actors indicate information transfer or consultation under ideal conditions, unless otherwise specified. Gray boxes indicate advisory committee (*Qoliqoli* Cokovata Management Committee or QCMC) members who do not have voting status. Note that Chief Macuata is a member of both the QCMC and the Bose Vanua. Particularly obscured here is decision-making at the village and district levels, which occurs in structures similar to the *Bose Vanua*: village chiefs preside over a village hierarchy council comprised of the chiefs of clans in the village; similarly, district chiefs preside over a hierarchy council comprised of the chiefs of villages within their districts. Collated from interview responses and Village 4/5 management plan.

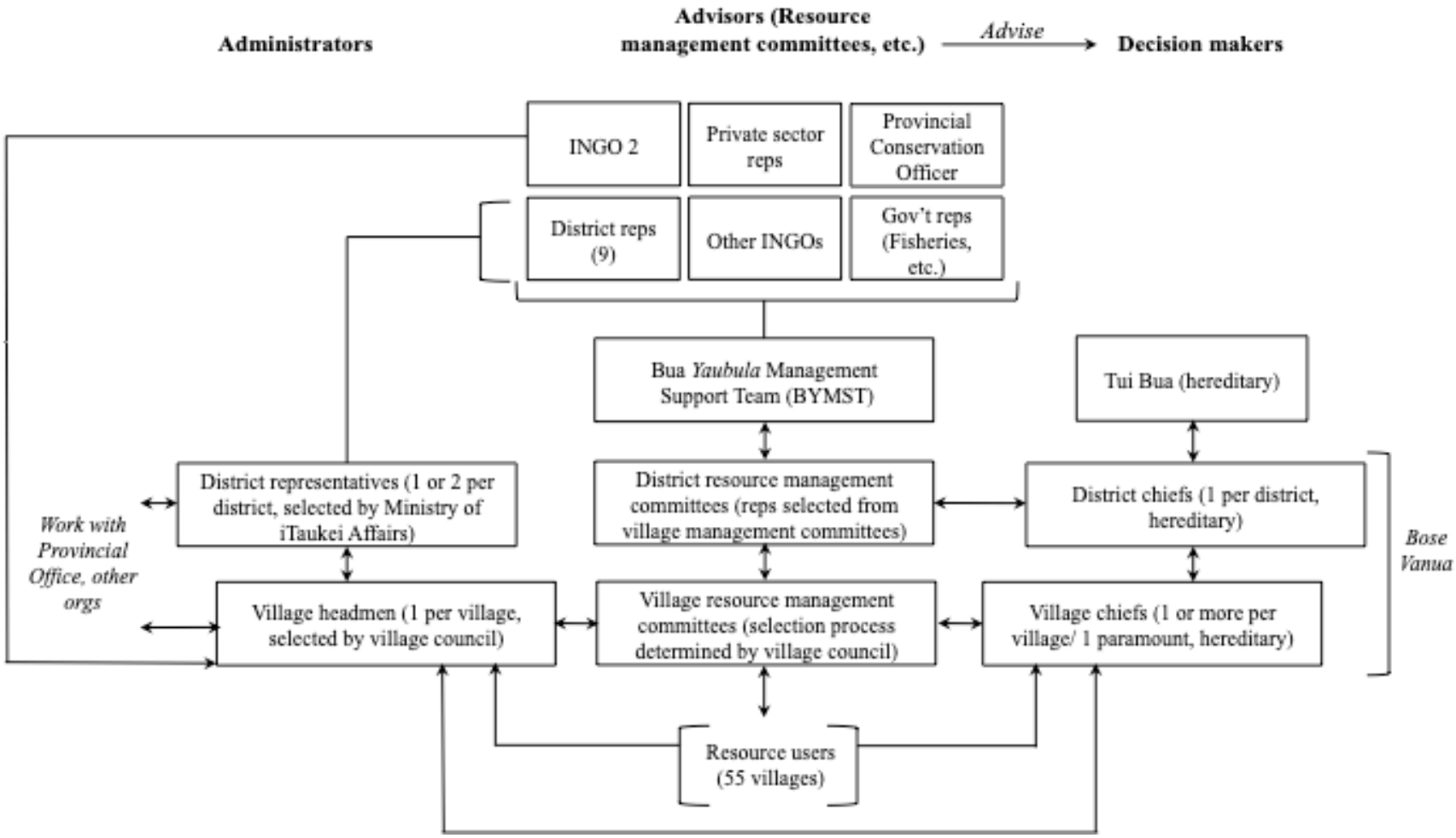

Figure A2. Simplified, generalized schematic of advisory and decision-making structures in INGO 2 contexts. Arrows between actors indicate information transfer or consultation under ideal conditions. Particularly obscured is decision-making at the village level, which occurs in a structure similar to the *Bose Vanua*: village chiefs preside over a village hierarchy council comprised of the chiefs of village clans. Village 8's management decision-making occurs within this village-level structure; in Villages 6 and 7 the *Bose Vanua* includes the district chief and the chiefs of the villages in the district, as portrayed here. Collated from interviews and Bua Provincial Council (http://buaprovincial.com.fj/environment-and-conservation/bymst-provincial-yaubula-support-team/).

CONCLUSION TO THE DISSERTATION

The studies presented in this dissertation examine the influence of international non-governmental conservation organizations on stakeholder buy-in to marine and coastal resource management under conditions of complex governance – that is, where problems are defined, solutions scoped, and/or rules made, implemented and revised by multiple actors, both governmental and non-governmental, acting in relationship to one another. Marine and coastal resource management is complicated by the common pool nature of the resources being managed as well as geographic and jurisdictional realities; managing marine and coastal resources through a truly top-down, command-and-control approach is often not feasible, especially where government capacity is lacking. For these reasons, complex governance is common in the marine and coastal sphere. Where compelling arguments can be made for improving biodiversity conservation and/or sustainable resource use, international non-governmental conservation organizations (INGOs) are likely to become involved in these governance efforts. Furthermore, where central government capacity is insufficient to monitor and enforce top-down governance of marine and coastal resources, management relies at least in part on stakeholders' willingness to support, engage in and comply with management – stakeholder buy-in.

Paper 1, "The effects of FishPath, a multi-stakeholder decision-support tool, on stakeholder buy-in to management in data-limited fisheries," presents an experimental test of FishPath, an interactive decision-support tool for data-limited fisheries that is applied globally under the auspices of The Nature Conservancy. In this paper, stakeholders' (fisheries scientists and managers, fishers, and non-fishing marine stakeholders) FishPath use significantly increased their perceptions of the ease and effectiveness of formal management of a hypothetical data-limited fishery, but did not increase their support for formal management, which began high and

remained high throughout the experiment (i.e., in Paper 1, stakeholder buy-in is understood as support for, and perceived ease and effectiveness, of management). Stakeholders who received expert support in navigating FishPath output reported a significant increase in the perceived ease of management, in contrast with those who received no such support. However, expert-supported stakeholders reported no significant increase in the perceived effectiveness of management, whereas their unsupported peers did experience a significant increase in perceived effectiveness. Thus the effects of expert-supported tool use are unclear.

As FishPath was designed in part to improve stakeholder buy-in to management, Paper 1 provides a proof-of-concept test of an outcome of interest, for a tool that is being actively applied to data-limited fisheries, which are estimated to constitute 80% of global catch (Costello et al. 2012). Although previous efforts have been made to develop such tools (MRAG Ltd. 1991; Alagappan and Kumaran 2013), FishPath is unique in the breadth of its aspiration to be applicable across data-limited fishery contexts; furthermore, to my knowledge, no prior tools have been subject to the empirical causal testing presented here. Lastly, by extending constructs of stakeholder buy-in to include efficacy beliefs, Paper 1 introduces to fisheries management a novel application of a set of concepts that have been usefully found to predict behavior change in other realms (Bandura 2004; Ortega-Egea, García-de-Frutos, and Antolín-López 2014).

While more research remains to be done to reinforce the findings reported in Paper 1, the results of this study draw attention to the potential value of environmental decision-support tools that engage management stakeholders in order to collate information and structure choice sets based on that information. While an over-reliance on panaceas often leads to management failures (Ostrom and Cox 2010), tools that standardize the solicitation of expert contextual knowledge, then combine that knowledge with richly understood, scientifically grounded

management options can not only empower stakeholders to select appropriate approaches but can also change stakeholder beliefs about whether management is possible, or can be effective, at all. Although the results reported here are encouraging, they do not answer questions about how best to determine who participates in FishPath use, how participants' input is used in decision-making, or how the costs and benefits of management decisions are distributed across stakeholders. In common with pre-existing work, Papers 2 and 3 underline the importance of these questions.

Paper 2, "International non-governmental organizations and the adoption and implementation of community-based management of coastal and marine resources," presents process-tracing tests of original qualitative data in order to understand how INGOs influence community-level incentives for the adoption and implementation of community-based management of coastal and marine resources (CBM) in Fiji. Although there are many potential stakeholders in CBM, particularly in co-management approaches to CBM (Cohen, Evans, and Govan 2015), this paper focuses in particular on the resource users/community members who are expected to take the lead in adopting and implementing (i.e., buying in to) CBM by common pool scholars (Ostrom 1990). I find that INGOs significantly and successfully incentivize the adoption of CBM, primarily by providing information on the benefits of local management strategies. However, my respondents perceived adoption as relatively costless. Although INGO activities also incentivize implementation, implementation is much more costly to CBM users, as active implementation results both in short-term resource access costs and monitoring and enforcement costs that are not defrayed under current CBM approaches. Thus, current INGO approaches incentivize implementation of CBM far less than they do adoption. I find some

evidence across my cases that this gap is not limited to INGO-led work, however, as other classes of organizations take similar approaches with similar results.

Much is known about the conditions under which users self-organize in traditional CBM (Ostrom 1990; Agrawal 2001), but modern-day CBM relies on external actors, especially INGOs (e.g., Clarke and Jupiter 2010; Benson 2012; Abernethy et al. 2014). Yet despite work that notes that the relationship of community-level costs and benefits is central to CBM success and sustainability (Adams and Hulme 2001; Pomeroy, Katon, and Harkes 2001; Govan 2009; Aceves-Bueno et al. 2015), few if any previous studies unpack how INGOs affect those costs and benefits. Judicious case selection, the inclusion of counterfactual cases, and the use of process tracing and content analysis support causal conclusions about this prevalent but understudied phenomenon. Paper 2 expands common pool resource theory by incorporating the effects of one class of external actors (INGOs) on classic formulations of CBM, and presents directly applicable conclusions likely to be of use to CBM actors including governments, funders, communities, and INGOs themselves. My findings in Paper 2 indicate that all organizations that seek to encourage or facilitate CBM should preemptively consider how the costs of implementation will be experienced across and through non-homogenous communities. Furthermore, as the benefits of successful CBM implementation are shared between co-management actors, communities should not be expected to bear the costs of implementation without support.

Two recommendations emerge from these findings. Firstly, costs of CBM are likely to be felt immediately, especially where subsistence reliance is high and shifting effort is infeasible, and alternate livelihood or livelihood support activities are likely to take significant time to develop to a point where they can defray those costs (to say nothing of other, non-economic

losses associated with livelihood change). Assuming that all communities can or should accept these costs is counterproductive of CBM success, as implementation fails where such costs are very high. To address this issue, meaningful and ongoing action to maintain community subsistence and income at or above pre-CBM implementation levels should be taken pre-emptively, especially in less-developed communities. Such support should be designed to become self-sustaining over time as the benefits of CBM implementation are realized at the local level. Secondly, where individual users are expected to fill capacity gaps by acting as monitors of resource use and monitoring is costly (e.g., requires boat use) they face classic collective action problems and their private calculus will often lead them to undersupply the collective good. As meaningful implementation in this context rests on monitoring and enforcement, private costs must be defrayed (fish wardens to be paid a stipend to make up for lost fishing effort, and benzene/boat costs covered). Again, initial support may come from INGOs or via their ability to connect communities to external support; institutions and agreements should be designed so that once the benefits of CBM are felt, the community assumes collective responsibility for self-finance.

Paper 3, "Who decides, who advises? Participation, international non-governmental conservation organizations and community-based marine resource management decision-making," presents process-tracing and content analysis of original data to examine how INGOs influence user participation in Fijian CBM decision-making. Again, for the purposes of this study, stakeholders are particularly defined as resource users/community members, as common pool resource theory posits that resource users' participation in decision-making is central to successful CBM (Ostrom 1990). In recognition of both the instrumental and normative benefits of participation (Wesselink et al. 2011), INGOs have sought to broaden participation, especially

participation of marginalized groups, in natural resource decision-making in other contexts (Flinton 2003). However, in the cases examined in Paper 3 I find that INGOs do not act to broaden user participation in decision-making, instead focusing their efforts on creating advisory/implementation structures that may accomplish little towards user-inclusive decision-making. Across the cases, user participation in decision-making remains almost entirely at the discretion of the paramount decision-maker, who maintains absolute authority (albeit while perhaps facing normative incentives to accept and heed counsel from those around him). Furthermore, where the locus of decision-making is far removed from resource users (i.e., the locus of decision-making is at a level higher than the village or tribe), neither traditional nested decision-making structures nor INGO-facilitated nested advisory/implementation structures ensure that users actually have a voice in decisions or even that their experiences and preferences are accurately transmitted to decision-makers. The findings of this paper further indicate that where users do not feel consulted, especially where the locus of decision-making is distant, implementation suffers.

Paper 3 offers a novel extension of systematic understandings of participation drawn from decision making scholarship (Fung 2006; Fung 2015) to a complex system of natural resource management in a non-Western context. As with Paper 2, Paper 3 also usefully extends common pool resource theory by examining the extent to which one of Ostrom's (1990) central tenets applies to INGO-facilitated CBM. In fact, due to the rigid hierarchies underpinning *iTaukei* society (Muehlig-Hofmann 2007; Veitayaki et al. 2011) neither traditional (pre-colonial) resource strategies nor modern-day Fijian CBM necessarily convene with the common pool resource design principle mandating that those affected by the rules have the ability to modify them (Ostrom 1990). Despite INGO and other organization rhetoric that supports the

participation of communities, and marginalized groups in particular, Paper 3 findings indicate that in Fijian CBM the attitudes of the chief and the relationship of the chief to those he or she governs are the factors that determine whether or not user participation in decision-making takes place at all.

In Fiji, respect for chiefly authority is no longer the guarantee of successful CBM implementation that it once was (Muehlig-Hofmann 2007; Clarke and Jupiter 2010; Veitayaki et al. 2011; Hassall et al. 2011). Paper 3 indicates that in today's Fiji, successful CBM implementation is more likely where users are bought in to management than it is where decision makers alone are bought in. As Ostrom (1990) demonstrates, one way to improve resource user buy-in to management is to give them a voice in decision making (Lynam et al. 2007; Reed 2008). The INGO-facilitated advisory/implementation structures that are intended to allow information to flow upwards should be fine-tuned to ensure that representatives a) accurately represent the full diversity of resource users and b) collect and accurately reflect the diversity of resource user preferences across levels. This is no small task, but revisiting representative selection processes, training representatives in downward accountability and their full duties to those they represent, and designing micro-institutions that allow community members to hold representatives accountable are all possible steps towards realizing these goals. Altering traditional decision-making structures would likely be challenging, and perhaps counterproductive. Yet efforts like FLMMA's, that seek to increase social pressure on traditional decision-makers to solicit and respond to user input – that is, to empower users' voices to influence the decisions that are made – could help increase broad user buy-in and thus the likelihood of implementation.

Taken together, the papers in this dissertation synthesize a diverse body of theory and empirics from fields including public policy and governance, common pool resource scholarship, natural resource management, fisheries science, non-profit management and cognitive and behavioral science to identify and respond to theoretically interesting and directly applicable research questions that are empirically tested using causal approaches. The evidence is mounting that local and/or stakeholder involvement improves ecological and socio-economic outcomes in natural resource management, including marine and coastal resource management (e.g., Brooks, Waylen, and Mulder 2013; Cinner et al. 2016). These three papers contribute to efforts to develop a nuanced understanding of what stakeholder involvement looks like under conditions of complex governance. The papers focus on instances in which stakeholder involvement is led, facilitated or encouraged by INGOs, a question that has received little attention to date. Taken together, the papers indicate that INGOs are extremely salient actors with real, positive effects on stakeholder buy-in. However, existing INGO approaches do not always realize their full potential. In response to INGO activity, stakeholder buy-in may increase unevenly over time or across actors, with disappointing final results for biodiversity conservation and sustainable resource use. Careful attention to the ways in which varied stakeholders experience and respond to INGO activities is necessary to identify and address these gaps and improve outcomes for both stakeholders and INGOs.

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