A CASE STUDY OF COLLABORATIVE MANAGEMENT APPROACH TO COMMON-POOL RESOURCES MANAGEMENT

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ABSTRACT

Some of prior studies posit that a *collaborative management approach* is the most suitable way to manage common-pool resources, including tuna resources, because it engages those who use the resources in the management process. Unfortunately, the approach has not been found effective in managing *migratory* tuna resources of the Western Central Pacific Ocean. Taking a case study approach, we investigated the collaborative management approach model taken by Western Central Pacific Ocean Commission and identified the root causes of the key issues in managing the resources. This study contributes to a better understanding of issues in managing common-pool resources, which may help policy-makers develop effective strategies for the sustainable management of the resources.

Keywords: Common-pool resources, collaborative management approach, tuna resources, Western Central Pacific Ocean

INTRODUCTION

Studies show that the world's fisheries as a common-pool resource are threatened by overharvesting and are facing serious challenges of depletion (e.g. Costello et al. 2016). The culmination of the several factors such as: increased fishing activities, increased vessels' capacities, improved fishing efficiency compounded with high rate of illegally, unreported and unregulated (IUU) fishing activities, have attributed to the overharvesting and depletion (ABC, 2016, WCPFC, 2016). Additionally, fishing in closed areas, violations of fishing licence rules, illegal discards (dumping untargeted species overboard), and misreporting of catch have all resulted in virtual extinction of certain tuna species, plundering of the fisheries, and loss of revenue for the Pacific Island countries[1] (PICs) (MRAG, 2016). The Marine Resources Assessment Group's Report, based on data obtained from 2010 – 2015, indicates

[1] Pacific island countries (PICs), commonly known as small islands developing states, have limited land landmass (with the exception of Papua New Guinea), with few natural resources, but they control the largest ocean area in the world.

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that between 276,500 mt and 338,400 mt of tuna were caught through IUU fishing activities over the past six years. This has contributed to a loss in revenue to PICs of USD 123 million per year (MRAG, 2016).

The problems compel policy advocates, scholars, and others to search for effective solutions. In the Western and Central Pacific Ocean (WCPO)[1], regional fisheries management organizations (RFMOs) and coastal states are struggling to manage their tuna resources (ABC, 2016). The WCPO is the only ocean region that still has tuna stocks. However, the Western and Central Pacific Fisheries Commission (WCPFC), is facing difficulties in managing the divergent interests of its members over tuna fisheries. The region witnesses the depletion of species such as big eye and blue fin tuna, and overharvesting of the other species (ABC, 2016). The problem raises the question about the *collaborative management approach* (CMA) taken by the WCPFC.

Collaborative management approach (CMA) is generally defined as a working practice whereby individuals work together for a common purpose (Ansell and Gash, 2007). The basic principle of CMA, based on the study of Colebatch and Larmour (1993), are that members behave according to their group's norms and take collective actions to achieve their goals. It operates within the framework of the attributes: partnership, cooperation, participation, shared interests, collective responsibilities, mutual trust, social capital and consensus based decisions (Marttunen and Hämäläinen, 2008).

Earlier studies on the management of common pool resources (CPRs) have asserted that CMA is most suitable to CPRs (such as fisheries, rivers, minerals, meadows, forestry, etc.) including tuna resources because it involves those who use the resources in the management process (e.g. Acheson, 2013, Hauzer et al., 2013). One of the main advantages for involving the resource users is that every member takes part in the decision making process which, in turn, instils a sense of ownership among the users, and motivates them to use the resources more responsibly (Ostrom, 2015). Fulton (2011) asserted that one of the key components for the successful management of fisheries is the inclusion of stakeholders in the management process known as "participatory management" (p.10). In terms of the WCPFC, such a management approach involves 26 member countries, cooperating non-members, participating territories and stakeholders such as non-government organizations (NGOs), fishing industries, RFMOs and sub-RFMOs, making it a potentially complex management structure.

While CMA may work well with the management of some of traditional coastal fisheries in Pacific Islands, known as community based fisheries management (Moses, 2016), the effectiveness of the approach elsewhere involving regional and international actors such as the WCPFC remains questionable (Hanich and Tsamenyi, 2014, Norris, 2015).

[1] This is the region stretching from Indonesia and the Philippines in the west, to Hawaii, Kiribati and French Polynesia in the east, and from the southern oceans at 55 degrees south to the waters of the Arctic in the north.

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This study therefore seeks to examine the factors influencing the outcomes of the CMA and explore the root causes for the failure of WCPFC in managing tuna fisheries in WCPO. The study has practical implications for managing other common-pool resources.

LITERATURE REVIEW

This literature review focuses on the (perceived or realised) benefits and outcomes of CMA, and the factors influencing CMA outcomes. We conducted a comprehensive and structured literature review on the topic areas. Most of the reviewed articles were published in leading scholarly journals, being peer reviewed and recorded most citations. The majority of journals reviewed were published between the years 2000 to 2015 to capture a reasonably current state of understanding on the topical areas. However, other journal articles published three to five decades ago have also been reviewed. Indeed, many of the earlier authors were eminent in this field, for example Elinor Ostrom was the joint Nobel Prize winner in 2009 in Economic Science (Anderies and Janssen, 2012), as well as others including Hofstede, Axelrod, and Nash. These same authors turn up as references in many of the more recent articles on the topic.

The major databased used to search the articles for the review include Pro-Quest, EbscoHost, Emerald, AQORA and JSTOR. These databases provide a balance of conceptual and empirical account in the areas of study. The key search words were selected based on their importance in the study field, including management of CPRs, collaborative management, co-management and common-property rights; collective action, and community based fisheries management (CBFM). Most of these terms were used interchangeably because they have similar meanings as they operate on the same management principles within the framework of partnership, cooperation, shared interests, collective responsibilities, mutual trust, and consensus based decisions. The search criteria included (1) articles were published between 2000 and 2015; (2) articles must have at least 50 citations; (3) articles must be peer reviewed; and (4) articles must be related to the management of CPRs. The number of articles analysed was also determined by the timeframe given to carry out the study, and the point of saturation reached from the information gathered (Kirriemuir and McFarlane, 2004). As a result, a total of 68 publications were selected for this review. Table 1 presents a brief summary of the basic features of the publications.

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Year (& No.) of publication		Type of study		Methodology		Geography		Main aspect of CMA studied		CPR*	
2000 - 2015	54	Empirical	46	Quantitative	9	North America	33	Overall effectiveness	14	Natural resources	23
1990s	9	Conceptual	22	Qualitative	6	Central America	1	Structures	6	Fisheries onshore	9
1980s	2			Mixed method	11	South America	1	Efficiency	4	Fisheries offshore	0
1970s	1			Ethnographic	12	Europe	12	Outcomes & Results	10	Agriculture	1
1960s	1			Experimental	8	Asia	11	CMA Theories	3	Unspecified	35
1950s	1			Conceptual	22	Africa	8				
						Pacific	2				

Table 1. Summary of basic features of the articles (N=68) reviewed

**Note:* Common-pool resources (CPRs): *natural resources* refers to forests, wildlife, ponds, rivers, and minerals; *fisheries onshore* refers to fisheries on the coast; *fisheries offshore* refers to fish in the deep ocean far from the coast (mostly pelagic, or migratory species); and *agriculture* refers to irrigation systems and pastures.

Given the purpose of this study, we presents a brief summary of the findings of our literature review as follows.

Benefits of Collaborative Management Approach

Our literature review finds that collaborative management approach (CMA) has both *perceived* benefits (e.g. Heikkila and Gerlak, 2005; Berkes, 2009) and *realized* benefits (e.g. Cheng and Sturtvant, 2012) in the management of CPRs. Research shows that CMA can offer a number of benefits such as: (1) common goal – group members share similar aims or desired results; (2) prevents conflicts by helping members to interact and solve their differences (Sa-Ngiamlak et al., 2011); (3) social learning – it enables group members to learn from each other's needs, perspectives and positions and thus promotes greater knowledge and understanding among members (Marttunen and Hämäläinen, 2008, Richie et al., 2012); (4) better relationship – it improves members' relationships and cultivates partnership; (5) mutual trust – it increases trust among members (Bruckmeier and Larsen, 2008, Caldwell et al., 2009); (6) participatory decision makings - all the stakeholders are involved in the decisions, and the decisions are often made through consensus. Hence, a group tends to take ownership of the collective decisions, increasing their commitment to their objectives; (7) integrated management – members share resources and responsibilities, which enhances unity by bringing together different groups under a single framework (Olaru et al., 2014, Munoz-Erickson et al., 2010); (8) mutual respect – it fosters respect among members (Richie et al., 2012); (9) collective benefits – all stakeholders benefit from the outcomes (Espinoza-Tenorio et al., 2012).

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Outcomes of Collaborative Management Approach

Although the majority of the literature that we reviewed has asserted the effectiveness of CMA in terms of the efficiency and equity in managing CPRs, scholars such as Agrawal (2003), and Grafton et al. (2006) amongst others have reported some negative results in their research findings in terms of cooperation towards the sustainability of CPRs. We find that out of the 10 empirical studies reviewed with a focus on the outcomes of CMA, about 40 percent of them, mostly in America, USA, Africa and Europe reported a negative outcome, due to various factors (to be discussed in the next section). Despite the negative outcomes, the majority of scholars are optimistic that the weaknesses can be addressed, and have suggested ways for improvements. Moreover, most of them indicate that CMA is ideal for CPRs (e.g. Mutimukuru, 2010, Boateng, 2006). Reynard (2002) and Masomera (2002) have argued that there is no one-size fits all approach, and the optimum management structure and approach must be context-based.

Factors influencing Collaborative Management Approach Outcomes

Our literature review finds that for a CMA to be successful in managing CPRs it has to meet certain favourable conditions including (i) equal power distribution among members, (ii) strong common interest (iii) certain cultural orientations (predominantly communalism, femininity and long-term orientations), (iv) fair endowment, (v) high-level of cooperation; (vi) strong leadership style, (vii) low to moderate transaction costs, (viii) incentives, (vix) clarity of rules, (x) small size groups (rather than large ones) and (xi) self-enforcement compounded with external enforcement. In terms of *power distribution*, Gallardo et al. (2013) argues that CMA does not guarantee a uniform egalitarian partnership in practice. There are different sources of power held by individuals within a CMA group. The two highlighted by scholars of most relevance to this study are political and economic powers (Acheson, 2013; Davis and Ruddle, 2012). Another factor that influences CMA outcomes is self-interest vs *common interest* (e.g. Acheson, 2013). CMA is intended to achieve organisational objectives and to benefit all members collectively. However, this may not occur if most members tend to value their own interests above the group's interests and opt for personal benefit once they see the opportunity, or if the group benefit is less than the individual one (Colebatch and Larmour, 1993). *Cultural orientations* have been found influencing the outcomes of CMA (e.g. Jentoft and Chuenpagdee, 2009, Pinel, 2013). Human behaviors are pre-dominantly influenced by cultures (norms, beliefs and values) (Hofstede et al. 1991). Mansbridge (1990, p.64), noted that "… not all cultures promote the same behaviour ..." which can be very challenging in international and regional institutions where members have different cultural values and orientations. In terms of *endowment*, if members endow their financial contributions to an association such as WPCFC, they tend to take more ownership, increase

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loyalty and commitment to the objectives of the organization. This is because they have invested their money into the organization (Ostrom, 1999). Managing highly migratory CPRs such as tuna fisheries in an open-access or free-for-all area requires strong *cooperation* among member countries, fishing industries and stakeholders. Hence, the level of cooperation is found to affect the outcomes of CMA (McGuire, 2006). *Leadership* is found to affect the outcomes of CMA in CPRs management (e.g. Cheng and Sturtevant, 2012). For example, a participatory approach taken by a leader is important in matters such as decision-making, the enactment of laws, the development of policies, and by listening to the views of members and helping them come up with sound decisions (e.g. Marttunen and Hämäläinen, 2008). *Transaction cost* is found to be another factor influencing the outcomes of CMA (e.g. Dyer, 1997). In the context of tuna fisheries in WCPO, the transaction costs can be the costs involved in trying to comply with the conservation management measures. *Incentive* is found to influence positively CMA outcomes and have been used as a tool to encourage compliance with rules in the appropriation of CPRs (e.g. Hanich et al., 2015). In the context of CPRs, rules are normally set by members of a group (communities) that use or harvest the resources. Studies show that the enactment depends on the clarity of the rules (e.g. Xepapadeas, 2005). The size of group is also found to affect the outcomes of CMA. Olson (2009) argues that the larger the group the less it will further its common interest. CMA outcomes can also be influenced by the effectiveness of the monitoring and *enforcement* of rules. Studies show that monitoring and enforcements of rules on CPRs are often problematic due to lack of resources, under capacity, and no follow-up (e.g. Reaves and Bauer, 2012).

The prior research discussed above about collaborative management approach in managing common-pool resources is informative and serves as a framework for our study. However, we also identify some research gaps from the literature review.

Major research gaps

This section discusses the major knowledge gaps. As showed in Table 1, the majority of the studies have been originated from North America (33), Europe (12) and Asia (11). Only two studies tackle the issues in the Pacific region, and these involve Australia and New Zealand only. However, the majority of countries in the Pacific region are small Pacific Island countries (PICs). None of the studies we reviewed touches on the issues in the context of the PICs. We argue that the context of studies places an important role to the conclusions of research findings and the generalisation of new knowledge or theory. Factors such as beliefs, attitude, socio-cultural, economics, and political environments play a key role in influencing how societies (or communities) behave and interpret their situations (Podsakoff et al., 2012). Furthermore, most of the literature available examines the management of natural resources and coastal fisheries. These are the CPRs that are localised in a single geographical

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area shared by a community within that vicinity. However, none of the studies discusses migratory CPRs such as tuna fisheries which are managed by countries from a region and distant water fishing nations (DWFNs). The management of migratory CPRs presents a serious challenge as it involves different sovereign states. It also involves different actors with different level of powers (e.g. Coastal States and DWFNs) that are subject to different sovereign laws and national interests. These are the dynamics that are inadequately taken on board in prior studies, arguably leading to another knowledge gap. We seek to address the knowledge gaps while taking into account what has been done in the prior studies and their findings on the topic area.

METHODS

Case study design

This study follows a case study design as it is the preferred strategy when how or why questions are being investigated (Yin, 1994). A case study is useful when in-depth explanations of social behaviour are sought (Zainal, 2007) and when examination of data is conducted within the context of its use (Yin, 1994). We selected the WCPFC as a unit of analysis and investigated how it managed tuna resources – a CPR in the Western Central Pacific Ocean and the root causes for failing to do so. We selected WCPFC as a case organization because the WCPFC serves as a classic example of using CMA in managing CPRs at both regional and international levels and the findings of this study should have wider implications for the studies of CPR management.

The WCPFC was established in 2004, principally to manage tuna stocks in the high seas. It consists of 26 member countries: mostly the Pacific Islands Forum members (PIFs) including Australia, New Zealand and 14 PICs, and Distant Water Fishing Nations (DWFNs) including Canada, USA, EU, China, Chinese Taipei, Republic of Korea and coastal states such as Indonesia and the Philippines. The WCPFC is intended to operate under a legally binding framework founded on collaborative principles based on collective responsibility and collective benefits (WCPFC, 2013).

Data collection and analysis

We conducted semi-structured and face-to-face interviews to collect interviewees' insights into the CMA practices in the WCPFC, the outcomes, and factors influencing the outcomes. Offshore tuna fisheries in the WCPFC is a sensitive issue, with government representatives from member countries hesitant to reveal information about their governments' position or their opinions. Using face-to-face interviews offers the opportunity to break the barrier because on most occasions discussions begin on the surface of the subject and then develop further into the core of the issue once trust is developed (Holbrook et al., 2003). The key questions that we asked include:

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- How is the collaborative management approach used by the WCPFC to manage tuna resources in the region?
- What do you think are the main factors that have attributed to the rapid decline of tuna resources in the region?

Using a purposive sampling technique, we selected the potential participants in our interviews, targeting at the key senior fisheries officers representing the 26 member countries of WCPFC. Most of them hold important responsibilities in their countries such as CEOs, directors, deputy directors, permanent secretaries, and senior fisheries officers, and who were usually the gatekeepers holding most of the management information about the tuna fisheries. In an attempt to gain comprehensive insight into the WCPFC's CMA issues, we also sought cross sectional viewpoints from potential informants holding different responsibilities. For example, officials who were engaged in monitoring, control, and surveillance (MCS) of the tuna fisheries were also interviewed. Likewise, we also interviewed representatives of fishing industries, scientists, and NGOs. As a result, we interviewed a total of 40 key informants. (All interviewees requested anonymity prior to the interviews, therefore as part of keeping that confidentiality, we are unable to provide further demographic data about the participants in our interviews). The interviews took between 30 minutes to 1 hour depending on the availability of the interviewees. All the interviews were recorded after obtaining the consent from the interviewees. English was used in all the interviews.

We used NVIVO software to help analyse our interview data by classifying, sorting and arranging information gathered into their respective themes. It also helped in concept-mapping to examine the relationship between concepts. We used a thematic data analysis to identify and categorize themes. The following section presents our analysis and discussion of the findings.

FINDINGS AND DISCUSSION

Failure of CMA of WCPFC

Prompted by the recommendation of the United Nations Convention on the Law of the Sea (UNCLOS, 1982), the WCPFC was established to implement a *collaborative management approach* (CMA) to manage the tuna resources of the Western Central Pacific Ocean. However, the tuna resources in the region have been declining and some of the species are facing extinction, which sends a serious warning that the whole tuna fisheries in the region could be depleted in the not too distant future (ABC, 2016). Increased fishing activities, increased vessel capacities, improved fishing efficiency compounded with high rate of illegally, unreported and unregulated (IUU) fishing activities, have culminated in overharvesting of the tuna fisheries. IUU fishing activities have led to overharvesting, virtual

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extinction of certain tuna species, plundering of the fisheries, and loss of revenue for PICs (MRAG, 2016).

There was a consensus among the participants in our interviews that WCPFC was not able to stop the overharvesting and its CMA model was not working. It is obvious that the potential benefits of CMA found in prior studies were not realized in the case of WCPFC. There were many causes for the failure.

Main causes for the failure

As discussed in our literature review section, prior studies have identified eleven factors that may influence the outcomes of CMA, including equality of power, self-interest, cooperation, endowment, cultural diversity, leadership, transaction costs, incentives, clarity of rules, size of the group, and enforcement. We draw on the prior studies to guide our analysis and frame our discussion below. Given the space of this paper, we limit our discussions to the most important causes for the failure identified through our interviews.

Power inequality and different powers

One of the conditions agreed by members of WCPFC prior to its establishment (in 2004) was that power must to be equally shared among the members to ensure a consensus-based decision making process. However, the majority of the participants that we interviewed indicated that WCPFC members did not have equally shared power. A representative of a sub-regional country interviewed stated:

….Yeah there is a big power inequality but it cuts both ways. The smallest countries on earth are dealing with the most powerful, economic thugs, they use their markets, their aid and other instruments, they can intimidate PICs. However, another source of power is that these fish occur in the waters of developing countries, 90% of the catch is taken either in the waters of PICs or in Indonesia, Philippines or in the waters adjacent to those countries. That gives a very great power to the PICs. This WCPFC is about that balance of power on one hand, PICs with their power of ownership and right of the resources, and on the other hand the economic and political powers of the DWFNs. That's the game.

We found from our interviews that the DWFNs had economic and political powers while PICs owned the tuna fisheries. WCPFC members used their different powers to pursue their national and sub-regional interests. This caused them to bargain, or veto any genuine proposed conservation management measures. As a result, the CMA of WCPFC lost in the power struggles.

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Competing interests

The evidence obtained from our interviews indicated that self-interest was dominant among the practices of WCPFC members, although members understood the importance of common-interest (i.e., interest for conservation and sustainability of tuna fisheries). Two participants put it this way:

> *The work of the WCPFC is extremely difficult because of the divergent interests among the members. This makes negotiations very difficult.*

Well, when conservation management measures are not agreed or when there is no decision on the issues, this certainly means there is a difference in interest…I think from a DWFNs perspective, they will continue fishing, continue having their businesses alive, but from a coastal state's perspective it's a matter of sustaining that resource to ensure that there is a maximum economic return, so whether it be excess fees or what so ever value added. Therefore, I would say perhaps the common goal would be to have sustainable fishery, there would be differences on what would be the economic returns, what it mean to those different perspectives.

We found that the DWFNs wanted to gain the maximum benefits from the fishery resources, while PICs felt that they did not receive fair shares and were proposing an increase in the resource rent, which did not go down well with DWFNs. One of the participants told us '*almost four billion dollars' worth of fish was harvested in Pacific waters in 2013, but not even one-fifth of that value was returned to the region (the PICs)'.* Thus, the main issue here was the unequal share of benefits received from the tuna resources among the WCPFC members. Therefore, we consider that the disagreement and competing interests of the members affected negatively the outcomes of WCPFC's CMA.

Cultural differences

The WCPFC member states have diverse cultures, which was seen negatively affecting the outcomes of CMA in WCPFC. For example, one of the participants commented:

Cultural differences actually hinder a lot of things….on how we manage this resource [tuna fisheries]. You take for example, Pacific Islanders, have to listen to chiefs when it comes to talking in meetings, they can't talk even if they know the subject. However, there are other parties that do not possess the culture of being obedient; they make a lot of noise in the meetings when they talk. That sort of cultural thing has seeped into this management and has worked against us too.

The comment indicated that the presence of power distance influenced the behaviour of members during their meetings. Drawing on Hofstede's culture research, countries that are high in power distance tend to be submissive. This is prominent with PICs that have high respect for chiefs, leaders and their early colonial powers (e.g. USA, EU, and Britain). They viewed these people on the hierarchy end of society. Thus, they tended to keep quiet in decision-making process. In contrast,

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those members (e.g. Australians and New Zealanders) who came from low power distance culture freely debated issues that concerned them. Our interview findings also indicated another distinct cultural difference – individualism and collectivism that hindered the way that member countries managed tuna resources and the CMA was enacted. For example, an official we interviewed told us:

We, in the Pacific, are more communal in our approach, we love our community-based management. The Western world looks at things differently, they do their own things and do not mind others' businesses. I think the perception that DWFNs have, will also affect the way we manage our resources collaboratively. They look at their own survivability, the economical viability, etc. Yes, I think our upbringings do have an impact on the way we manage our resources collaboratively.

The remarks showed that different cultural orientations affected the behaviour of member countries and collaboration within WCPFC that may cause the fallout of CMA.

Lack of self-enforcement

Our interviews found that most participants believed based on their past experience with WCPFC that self-enforcement was not a viable mechanism to manage migratory tuna resources. Here are some of the comments made by the participants:

> *I don't think voluntary compliance will happen because fishing industry is based on profit, so I do not think voluntary compliance will be possible.*

> *…it is and will be difficult for the DWFNs to participate co-productively in this approach [self-enforcement] because they have different interests. They are more interested in making money. So we still need observers to oversee their activities and to increase the capacities of external monitoring and surveillance.*

> *When we talk about offshore resources, we refer to migratory species that trans- boundaries, it is very difficult (to apply self-enforcement) because they are highly migratory. The key to managing such resources is monitoring and surveillance, if people feel that they own the resources or part of them.*

The above comments imply that self-enforcement will not work for organisations (or multi-organisations) that pursue self-interest or profit making (Colebatch and Larmour 1993). From our interviews, we can see that it is difficult for self-enforcement to work in commercial fisheries and in a heterogeneous coalition where members have divergent and competing interests. The self-

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enforcement is also not viable in open-access areas such as the high seas where ownership is often disputed on the fishing ground.

Size of WCPFC

In our interviews when talking about the size of the WCPFC, there was a consensus that WCPFC was such a large and diverse group, making it difficult for them to agree on conservation management measures, resulting in not being able to achieve WCPFC's conservation goals.

> *...as members get bigger, it gets complicated and the interests get wider, and some of these interests are finding other forums to creep into this WCPFC, so yes the size as it is now makes it more complicated than it was initially set-up.*

> *Well in terms of group dynamics [in the WCPFC], bigger groups are very hard to manage because the bigger the group, possibly the more interests in it. The bigger the group that would be hard to make decisions, the smaller possibly manageable would be good, we can identify who are the key stakeholders in the fisheries would be good because they play a major role in the fisheries.*

The WCPFC is made up of DWFNs and PICs who are heterogeneous, representing fishers and the resource owners. Our interview data show that members in such a large and heterogeneous group had considerable difficulty to reach consensus, such as in the conversation management measures. Members often had different and conflicting intentions and interests. For the DWFNs, they would prefer to continue with the existing financial benefits gained from the tuna resources while PICs wanted somewhat equal share of the cake (benefit) being the resource owners. In addition, the differences in the level of power among the members and different cultures affected their level of cooperation and consequently the outcomes of the CMA adopted by WCPFC. Furthermore, the differences among the members affected trust among them in that PICs did not think DWFNs or fishers can self-enforce due to increasing IUU fishing activities in the region (MRAG, 2016).

CONTRIBUTIONS OF THIS STUDY

This study advances the existing literature and understanding of common pool resources management in general, and migratory tuna resources management in particular. Tuna migrate from one national boundary to another within the Western Central Pacific Ocean and are mostly fished by DWFNs. By studying the WCPFC comprising of the PICs and DWFNs, this research extends the understanding of the management of CPRs from one single geographical area to multiple

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geographical areas, and includes the analysis of the motivations and conducts of international actors. This study also contributes to the extant research of collaborative management approach by exploring empirically the key factors that affect the outcomes of CMA through a case study. The findings from this study should contribute to future theoretical development of a new model to advance common-pool resource management research.

In addition to the contribution to extant body of knowledge, our study makes practical contributions because tuna resources in the WCPO are vital to the economy and the sustainable development of the region. Compared to other ocean regions, WCPO supplied more than 50 percent of the tuna resources to the global markets (World Bank, 2016). The findings of this study are expected to inform policy-makers in the WCPO region about the key issues that the current management approach (CMA) has raised and help them develop policies and strategies to address the issues.

CONCLUSIONS

Earlier studies have asserted that the use of CMAs is the most suitable way to manage CPRs such as tuna fisheries and resources (e.g. Acheson 2013; Huezer et al. 2012). However, our research has shown that the CMA does not appear to instil the sense of ownership among WCPFC members that is needed to encourage and develop *sustainability* and *collective benefits* of the fisheries, as argued by scholars such as Acheson (2013); Huezer et al. (2012). Our research demonstrates that a CMA is not necessarily effective for groups (that includes stakeholders, multi-governments, and multi-national organisations) that are highly heterogeneous, especially those that involve international actors (cross-country and cross-cultural), such as a combination of developed, developing and least developed countries. Their significant differences, competing interests, and different economical aspirations appear often to lead them to base their decisions at the expense of collective objectives and collaborative institutions. The findings of our research lead to a conclusion that it would be difficult for the WCPFC in its current form to be an effective institution capable of managing and sustaining the tuna fisheries in the WCPF region. Consequently, the problem of overfishing will continue and, regrettably, the depletion of tuna species is likely to continue.

REFERENCES

ABC 2016. Asian fishing giants putting Pacific operations under pressure. Melbourne: ABC Pacific Beat News.
ACHESON, J. 2013. John Fowles, New York, Palgrave Macmillan.
AGRAWAL, A. 2003. Sustainable Governance of Common-Pool Resources: Context, Methods, and Politics. Annual Review of Anthropology, 32, 243-262.
ANDERIES, J. M. & JANSSEN, M. A. 2012. Elinor Ostrom (1933–2012): Pioneer in the Interdisciplinary Science of Coupled Social-Ecological Systems. PLoS Biol, 10, 1-2.

ISSN: 2547-8516
ISBN: 978-9963-711-67-3

ANSELL, C. & GASH, A. 2007. Collaborative Governance in Theory and Practice. Journal of Public Administration Research and Theory, 18, 543-571.
ANSELL, C. & GASH, A. 2008. Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18, 543-571.
BERKES, F. 2009. Evolution of co-management: role of knowledge generation, bridging organizations and social learning. Journal of Environmental Management, 90, 1692-1702.
BOATENG, I. 2006. Institutional frameworks in the administration of coastal and marine space in Africa. Administering Marine Spaces: International Issues, 102.
CHENG, A. S. & STURTEVANT, V. E. 2012. A framework for assessing collaborative capacity in community-based public forest management. Environmental Management, 49, 675-689.
COLEBATCH, H. & LARMOUR, P. 1993. Market, bureaucracy and community, London, Pluto Press.
Costello, C., Ovando, D., Clavelle, T., Strauss, C. K., Hilborn, R., Melnychuk, M. C., & Rader, D. N. 2016. Global fishery prospects under contrasting management regimes. Proceedings of the national academy of sciences, 113(18), 5125-5129.
DAVIS, A. & RUDDLE, K. 2012. Massaging the misery: recent approaches to fisheries governance and the betrayal of small-scale fisheries. Human Organization, 71, 244-254.
DYER, J. H. 1997. Effective interfirm collaboration: how firms minimize transaction costs and maximize transaction value. Strategic Management Journal, 535-556.
ESPINOZA-TENORIO, A., WOLFF, M., TAYLOR, M. H. & ESPEJEL, I. 2012. What model suits ecosystem-based fisheries management? A plea for a structured modeling process. Reviews in Fish Biology and Fisheries, 22, 81-94.
FULTON, E. A. S., ANTHONY DM SMITH, DAVID CVAN PUTTEN, INGRID E 2011. Human behaviour: the key source of uncertainty in fisheries management. Fish and Fisheries, 12, 2-17.
GRAFTON, R. Q., ARNASON, R., BJØRNDAL, T., CAMPBELL, D., CAMPBELL, H. F., CLARK, C. W., CONNOR, R., DUPONT, D. P., HANNESSON, R. & HILBORN, R. 2006. Incentive-based approaches to sustainable fisheries. Canadian Journal of Fisheries and Aquatic Sciences, 63, 699-710.
HANICH, Q., CAMPBELL, B., BAILEY, M. & MOLENAAR, E. 2015. Research into fisheries equity and fairness—addressing conservation burden concerns in transboundary fisheries. Marine Policy, 51, 302-304.
HANICH, Q. & TSAMENYI, M. 2014. Progress in the Implementation of Conservation and Management Measures for Bigeye and Yellowfin Tunas in the Western and Central Pacific: Sharing the Conservation Burden and Benefit. Peaceful Order in the World's Oceans. Brill.
HAUZER, M., DEARDEN, P. & MURRAY, G. 2013. The effectiveness of community-based governance of small-scale fisheries, Ngazidja island, Comoros. Marine Policy, 38, 346-354.
HEIKKILA, T. & GERLAK, A. K. 2005a. The formation of large-scale collaborative resource management Institutions: clarifying the roles of stakeholders, science, and institutions. The Policy Studies Journal, 33, 583-612.
HOFSTEDE, G., HOFSTEDE, G. J. & MINKOV, M. 1991. Cultures and organizations: Software of the mind, Citeseer.
HOLBROOK, A. L., GREEN, M. C. & KROSNICK, J. A. 2003. Telephone versus face-to-face interviewing of national probability samples with long questionnaires: Comparisons of respondent satisficing and social desirability response bias. Public Opinion Quarterly, 67, 79-125.
JENTOFT, S. & CHUENPAGDEE, R. 2009. Fisheries and coastal governance as a wicked problem. Marine Policy, 33, 553-560.
KIRRIEMUIR, J. & MCFARLANE, A. 2004. Literature review in games and learning.
LE PAPE, O., BONHOMMEAU, S., NIEBLAS, A. E., & FROMENTIN, J. M. (2017). Overfishing causes frequent fish population collapses but rare extinctions. Proceedings of the National Academy of Sciences, 201706893.
MANSBRIDGE, J. J. 1990. Beyond self-interest, Chicago, University of Chicago Press.
MCGUIRE, M. 2006. Intergovernmental management: A view from the bottom. Public Administration Review, 66, 677-679.
MRAG 2016. Towards the quantification of illegal, unreported and unregulated (IUU) fishing in the Pacific islands region. Queensland: MRAG Asia Pacific.
MUTIMUKURU, T. 2010. Can we learn our way to sustainable management?: adaptive collaborative management in Mafungautsi State Forest, Zimbabwe.
NORRIS, W. 2015. Transcript- Wez Norris Press Conference. Bali: FFA.
OLSON, M. 2009. The logic of collective action, Harvard University Press.
OSTROM, E. 1999. Polycentricity, complexity, and the commons. The Good Society, 9, 37-41.
OSTROM, E. 2015. Governing the commons, London, Cambridge University Press.

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PINEL, S. 2013. Giving and reciprocity in natural resource management and consensus building: an application of economic anthropology to understanding the Clearwater Basin Forest Collaborative. Human Organization, 72, 164-174.
PODSAKOFF, M. P., MACKENZIE, B. S. & PODSAKOFF, P. N. 2012. Sources of method bias in Social Science Research and recommendations on how to control it. Annu. Rev. Psychol. , 63, 539-69.
REAVES, B. A. & BAUER, L. M. 2012. Federal law enforcement officers, 2002, BiblioGov.
RICHIE, L., OPPENHEIMER, J. D. & CLARK, S. G. 2012. Social process in grizzly bear management: lessons for collaborative governance and natural resource policy. Policy Sciences, 45, 265-291.
SA-NGIAMLAK, S., SOMTRAKUL, K. & POHTHAWIN, T. 2011. Ways of fishery local life: processes of participation in management of natural resources in the coastal areas of the upper gulf of Eastern Area. Journal of Social Sciences, 7, 575.
STEELMAN, T. A. & WALLACE, R. L. 2001. Property rights and property wrongs: why context matters in fisheries management. Policy Sciences, 34, 357-379.
United Nations Convention on the Law of the Sea (UNCLOS). 1982. 'Part v exclusive economic zone: United Conventions on the Law of the Sea' [Online]. Available: <http://www.un.org/depts/lols/convention_agreements/texts/unclos/part5.htm>
WCPFC. 2013. About WCPFC [Online]. WCPFC. Available: https://www.wcpfc.int/about-wcpfc [Accessed 2nd November 2016 2016].
WCPFC 2016. 12th Regular Session of the Scientific Committee Pohnpei: WCPFC.
World Bank. 2016. Tuna fisheries. Pacific possible series; background paper no. 3. Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/966441503678446432/Tuna-fisheries
XEPAPADEAS, A. 2005. Regulation and evolution of compliance in common pool resources. The Scandinavian Journal of Economics, 107, 583-599.
YIN, R. 1994. Case Study Research. Design and Methods Thousand Oaks, Sage.

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