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Community champions of ecosystem services: The role of local agency in protecting Indonesian coral reefs

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The importance of communities is well recognized in the protection and enhancement of ecosystem services (ES), yet the influences of individuals within and on communities are often overlooked. Individual and community agency are pertinent in small-scale fisheries, given that livelihoods of many millions of these fishers worldwide depend on ES derived from coral reefs and seagrass beds. In eastern Indonesia the rapid spread of destructive fishing practices has serious impacts on these marine and coastal ecosystems. Policy is complex, with three levels of government involved, and communities also seeking to apply customary marine management and fishing rules. Effective deterrence and enforcement prove difficult for both communities and government, especially in remote places. Community-based marine protected areas, and government or aid-led educational programs, are attempted, but are insufficient against the pressures of well-organized illegal fishing supply chains. On Selayar Island, in South Sulawesi province, Indonesia, certain local "champions," fishers and others exerting influence within their communities, and "island champions (IC)," individuals working at island level from local government and non-government roles, are developing their own—often unorthodox—strategies to mobilize social change to protect ES. Through in-depth interviews supported by participant observation we investigated how these individuals become motivated, and how they operate to protect local ecosystems such as coral reefs and seagrass meadows. We document what inspired them, what strategies they follow, their observations on barriers, and their key messages for others. Understanding these very unofficial, individual and small-group processes that occur outside conventional policy-making and ecosystem governance can allow sharing of effective strategies to encourage potential champions elsewhere, and support community agency in protecting marine ES.

KEYWORDS

ecosystem services, marine, destructive fishing, coastal communities, livelihoods, change agents, champions, Indonesia

Introduction

Remote coastal communities are particularly dependant on sustained access to the goods and services provided by ecosystems such as coral reefs, seagrass, and mangroves (Terrados and Borum, 2004; Duraiappah et al., 2005; Duke et al., 2014; Pratchett et al., 2014). One of the major threats to the ecosystem services (ES) provided by these marine ecosystems is illegal and destructive forms of fishing (WWF and ADB, 2012; ADB, 2014; Pomeroy et al., 2016; UNEP, 2016; UNEP-WCMC, 2016; IPBES, 2018; UNESCAP, 2018; Simmons and Fielding, 2019; El-Naggar, 2020; Hampton-Smith et al., 2021; Reis-Filho and Loiola, 2021). These are a significant problem in the "Coral Triangle" waters of Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor Leste and the Solomon Islands (Cabral et al., 2012), particularly in eastern Indonesia (Larsen et al., 2018). In eastern (and also central) Indonesia, the main causes of coral reef damage are bleaching due to climate change, and anthropogenic factors—especially destructive fishing with bombs and cyanide (Hadi et al., 2018). There has been a west to east shift across Indonesia in the use of destructive fishing techniques, associated both with levels of coastal poverty and fishing dependence, and exploitative supply chains, coupled with a lack of monitoring (Hadi et al., 2020). This is not surprising considering that although there is no exact number, most fishing households throughout Indonesia earn below the poverty line, and represent about a quarter of the nation's poor (Secretariat of the Vice President of the Republic of Indonesia, 2011; BPS-Statistics Indonesia, 2018).

The impact on ecosystems and ES is evident. The condition of coral reefs in Indonesia has deteriorated particularly in the past three decades (ADB, 2014), for reasons that include climate change and destructive fishing (Hughes et al., 2012; Pratchett et al., 2014; Duran et al., 2018; Eddy et al., 2021; Johnson and Watson, 2021). There has been a clear pattern of decline in coral reef condition throughout Indonesia, especially in Eastern Indonesia (ADB, 2014; Hadi et al., 2020). Meanwhile, there has been a corresponding rapid decline in the diversity of reef fish species (CRITC-LIPI, 2011).

A substantial body of literature has demonstrated that ES fundamentally underpin human wellbeing, health, and prosperity (Millenium Ecosystem Assessment, 2005; Gómez-Baggethun and De Groot, 2010; Haines-Young and Potschin, 2010; Díaz et al., 2018; Constanza, 2020). Congruently, social drivers such as poverty traps, migration, property rights and other power asymmetries that limit collective action play an important role in conservation and the resilient provision of ES (Robards et al., 2011). Increasing recognition of the value of ES to local communities has driven improved efforts to protect those services through local ecosystem initiatives (Tallis et al., 2008; Bork and Hirokawa, 2021). Community-based action to protect and enhance ES is also being increasingly recognized (Nelson et al., 2010; Krasny et al., 2014; Paudyal et al., 2017; Rakotomahazo et al., 2019). However, the role of individuals and how they may energize their communities is relatively neglected in ES and ecosystem governance literature. Better understanding of the role such "champions," individuals who take it upon themselves to act as change agents, play in ecosystem management can further inform policy decision making and programs in marine conservation, and collaboration with communities.

Our interest in community champions (CC) who act to improve sustainable fishing practices in their villages or at broader scales (Ross et al., 2019) arose from discussions in a number of villages during scoping toward a community-based study under the Capturing Coral Reef and related Ecosystem Services (CCRES) project (Abdurrahim et al., 2018; Ross et al., 2018). We discovered several individuals, in different villages, who were trying to convert their fellow villagers away from destructive fishing, using a variety of innovative strategies. Many of these were former destructive fishers. We sought to know more about these people, and how they go about influencing their communities. Subsequently we identified, and so expanded our investigation to include, people who act as champions while working at island level, rather than within a single community.

The role of individual champions is a gap in knowledge about environmental protection, including ES, with some rare exceptions (e.g., Westley, 2002). In the literature on environmental management there is much emphasis on institutions, e.g., policies, community-based natural resource management (Kellert et al., 2000; Berkes, 2007), co-management (Berkes, 2009), commons systems, and even local knowledge, but the roles of individuals in mobilizing or attempting to mobilize their communities toward desired changes tends to be obscured. There is a strong temptation to overlook the roles of individuals within the general focus on "community" within community-based natural resource management, in portraying each community as a key agent in the initiatives. Leadership dynamics within communities are also underplayed (Ho et al., 2016a). The community-based natural resource management literature recognizes actors and networks (Dwiartama and Rosin, 2014), but again this literature tends to focus on the community groups and organizations, rather than the actions of individuals influencing those organizations from within.

We argue there is a need to recognize the existence and importance of champions in ES and natural resource management contexts. This paper presents a case study of "community" (village focused) and "island" (more widely focused) champions working in a self-motivated and self-organized way to address illegal and destructive fishing in Selayar Island, eastern Indonesia. We aim to understand the motivations of and strategies used by these champions in attempting to mobilize others in their communities (or more widely) to inspire and influence others to protect ES that are important to them. In this exploration, we seek to learn what motivated them, what strategies they follow, their

observations on barriers, and their key messages for others wishing to follow them.

Champions: A review of literature

There is occasional recognition of "champions" in the ES literature (e.g., Sitas et al., 2014; Saarikoski et al., 2018), and in broader environmental and conservation literature that refers to ES (Pasquini et al., 2015; Garçon et al., 2019; Wang and Wolf, 2019; Fanning et al., 2021; McLoughlin et al., 2021; Wessels et al., 2021). Sitas et al. (2014, p. 1325) describe "champions," as individuals or institutions that take responsibility for publicizing and garnering support for a "cause," otherwise they are not defined in this literature. With the exception of Wang and Wolf (2019), who refer to the academic leaders in the ES field, champions are treated as synonymous with formal office bearers (Pasquini et al., 2015; McLoughlin et al., 2021; Wessels et al., 2021), or leaders (Pasquini et al., 2015; Fanning et al., 2021). In many cases both organizations and individuals are considered champions. Garçon et al. (2019) designated individuals to act as "champions" in a program, and Sitas et al. (2014) recommend strategically targeting champions to help mainstream ES, but do not identify the requirements of their roles. This literature does not identify the characteristics of individual champions, though Pasquini et al. (2015) make a useful distinction between political (elected officers), administrative (staff) and environmental champions (staff with environmental expertise), and explain synergies among their roles in a climate adaptation context. Wessels et al. (2021) also refer to political and official champions, and Fanning et al. (2021) to political and technical champions. Very little mention is made of champions outside formal organizations. Exceptions are Wessels et al. (2021), who refer to champions leading active civil society stewardship and fostering collaboration with government in a conservation context, and Sitas et al. (2014), who identified a variety of sources of champions including consultants, and individuals based in NGOs and community groups. These are useful beginnings, yet the ES field can benefit from a better understanding of champions from advanced research in other fields.

Individual champions are recognized in several fields, particularly in organizational management (e.g., Howell et al., 2005; Taylor et al., 2011), but also in health (Harrison and Mort, 1998; Hendy and Barlow, 2012), environment and natural resource management (Taylor, 2008; Gattiker and Charter, 2010; Markusson, 2010; Reid et al., 2010; Measham et al., 2011; Taylor et al., 2012; Miles, 2013; Lindsay et al., 2019), energy (Axon et al., 2018; Martiskainen and Kivimaa, 2018), community development (Johnstone and Campbell-Jones, 2003; Vail, 2007; Worthy et al., 2016), and among not-for-profit organizations (Chapman et al., 2010).

The differing contexts in which champions have been studied affect the roles, characteristics and behaviors identified among champions. Champions have a very important role in processes of innovation and change, whether in organizations or in communities (Fazey et al., 2020). The literature on champions is found predominantly in organizational contexts, particularly large business or government organizations. Here there is differentiation between formal leaders, and those who exert leadership more informally, by dint of their enthusiasm for a project, or personal characteristics. There is specific interest in the role of champions in innovation processes (Martiskainen and Kivimaa, 2018). In health and education contexts, community-based champions, including youth, are seen as able to play roles in the encouragement of behavior change (Harrison and Mort, 1998; Leadbeater, 2008; Cushing, 2015). There is less, but growing, recognition in the literature of personal champions in fields closely related to ES, i.e., community, agriculture (Klerkx et al., 2013) or environmental management contexts (Markusson, 2010). Most of the literature describes champions as emergent and self-organizing (e.g., Measham et al., 2011; Cockburn et al., 2019). Nevertheless in some instances interested individuals are recruited and their skills are developed under program interventions (Le Goff et al., 2021).

Across all of these fields, champions are defined as individuals who have leadership or catalyst capacity to make changes or transformations in their organizations, communities, or broader institutions (Taylor et al., 2011, 2012; Martiskainen and Kivimaa, 2018). They share and promote their ideas, vision, wisdom, and innovation to encourage other parties to be involved in the process and stages of achieving various goals (Hendy and Barlow, 2012; Klerkx and Aarts, 2013; Ashley, 2018; Martiskainen and Kivimaa, 2018). In natural resource management, champions can be significant enablers by inspiring others and helping to create momentum (Cockburn et al., 2019). Champions often bridge various interests, including public, private, and civic (Sayer, 2009). They may be in well-established social networks (Sitas et al., 2014). They find the best solutions for their resource issues through a collaborative process emphasizing choice, trust, and feedback mechanisms (Desrochers and Szurmak, 2020).

In carrying out their catalytic roles, champions show unique and extraordinary character traits. They have sincerity, high personal capacity, and model good behavior. They show knowledge, skills, wisdom, and credibility in providing social influence (Gattiker and Charter, 2010; Ashley, 2018). Specifically in a developing country, small-scale fisheries context, Ho et al. (2016a) identified six characteristics of Vietnamese fisheries leaders—who were also effective champions. They are fair, accountable, they act as role models, and are "servant leaders" who focus on the needs of others. They have professional competencies such as resource knowledge and management skills, and social qualities such as being ethical, understanding and having good relationships within their community. While the concept of leadership is somewhat distinct from that of a champion, in that champions can and do operate outside

or across leadership structures and roles, in communities champions tend to exert a particular type of leadership based on personal power and influence rather than formal positions.

In natural resource management, champions make some additional contributions. Lindsay et al. (2019) noted that champions can play a role as intermediaries of knowledge between the community and natural resource managers (in this case, water). With their broad and strong capabilities and networks, champions can facilitate the resolution of natural resource management conflicts (Ross et al., 2019; Abdurrahim et al., 2020a,b; Hastuti and Abdurrahim, 2021), inspire and encourage participation of others in their communities (Cockburn et al., 2019) and increase the effectiveness of landscape management (van Noordwijk et al., 2020). Local champions can help their communities to collaborate with government, scientists, and other key stakeholders to increase the effectiveness of marine and fisheries conservation (Krueck et al., 2019). Champions may find solutions for resource issues through a collaborative process emphasizing choice, trust, and feedback mechanisms (Desrochers and Szurmak, 2020).

Study location

Selayar Island, in South Sulawesi Province, eastern Indonesia (see **Figure 1**), was selected as location for the larger project of which this study was part. This was on the basis that the island is rich in coral reefs, that are under threat; it offered opportunities to explore new approaches to "capturing coral reef and related ES" in ways that combined ecosystem management with recognition of coastal residents' livelihood needs and interests; and there was strong local and national government support for choosing this location.

Indonesia is a maritime nation, consisting of 17,000 islands and extensive coasts (99,000 km long). The Selayar islands lie to the south of Sulawesi. The 130 islands cover 10,503.69 km^2 (1,357.03 km^2 of land area and 9,146.66 km^2 of ocean). The islands have a wet equatorial tropical climate, with four consecutive wet months (January-April, influenced by the west monsoon, precipitation $>$ 200 mm) and five dry months (August-November, influenced by the east monsoon, precipitation $<$ 100 mm). There are transition seasons, locally called *pancaroba*, in December, and from May to July (BPS-Statistics of Selayar Islands District, 2021).

The total population of Selayar Islands district in 2020 was 137,071 in 2020, with a 2010–2020 annual population growth rate of 1.31 percent. The percentage of poor people (as of March 2020) was 12.48 percent (BPS-Statistics of Selayar Islands District, 2021), well above the national level of 9.78 percent. The number of households with fishing as the main source of livelihood was registered as 7,207 households in 2021. This number had increased by 17 percent since 2010 (BPS-Statistics of Selayar Islands District, 2022a).

Selayar Islands District[1] has diverse fish species. MFO Selayar Islands District (2011) reports 375 varieties of pelagic, demersal and ornamental fish species, and four of the world's six species of turtle. The biodiversity indicates the importance of Selayar's reefs as habitat for marine biota, including some endangered species.

Coral reefs and other coastal ecosystems are vital sources of food and income for Selayar's coastal communities. Almost all of the population lives in coastal areas and depends on nearshore fisheries for livelihood. The majority of fishermen are small-scale, and the fishing fleet is dominated by small boats without engines, or with outboard motors (BPS-Statistics of Selayar Islands District, 2022b). The fishing gear is dominated by hook and line. Other common gears are raft liftnet, gillnet, and fish trap (MMAF, 2020). With population increase, the annual rate of fish consumption has risen. Coral reefs and other coastal resources also contribute to tourism growth (ADB, 2014).

Our data shows that Selayar's coastal communities and households vary in their dependence on fishing. One community is 97 percent dependent on fishing. Others have mixed livelihoods including farming (e.g., coconuts, livestock). Inland communities are more likely to rely on agricultural resources, with fishing as a supplement. In hard years for agriculture, more households turn to fishing. The intense seasonal monsoons render the east and west coasts of the island impossible to fish from small boats for different parts of the year. Households without alternate incomes suffer during those periods, as very few of the island's approximately 80 villages have access to both coasts.

Most of the communities have deep and complex cultural arrangements associated with use of coastal and marine resources, involving fishing areas for each community demarcated by agreed coastal landmarks; a system (*ongko*) whereby individuals or families can restrict use of particular areas for periods; complex sets of fishing gear, and rules for the use of each (Ross et al., 2019). Knowledge of these arrangements varies, however, with some communities using their village administrative arrangements to enforce them strongly, whereas in others—particularly the communities less dependent on fishing—understanding of and willingness to abide by or enforce traditional rules is more patchy (authors' participant observation data).

Although the intensity has decreased significantly in the last decade or so, destructive fishing still takes place in Selayar waters (Abdurrahim et al., 2018; Ross et al., 2018). The two types of destructive fishing in Selayar are bomb fishing, introduced from other parts of South Sulawesi at some time after World War II, and fishing with cyanide, introduced by a Hong Kong based head of a fishing supply chain in the late 1980s. While bomb fishing developed for the local market, fishing with

1 A district is an Indonesian administrative unit, subsidiary to a province.

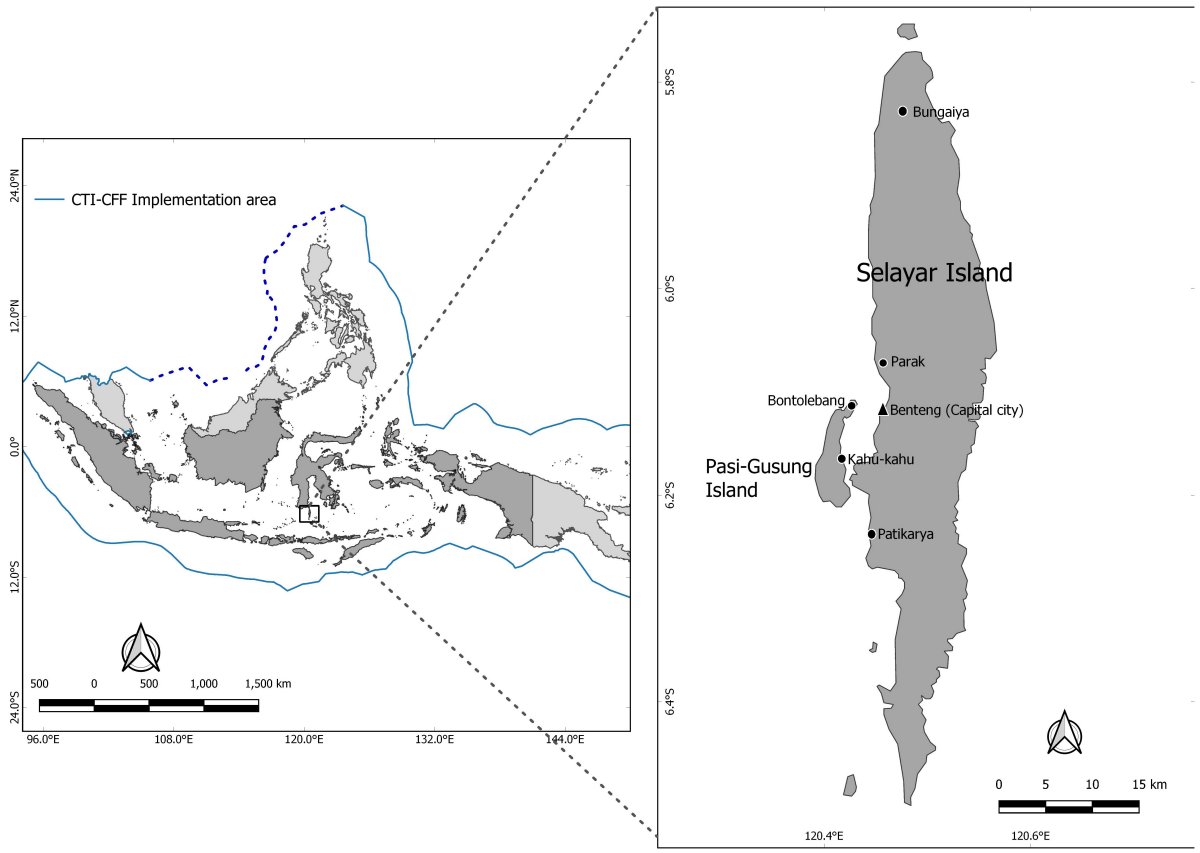

FIGURE 1
The Coral Triangle, Selayar Island and villages of the community champions.

cyanide was strongly associated with the international trade for live reef fish which started in the 1990s (Abdurrahim et al., 2018). Bomb fishing involves homemade explosives, packed and lit by the fishers, from materials supplied by their organizers. Cyanide fishing involves poisoning the waters, by several means including wading in cyanide-laced shorts. One mechanism is use of an "octopus doll" (*pocong-pocong* in Indonesian), a dummy octopus soaked in cyanide that attracts other octopii to investigate, and hence be exposed to the poison (Abdurrahim et al., 2018). Both types of destructive fishing create conflicts among fishers, sometimes involving violence, even deaths.

An extended national initiative to protect, rehabilitate and sustainably utilize coral reefs, mangroves and seagrass systems, the Coral Rehabilitation and Management Program (COREMAP), was implemented in several parts of Indonesia including Selayar. In the Selayar Islands District it commenced with biophysical monitoring of reef condition under COREMAP I, implemented 1998–2003 only in Takabonerate National Park, well away from the main island of Selayar. COREMAP II was conducted in 2004–2011 in 52 coastal villages; and COREMAP III, known as COREMAP-Coral Triangle Initiative (CTI), was conducted from 2014 until early 2017 in a subset of those villages. The program worked with the communities selected to build awareness and share strategies. COREMAP III fostered experiments in community-based marine management including declaration of and learning from their own small marine protected areas. Through these activities the program encouraged community-based institutional arrangements in marine management. It also provided funds for some valued community infrastructure.

COREMAP also led to an increase in marine protected areas in the Selayar islands. In addition to Taka Bonerate National Park, two district marine conservation areas (KKPD in Indonesian) were created, Pasi Gusung with an area of 5,018 ha (1,958 ha coral reef) and Kauna Kayuadi with an area of 3,983 ha (879 ha coral reef); and 52 Village Marine Protected Areas (DPL in Indonesian) with a combined area of 6.089 ha. Thus, the Selayar Islands have a combined area with marine protected area status (KKPD and DPL) of 8,926 ha outside Taka Bonerate. The increase in marine protected areas and implementation of COREMAP II encouraged improvements in the condition of coral reefs. CRITIC-LIPI (2011) showed the percentage of

rock coral cover increased from 32.40 percent in 2006 to 45.22 percent in 2011. Despite the increase, the condition of Selayar's coral reefs was still categorized as moderate.

Materials and methods

Community champions were first identified through our initial scoping meetings in several villages, toward selection of villages for participation in the social science project of which this study is part (Ross et al., 2018). Others emerged through participant observation in the communities, and consultation with the COREMAP III coordinator. Selection criteria for both community and island champions (IC) were:

1. social and ecological concerns about coastal ecosystems
2. a prominent role in creating change toward better coastal ecosystem management, within their community or more broadly
3. being recognized by others as having influence on these issues
4. working well beyond what would normally be considered typical commitment and duties associated with their work or governance role.

Efforts were made to identify women and men with these characteristics, but since the topic was destructive fishing only one woman (of three considered) met the criteria for a champion. Fifteen people were interviewed. Nine were currently or had formerly acted as champions within their communities (one woman and eight men). Six, all male, were working at an island level (e.g., sub-district and district officers, NGO staff and an active citizen).

In-depth interviews were conducted with each champion at a location of their choice, usually at their own home in the village, or in offices, or at other convenient places such as a restaurant and a mosque. They were conducted in Indonesian, by one or two of the academic researchers (both male), accompanied where possible by one or both of two local assistants, both female. Each interview took 1–2 hours. Some second interviews were held in order to confirm information. The semi-structured interviews covered:

- explanation of the process and ethical protections, and agreement to be interviewed; choosing whether to be named and have images shown in reports (all champions gave their permission for their profiles and strategies to be shared publicly (Abdurrahim et al., 2018)
- their personal story of involvement in the issue, especially key change points
- the strategies they used to influence other people
- what challenges they had, and how they overcame them
- how successful they believed they had been in stopping destructive fishing by others, their "measures" of success, and what remains to be done
- what they would advise others to do in a similar situation
- advice on anyone else we could ask, for confirmation purposes.

Probes within this interview guide were for:

- roles of women and family members, both in supporting the illegal fishing activities and in supporting the fishers in stopping these practices
- conflicts and cooperation within the community
- their ways of connecting across the community, and connecting with government people.

Where possible, interviews were followed up with other informants, who were able to verify and add information. The interview information was supplemented by participant observation in a set of villages, by the first author and two female local assistants, for a combined period (over several field trips) of some 3 months. The team also discussed the interview information and observations with district officers, who were able to corroborate and add to points.

Each interview was recorded, transcribed (in Indonesian), and checked against interview notes taken by the interviewer and assistants. The interviews were coded for the themes of personal background and history; the process of becoming aware of destructive fishing; strategies used to influence others; observations about the reasons for destructive fishing; and additional advice.

Champions, their motivations and strategies

Community champions

Table 1 shows the characteristics of the CC interviewed, their strategies, the effects they achieved, and advice for others. Full champion profiles and data are provided in Abdurrahim et al. (2018).

Roles

Four of the CC are former illegal fishers [CC01, CC02, CC03, CC06]. The other five [including the woman (CC04)] became champions in association with community leadership roles. One was a religious leader, another a lay preacher. At the time of interview most of the champions held, or had recently held, official roles within their communities, in most cases as head or member of the community's surveillance team, head of the community-based coastal management committee, or head of village. Several held or had held more than

TABLE 1 Summary of community champions, their strategies, barriers and messages.

Community champion (CC) number	Target behavior	Defining moment	Key strategies	Biggest barrier	Key message
CC01	Bomb fishing	As a former bomb fisher himself, the deaths of four other bomb fishers in his home village convinced him that the practice had to stop	Collaborating with the village leadership, district fisheries staff and other coastal villages. Working with other villages with a view to creating a coastal communities alliance. Continuing fishing (only to feed his family) to easily stay in touch with other fishers and observe their activities.	Gaps in resources available for surveillance activities to protect marine protected areas.	*"It is important that the authorities take firm action against illegal fishers. If necessary, they should sink their boats".*
CC02	Bomb and cyanide fishing; use of coral for building materials	A former destructive fisher, COREMAP training made him understand the adverse effects of destructive fishing on marine-coastal ecosystems	Using his influence as Village Head, and as a former fisher-team 'boss', to talk to other 'bosses' about stopping destructive fishing. Playing off rival groups against each other, knowing they would watch and report each other's illegal activities. Involving wives, children in awareness-raising activities and supporting alternative livelihoods.	Families being dependent on destructive fishing for their livelihoods.	*"Combine all the power you possess and communicate and collaborate with others: the police are very important in making changes in the community. The role of women and families is very important to change the behavior of the destructive fishers from within the community".*
CC03	Bomb and cyanide fishing	Realizing destructive fishing was not worthwhile given the money he earned was often quickly lost or exhausted	Offering his own experience as an example of the futility of destructive fishing; he bomb fished for decades, but never became rich. Using his leadership of the Community Committee for Coastal Resource Management, and his networks, to advocate for positive change. Putting out the message that destructive fishing violates religious teachings and Indonesian law.	Destructive fishers become addicted to the 'glamorous' (and wasteful) lifestyle funded by destructive fishing, but nevertheless have a lot of debt.	*"Villagers usually follow good examples and leadership. So, the most important thing to drive changes in the community is for the leaders to set a good example".*
CC04	Bomb and cyanide fishing	She and her community became aware of the dangers, negative impacts, and laws against destructive fishing with the arrival of COREMAP	Establishing a village law to create two community marine protected areas. Patrolling and apprehending illegal fishers, together with the police and military personnel assigned to work with her village. Giving women a central role in alternative livelihood programs.	In the past, economic need was the main reason that bomb fishers persisted in her village.	*"There are two important things to do to eliminate destructive fishing: (1) involving women and giving them an important role; and (2) involving the military and police in surveillance".*
CC05	The use of cyanide poison to catch live grouper	As a COREMAP II participant he realized the importance of coral reef ecosystems to ensure fisheries productivity and household incomes	Holding formal meetings with destructive fishers featuring outside speakers. Substituting fishing gear such as 'octopus doll' (*pocong- pocong* in Indonesian) for cyanide. Capturing, punishing those fishers who are caught using destructive fishing.	Addressing the fishers' debt-dependence on the live-fish business network	*"The role of women and families is very important to change the behavior of the destructive fishers from within the community".*
CC06	Cyanide fishing	Seeing the high numbers of fish ready to lay eggs that were caught by cyanide fishing and, as a result, fish being wiped out at those locations	Being an active member of the Community Committee for Coastal Resource Management (LPSP). Describing the benefits of making a change for the better to his friends (when he was a destructive fisher, the money seemed plentiful, but he was never satisfied). Preaching against destructive fishing in the mosque during Friday prayers.	Fishers becoming entrapped by a cycle of generous loans and indebtedness	*"Cancel the licenses for live reef fish traders, because they don't care where the fish comes from".*

(Continued)

TABLE 1 Continued

Community champion (CC) number	Target behavior	Defining moment	Key strategies	Biggest barrier	Key message
CC07	Illegal fishing against village regulations	As a trusted community leader, knowing how much the welfare of his village's fishers would suffer if destructive fishing were allowed	Strict enforcement of village laws through patrols on sea and land; arrest of destructive fishers. Additional rules governing the types of fish resources, fishing gear, fishing methods and catch areas permitted. Using the village fund to provide fishers with boats and environmentally-friendly fishing gear.	In other parts of a Selayar, leaders showing a lack of resolve to combat illegal fishing	*"Leadership, robust social institutions and social solidarity are the key to protecting coastal and marine resources".*
CC08	Bomb, cyanide and tuba fishing in village marine waters	Strong belief in religious teachings that people are only entitled to take sufficient resources to meet the necessities of life, in a sustainable way	Running regular surveillance patrols with his children and neighbors, which have resulted in numerous arrests. Preaching to adherents in his local mosque and around Selayar about their obligation to preserve nature, and reminding them about the ban on destructive fishing. Supporting and encouraging village-level rules to prevent and combat destructive fishing activities.	Destructive fishers lacking faith in God and failing to adhere to religious teachings about sustainable use of resources	*"Surveillance and guarding nature must be performed as a part of worship, in thankfulness to God".*
CC09	The hunting of sea turtle eggs	Observing a decline in female turtles coming to Barugaiya's beach to lay eggs; worrying about the sustainability of the turtles, and his livelihood	Setting up an enterprise to purchase turtle eggs from collectors, but then hatching and releasing the baby turtles into the sea as a tourist attraction. Creating a buzz by inviting relatives, colleagues and various other parties, including the police, to participate in sea turtle conservation activities.	People were initially slow to respond to his requests for help and support	*"Practitioners of destructive activities, including former egg collectors, act according to their economic needs and ignorance of the negative effects of their activities".*

one of these roles. Some gained their official (elected or appointed) roles having demonstrated personal commitment and leadership as self-made champions; others began acting as champions upon being given an official role, and deciding that stopping illegal fishing was an important part of exercising their new role.

Driving factors for destructive fishing

While financial need, in the context of widespread poverty among fishing-dependent communities, is a factor, it does not explain why some individuals took up destructive fishing while others had not done so. An important factor listed by our participants, and verified in our participant observation, is external parties bringing an illegal fishing supply chain system to Selayar and its outer islands (One of the current champions had been one of those introducing the system). Groups of fishers were introduced to the ease and profitability of destructive fishing, initially at a time when the environmental damage, and later illegality, were not widely known. Patron-client relationships were set up, or perhaps existing ones adapted when the patrons connected to the illegal supply chains. Patrons would recruit a fisher by lending money at a time or times of need. This sets up loyalty, and obligations to meet the requests of the patrons. These entail using the fishing gear provided by the patron (bomb materials or cyanide), selling their catch to the patron, and covering for their bosses if caught. The patrons would then distribute the fish through a supply chain that is alleged to be far more efficient than legal supply chains, in terms of size and speed of catch, and hence money made. Fishers run the entire risk; while managers of the supply chains can in principle be caught and prosecuted, they seldom are. A cycle of continuing indebtedness to the patrons, amidst very poor recording of the actual debts among fishermen with poor numeracy, makes a type of poverty trap. Meanwhile the illegal supply chains also trap the patrons, who find it hard to break free without risk to their finances, their safety and that of their families.

Lack of ecological awareness, at least until the COREMAP program began promoting awareness in the early 2000s, and lack of knowledge of legal requirements and penalties, helped this system to thrive. Meanwhile weak and irregular legal enforcement, lubricated by bribery, has helped to perpetuate the system. When the senior businessman in charge of one illegal network returned to his country, local fishers who had learnt his trade took over his role in the chain.

Developing awareness

The CC developed their awareness of the damage caused by destructive fishing, and its being illegal, in a number of ways. One for instance [CC01] was moved by a terrible accident, in which an entire team of bomb fishers in his former village, four men, were killed grotesquely. Another [CC03] was caught by a member of another village's surveillance team, at least twice, and their religious leader [CC08] asked to visit him. Their conversations led him to a new outlook. He decided destructive fishing is a sin, destroying resources. It is also against regulations, and not even profitable once one pays all the fines and bribes. Some [CC02 and CC06] changed on being elected or appointed to community office, deciding they should set an example within their communities. Other elected office bearers [CC04 and CC07] had no prior connection with fishing, but decided to adopt illegal fishing as an issue where they could exert useful leadership. Others became aware through their involvement in COREMAP and other coastal community development projects. One community champion [CC07] was also studying toward a masters degree, an interest that complemented his commitment to his community.

Strategies

The strategies the CC used to influence others were very varied. They included:

- interesting lines of persuasion, particularly from the former destructive fishers who were able to share the logic behind their personal epiphanies with other destructive fishers
- invoking religion, either within their lines of persuasion, or using their status as preachers to proselytize
- collaborating horizontally, with one or two village leaders (some of whom also became champions)
- collaborating vertically, particularly with marine enforcement officers
- exploiting rivalry within a community
- using village institutional arrangements
- gendered strategies, including male-to-male talk about impacts on wives, and making sure women were included in relevant community initiatives
- developing alternative livelihoods.

Lines of persuasion

Several champions had followed a process of personal discovery and reflection, then drew on their experiences in planned lines of argument to persuade fellow villagers, then those in other villages, to give up destructive fishing. One [CC01] began his pitch by pointing out the danger of serious accidents, even death. Then he argued about the unfairness of putting the pressure on their wives when police came to their doors, since the men could run away but the wives were left to speak with them. Then came the need for making honest livelihoods, and finally a religious view based on considering the Koran, that it is all right to fish, but not to destroy the fishes' homes. Another [CC03] explains to others that he bomb-fished for decades, but never became any better off because of the cost of paying fines. Yet another [CC06] explains that when he was a destructive fisher, the money seemed plentiful, but he was never satisfied with it.

Networks are important in these efforts to advocate for positive change. One person [CC02] began with his own destructive fishing team, then all other teams in the village, then those in neighboring villages.

Invoking religion

Two of the CC use preaching opportunities as part of their strategy. One (CC08), a religious leader who is also a strong sustainable fishing advocate and member of his community's fishing surveillance team, preaches in his local mosque and more widely around Selayar about fishers' obligation to preserve nature, and reminds people about the ban on destructive fishing. Meanwhile he plays a leading role in his village's regular surveillance patrols, and supports and encourages village regulations to prevent and combat destructive fishing activities. Another, [CC06], preaches against destructive fishing in the mosque during Friday prayers. He also uses membership of his village's Community Committee for Coastal Resource Management (LPSP in Indonesian) to encourage change, and personal advocacy based on his own experience. Meanwhile, as explained above, some of the former destructive fishers incorporated religious beliefs and principles in the lines of persuasion they used with others.

Collaborating horizontally

Many developed strategic collaborations as part of their strategy, for example former destructive fishers with their village head and/or other formal village leaders. Over time this extended to some networking between villages, for instance the champion on one side of a strait between the Selayar mainland and Pasi-Gusung island (see **Figure 1**) cooperated with the religious leader of the village on the opposite shore, drawing on him to help persuade destructive fishers to stop [CC03 with CC08].

Collaborating vertically

Two champions—as village heads [CC02 and CC04]—worked closely but covertly with police and the marine surveillance unit to decide local deterrence strategies for community members fishing destructively, or those from other villages caught fishing in their waters. Two champions [CC01 and CC04] wanted offenders apprehended, then released with a warning or given one night in detention. This would frighten the offenders so that the champion could then use social influence to try to convert them. Two other champions [CC07 and CC08]

sought full arrest, charging and application of penalties, then sought to turn the offenders away from destructive fishing after their release from jail.

Exploiting rivalry

One champion [CC02], supported by his village head, played off two rival groups within their community, encouraging each to fish sustainably but to report any breaches by other fishers. This champion predicted, correctly, that the rival groups would keep a close watch on each others' members, keeping both sides fishing legally. This champion was also one of those using a vertical relationship with district government surveillance staff and making strategic use of policy to customize the deterrence strategy for offenders found by his village.

Using village institutional arrangements

Several of the champions—whether in formal roles or not—held village meetings, and meetings of specific groups such as women, to build awareness and community consensus against destructive fishing. One [CC05] invited outside speakers. Those with formal powers, such as village heads [CC02 and CC04] and committee members, designed and passed village regulations to support sustainable fishing practices consistent with customary practices, and/or to deter destructive fishing. The champions were active in their village marine surveillance processes, especially CC08 who is head of his village's marine surveillance task force.

As chair of the committee for coastal resource management in his village, one champion [CC007] prompted the village leadership to strengthen its rules governing each type of fish resource, and the fishing gear, fishing methods and catch areas permitted. He also promoted the use of village funds to provide fishermen with boats and environmentally friendly fishing gear. This village is particularly strong in applying traditional knowledge in fisheries management, and in using its regulatory powers to reinforce traditional law.

The female champion [CC04], a former village head, had established a village law to create two community marine protected areas. She also led the establishment of village arrangements for patrolling and apprehending illegal fishers, together with the police and military personnel assigned to work with her village.

Gendered strategies

Some of those using specific lines of persuasion referred to women in their arguments. The female champion [CC04] used her status, and opportunities at religious gatherings and women's meetings, to raise awareness about the consequences and illegality of destructive fishing. Meanwhile, she ensured women had a central role in alternative livelihood programs.

Developing alternative livelihoods

While several of the champions supported efforts to build alternative livelihoods, one [CC09] stood out in developing one himself. As a former turtle egg collector, this community champion had observed a rapid decline in turtle numbers. He set out to stop the harvest of turtle eggs by setting up an enterprise to purchase turtle eggs from collectors, then hatch and release the baby turtles into the sea as a tourist attraction. He promoted awareness by inviting relatives, colleagues and various other parties, including the police, to participate in the sea turtle conservation activities. His activities had strong support from his village, which welcomed the alternate livelihood enterprise and hoped to build other tourism-focused activities around it.

Combined use of strategies

All of the CC used combinations of these strategies, never one alone. Many used personal persuasion based on their own experience, in combination with horizontal and vertical collaborations, and use of village institutional arrangements. A "carrot and stick" strategy is evident: persuasion as "carrot," punitive enforcement or warnings (arranged in collaboration with the government surveillance and enforcement authorities) as "stick." These strategies form the substance of the champions' advice to others, too.

For example CC01 has four key strategies (see **Table 1**). These are (a) a line of argument based on his own experience; (b) collaborating with the village leadership, district fisheries staff and other coastal villages; (c) working with other villages with a view to creating a coastal communities alliance; and (d) continuing fishing (only to feed his family) to easily stay in touch with other fishers and observe their activities. Meanwhile CC02, as a village head and a former fisher-team boss, used three different strategies: (a) talking to other "bosses" about stopping destructive fishing; (b) playing off rival groups against each other, knowing they would watch and report each other's illegal activities; and (c) involving wives and children in awareness-raising activities and supporting alternative livelihoods. The third, CC03, offers his own experience as an example of the futility of destructive fishing. Meanwhile he uses his leadership of the Community Committee for Coastal Resource Management (a position gained through his advocacy), and his networks to advocate for positive change; and puts out the message that destructive fishing violates religious teachings and Indonesian law.

The emergence process of the CC is depicted in **Figure 2**.

Island champions

Table 2 shows the characteristics of the IC interviewed, their strategies, effects, and advice for others.

Roles and development of awareness

Four of the six IC worked as district government officials in various capacities. One was a member of an NGO, and one a private citizen with the ear of district government. Five of them

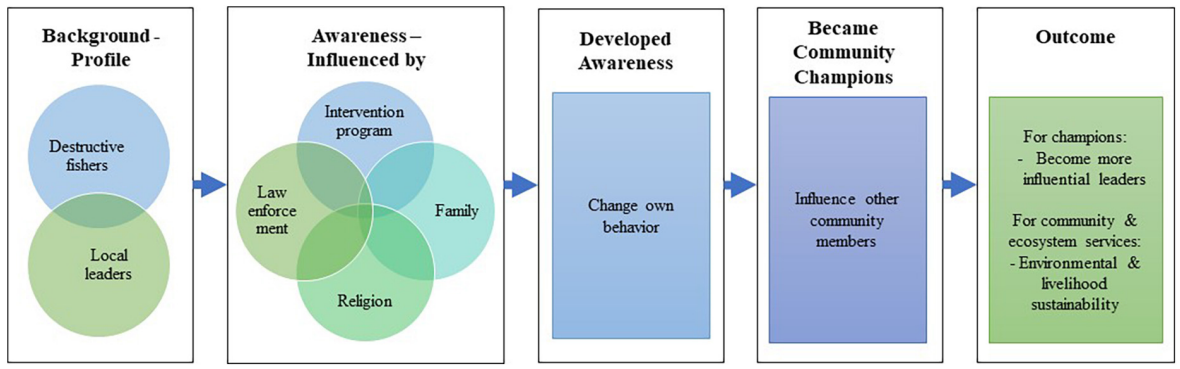

FIGURE 2
Emergence process of community champions.

had masters degrees. Four of them [IC01, IC02, IC03, and IC06] began to emerge as champions by becoming activists while at university. There they developed interests and gained experience in conservation and/or community empowerment. Recreational interests, especially scuba diving, had helped to build a love of the marine environment for some. In an environment in which corruption was decreasing but still present, all saw corruption as a threat to the ES and were known for their honesty. Their personal commitments seem to have influenced their subsequent career choices, to return to their island then to segue into roles that permitted them influence over marine management and in community empowerment. These individuals are strongly networked (which is not surprising within a small island and local government, and given their shared interests and having attended the same university). Several had worked together on different phases of the COREMAP program.

Some ran professional risks in their work. One surveillance officer [IC05] was demoted after successful prosecution of a powerful, politically well-connected offender.

Strategies

The IC networked among themselves, and with others, to tackle different parts of the destructive fishing "system." In doing so they used the powers and resources available through their work, including the highly influential COREMAP development program while it was active. Most also set out to build excellent and enduring relationships with communities: their success in this was confirmed by participant observation. Between them, they used a "carrot and stick" approach, some using their positions to work directly with communities to build their capacities and reward constructive approaches to marine management, others using surveillance and policing positions to ensure deterrence was applied well.

Thus between them, the IC were able to:

- use community development approaches and COREMAP resources to build community capacity to resist destructive fishing, convert their members away from it, and develop alternative livelihoods
- strengthen the marine surveillance system against destructive and illegal fishing, and so far as possible keep it honest and effective.

One [IC01], for example, had (and we understand had sought to be appointed to) a major responsibility for liaising with communities under COREMAP stages II and III. Over a number of years he applied community development methods to build up interest in resisting destructive fishing, and empower the communities collectively to do so. Key strategies were encouraging the formation of community committees for marine protection and management; reporting to the village governments (which were thereby forced to pay attention); the formation of community-based marine protected areas in locations of their choices; and voluntary community-based surveillance systems to enforce the marine protected areas and any regulations made by the village governments (often arising from the advice of their committees). In our observation and from the accounts of the CC, the committees provided opportunities for the emerging CC to expand their roles and influence. One of the types of resources this officer was able to leverage through COREMAP was boats for some of the communities to conduct their surveillance of their protected areas.

The IC helped to empower the CC by respecting and encouraging them personally, and later by presenting opportunities for them to attend major meetings outside their communities, even on mainland Sulawesi. These opportunities enabled the CC to network more widely, to learn from wider exposure, and particularly to feel recognized and validated.

Those working in marine surveillance [IC02 and IC05] took a systems approach, using international to local intelligence gathering (through their excellent networks, including

TABLE 2 Summary of island champions, their strategies, barriers and messages.

Island champion (IC) number	Target behavior	Defining moment	Key strategies	Biggest barrier	Key message
IC01	Destructive fishing; declining fish catch	Concern for the environment and community welfare since university	Explaining the declining fish numbers in ways that people could relate to: e.g. the destructive fishing has damaged the fishes' houses and caused them to move home, to other waters. Inviting the destructive fishing bosses to take up COREMAP positions at the village level, thus the former bombers became 'hunters' of bombers. Developing a coastal environmental education curriculum for local schools and giving women a prominent role in supporting alternative livelihoods.	Unscrupulous officials or villagers still doing destructive fishing	*"The destructive fishers can turn into champions when we touch their hearts and listen to their problems. Facilitate this, and involve them in development".*
IC02	Illegal fishing; distribution of destructive fishing materials	COREMAP II allowed him to continue to build his skills and experience to realize its objectives (sustainable coral reef ecosystems and livelihoods).	Performs routine patrols to catch small- scale destructive fishers. Seeking to apprehend the leaders of the destructive fishing networks.	Eliminating the circulation of raw materials for bombing; perpetrators will always try to avoid detection, including changing the types of ships and shipping lanes they use	*"Bombing activities in several locations, especially in the waters around small islands, remain a challenge for officers in fighting destructive fishing in Selayar".*
IC03	Destructive fishing	His work on coastal projects and for COREMAP, made him very aware of the importance of coral reefs and related ecosystems for human life	Participatory and collaborative surveillance and community empowerment activities that include local communities. Inviting and training community members to become involved in planning and implementation of development activities. Encouraging the emergence of local champions in various villages.	Local champions becoming discouraged because some law enforcers actually protect the destructive fishers	*"To maintain the spirit of the local champions, government, law enforcers and other stakeholders must consistently give their full support to these people".*
IC04	Illegal fishing	Seeing the negative impacts of destructive fishing on family life and relationships in the community, in a previous work role	Sharing knowledge about surveillance and techniques for investigating destructive fishing with his own staff, police and military personnel, to support patrol success. Conducting unannounced patrols and prohibiting the use of mobile phones during patrols to prevent anyone leaking information to the destructive fishers. Catching destructive fishers with evidence for the best- possible chance of mounting successful prosecutions.	Losing his position because of the powerful connections of a destructive fisher he arrested	*"The destructive fishers are sneaky. They have many strategies to trick patrollers, including getting rid of evidence. Some of them have boats that are faster than the patrol boats; they also try to bribe the officers".*
IC05	Unsustainable fishing practices	When he was a child, fishers caught fish very easily; but he saw all that change after the rampant destructive fishing and overfishing that occurred	Facilitating participatory village development planning involving all components of the system, including actors, bosses and leaders involved in destructive fishing. As head of the Regional Owned Fishery Enterprises, making a policy to buy sustainably- caught fish at high prices, promptly and for cash. Leading people into productive activities where it is easy to earn money legally, so that eventually they change their behavior.	The limited ability of the state legal apparatus to eliminate destructive fishing activities	*"The success of others, especially leaders, will be magnets that draw [destructive fishing actors] to change".*

(Continued)

TABLE 2 Continued

Island champion (IC) number	Target behavior	Defining moment	Key strategies	Biggest barrier	Key message
IC06	The economic power of destructive fishing networks over poor fishers	Overfishing and destructive practices (e.g. bombs and cyanide) don't seem to make the fishers any richer	Through his NGO, mentoring and empowering fishers and their families to take a new approach to improve their incomes. Opening a supply chain for sustainably caught fish that offers higher prices than the destructive fishing bosses. Encouraging fishers to pay off their debts to the bosses, and to sell increasing amounts of their fish into the honest supply chain as they clear their debts.	Fishers becoming dependent on government assistance and losing their entrepreneurial spirit	*"With regard to empowerment, effective facilitation can be done by staying in fishers' homes, eating with them, listening to them and sharing stories, and participating in their activities".*

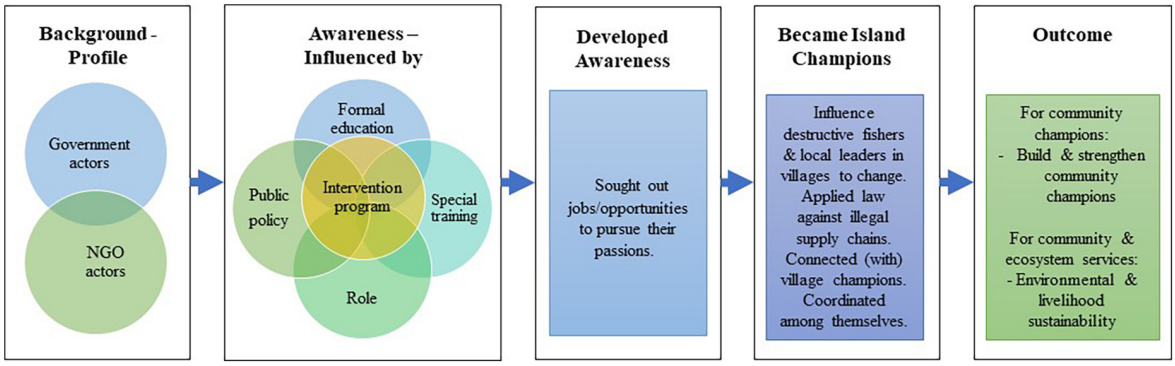

FIGURE 3
Emergence process of island champions.

concerned international NGOs) to identify opportunities to intercept illegal fishers or disrupt their activities. This could occur in local or Indonesian waters, or overseas where the illegal supply chains partially operated. Novel approaches included using mapping of intelligence information (e.g., the name, position and planned route of a suspect ship), and sending it to those best positioned to act; arranging interception of the materials used to make bombs since bombing could not go ahead without raw materials; and forbidding staff from taking mobile phones on raids so that no one could warn suspects. Those working in surveillance were very ready to collaborate with CC, for instance in customizing deterrence approaches for local offenders found fishing in each community's waters.

The emergence process of the IC is summarized in **Figure 3**.

All of the champions were invited to give advice to others. This is included in **Tables 1**, **2**, but not expanded here.

Discussion

We present a case study of a set of "community" (village focused) and "island" (more widely focused) champions from Selayar Island, eastern Indonesia. This case study illustrates the important role individuals play in ES management and the conservation of marine and coastal ecosystems. The unique and innovative strategies used by the champions to address illegal and destructive fishing inspire and influence others in each community and across the island study area to protect ES. The particular strategies can also suggest ideas that could be relevant in other places.

Champions, their networks and strategies

The findings demonstrate the potential of champions to influence sustainable environmental management, and play a role as intermediaries of knowledge between community, government, NGOs and natural resource managers (Lindsay et al., 2019). In forming networks connecting themselves horizontally—champions of different villages, the different offices of the IC—and vertically, i.e., the connection of village champions to government champions, the champions act as creative intermediaries between policy and policy

makers, and communities and their behavior. The horizontal network makes it possible for a champion to expand their influence, and influence behavioral change in a much wider area and set of communities. The vertical network connects the community to various levels of government, magnifying their power, expanding access to resources, and connecting the community with government policy and policy makers as well as legal apparatus and resources. While fulfilling policy is not the champions' motivation, their activities help to strengthen the implementation of policy.

The champions in Selayar had their own interests, protecting ES for a variety of reasons especially livelihoods, and maintenance of customary law, but also religious logics. Because their interests in protecting ES aligned with policy, and program interventions provided practical opportunities, they applied government policy for combating illegal, unreported and unregulated fishing, including destructive fishing. However in implementing their strategies they relied mostly on their social influence and local social knowledge, then on strengthening village institutions and policies. For example, the strategies they developed in dealing with destructive fishing are based on capitalizing their traditional power as community leaders or elders, using their traditional knowledge about natural resources and community structures sometimes supported by religious knowledge. They use these resources to increase awareness for nurturing the environment as well as combating destructive fishing. They used formal government instruments and power, particularly district government surveillance and arrests, as complements to their individual influences and capabilities.

Contributions of the study

The findings highlight the importance of working closely with communities toward environmental conservation measures, and respecting and utilizing the social dynamics that are already there. Often members of communities are seen as culprits of environmental damage. Our study shows how such assumptions are dangerous, as they can overlook the positive forces within communities, and the diversity of values and behavioral positions. Paternalistic conservation measures may lead to incorrect assumptions, and to undermining solutions that stem from the community.

Communities can be complex entities, with active inter-personal and inter-group dynamics (Agrawal and Gibson, 1999; Green and Haines, 2016). Our results highlight the existence of community and broader-acting champions, and how they intervene using their personal suasion and any formal powers strategically and inventively, to promote wide-scale change in the interests of ES. We thus argue that closer attention to champions and their strategies is needed in the ES field, as a valuable contributor to efforts to protect and support ES.

Amidst the literature predominantly portraying communities, or communities facilitated by NGOs, as the principal "bottom-up" actors in protecting and enhancing ES, this paper highlights the role of individuals. Understanding the role champions play in energizing communities and other local actors toward ecosystem governance helps inform policy decision making and interventions on development, sustainability, and the use of land, sea, and biodiversity resources.

ES literature recognizes that social drivers play an important role in conservation, and provision of ES (Robards et al., 2011). It also recognizes the importance of community-based management (Nelson et al., 2010; Krasny et al., 2014; Paudyal et al., 2017; Rakotomahazo et al., 2019), however, case studies exemplifying the roles of individuals in sustainable ES management and community-policy interfaces are largely missing. This case study provides important insights into successful strategies used by local champions, individuals who take it upon themselves to act as change agents, to protect ecosystems and inform policy decision making on the use of resources.

The paper also contributes to the body of literature on champions, in the ES, environmental and natural resource management fields, and more generally. It does so by explaining—for one cultural context and location—how champions emerge, how they build influence, and how they strategize horizontally and vertically to achieve influence.

We confirm that both community and IC share many of the characteristics and roles of champions identified in environmental contexts, and other community based initiatives such as in health and education. Although the contexts are very different, they also share some characteristics with champions in large organizations. We can confirm that they show characteristics of sincerity, personal power, communication skills and persuasion tactics (Taylor et al., 2011, 2012; Ho et al., 2016a; Shea and Belden, 2016; Lindsay et al., 2019). We can only partly confirm charisma as a characteristic of champions (Shea and Belden, 2016). Some of our champions are charismatic; we suspect some have become more charismatic than when they began, through building confidence; while others are not particularly charismatic. A few showed intuitive abilities (particularly CC in understanding their peers), while others showed analytical ability (e.g., one community champion in finding a solution to decline of turtles, a surveillance officer in analyzing and mapping intelligence information to break illegal supply chains. More importantly, we assess that they achieve influence with others through dispensing wisdom (their arguments), and demonstrating personal integrity (cf., Ho et al., 2016a). Some, including one of the youngest, are seen as "achievers." We share the observation from literature (Taylor et al., 2011) that they play catalytic roles. They not

only use, but build networks and collaborative alliances—using both horizontal and vertical relationships—to achieve their goals (Klerkx and Aarts, 2013; Pasquini et al., 2015). This has something in common with the observation in the innovation literature that some types of champion build networks of stakeholders to advance innovations (Klerkx et al., 2013).

We contribute to a gap in the literature about how champions emerge. Our study suggests a complex set of processes (see **Figures 2**, **3**) in which personal backgrounds combine with various influences on awareness of the damage caused by destructive fishing, leading to personal changes in behavior, and strategies to influence others to cease destructive fishing. These lead to outcomes for the champions themselves, and for the environments and ES they seek to protect. These will be different for different individuals and communities, and in different places, but they suggest a complex "system" of influences and pathways.

Further, we suggest that the particular strategies used by champions provide practical insights, and deserve closer examination in many contexts. While identification of the characteristics of champions can be useful, what champions actually do may be most enlightening to those seeking to achieve changes in ecosystem management.

Implications

We identify champions in our context as emergent (Worthy et al., 2016). In contrast to some program interventions such as in health (Harrison and Mort, 1998; Hendy and Barlow, 2012), they are not recruited. They self-select, and self-organize. In testing and improving personal strategies, they link and collaborate with others in a position to support the change process they seek (Klerkx et al., 2013). Nevertheless, as the COREMAP program—and the way its interventions were tailored by some of the IC—illustrates, once the personal emergence process begins, champions can be enabled further by the rewards of attention, opening of institutional platforms to expand their influence, and practical resources. Thus in ecosystem management contexts where natural resources important to the communities are at stake, we do not advocate that potential champions be hand-picked and fostered from the beginning, especially by people from outside organizations. That type of "top-down" intervention could be counter-productive, by de-motivating those not picked, and potentially making some champions feel they need to be auspiced by others in order to act. We believe "champion" is a role that should be self-selected and developed personally, not a label to be given. Nevertheless, the accounts of champions in our case study suggest the value of certain interventions to support emerging champions:

- *Recognition*—the champions have welcomed being given further roles, which enhance their experience and confidence, and provide them with formal opportunities to continue or expand their voluntary work.
- *Networking opportunities*—invitations, with funding to cover travel costs, to inter-community meetings and events beyond their localities have helped to build champions' awareness and confidence, and to share ideas.
- *Learning opportunities*—especially the informal adult learning that occurs through networking events and meetings. Some champions may welcome formal training on certain topics, but our discussions with the Selayar champions reveal the benefits of learning from peers and those more experienced, in shared settings.
- *Resources*—while resources do not drive a champion, modest resources can enable bringing champions together for meeting and networking, and help them to do their work (e.g., boats for community-based surveillance). Where champions are employed, program funding can be helpful, but loss of resourcing can be devastating, since community-facing roles are often the first positions to be cut when programs end or funds become scarce, and so effective champions may be transferred to other roles.

The champions in this study are not driven by monetary incentives, at least not directly. Their motivations are communitarian, in concern for the ES that underpin entire communities' livelihoods, coupled with individual, cultural and to some extent religious values.

Local champions in policy and program interventions

The activities of local champions can complement policy and program intervention strategies supporting ES in numerous ways. Since champions have made themselves important actors within communities, and more broadly, on certain causes, working with them can help to introduce new program interventions into new areas (Measham et al., 2011). Working with, rather than ignoring, their experientially tested strategies can help customize a program for local circumstances and give it momentum. Further, champions help the sustainability of projects, after projects close. Local actors, supported and strengthened by project interventions, can embed program goals in a community, government or community-government-NGO collaboration for long after an intervention ceases, though this cannot be relied on indefinitely without certain continuing supports (cf., Ho et al., 2016b). The way the Selayar champions have connected and cooperated at two levels suggests the potential in webs of influencers connecting toward regional effectiveness, irrespective of particular policies and programs.

We note that working with champions aligns with the livelihoods approach (Scoones, 1998, 2009; Ellis, 2000; Allison and Ellis, 2001) and assets-based community development

(Kretzmann and McKnight, 1996; Green and Haines, 2016), in focusing on people's strengths and assets, not what they lack. This suggests interventions that align with strengths-based approaches.

Limitations, and suggestions for further research

As a single case study, based in a particular developing country location and context, the findings of this study cannot be generalized in every particular. The study should be considered at the level that champions exist and are important, they have considerable agency, and that champions in other places besides Selayar may have enlightening strategies to offer toward protection and enhancement of ES. This does not mean each strategy will work in other places, or among other peoples. Similar case studies, and comparative research in other places and cultural contexts would be useful to learn more about the activities of champions in ES.

The study was conducted at a particular point in time, and after a lengthy project intervention. We have no "counterfactual" to examine whether champions would have been so evident in the absence of any recent government or NGO attentions—though it would be possible to test by seeking and interviewing champions in other parts of Selayar which were not included in the COREMAP program interventions (we are aware of some such individuals). We have not been in a position to follow up what happened to these individuals, and their circumstances, in any detail after we left the location. It is possible that community or IC could be discouraged if not succeeding, or if vital parts of their supportive networks are lost. Following loss of program funding, and government restructure moving responsibility for fisheries to a "higher" level of government, one of the IC was transferred to a position where he could no longer support the CC, at least officially.

Further, we did not have, and were not in any position to collect, any baseline data or ability to test whether the actions of champions have direct ecological effects. Even if this had been possible, measurable outcomes usually have multiple influences, so the contribution of champions would be hard to differentiate alongside other influences. Influences may well be cumulative, champions acting synergistically with other influences. This introduces the possibility of studies that can test the degree of influence champions have within communities, on thinking and behavior, and the nature of synergistic effects.

We were unable to consider gender in more depth. Fishing is a gendered social role on Selayar, and women are under-represented in governance. Therefore women were not strongly represented in this study despite our efforts. We know from other research in the same and similar locations that women can be proactive in other types of community affairs, e.g., waste management (Simmons and Fielding, 2019). Given that some of the champions considered the roles of wives, and sought to include women in meetings and livelihood initiatives, a study interviewing women of the communities could be valuable.

Further research could also explore more deeply into the behavioral transformation processes, as shown in **Figures 2**, **3**. From a theoretical and practical perspective, this could compare well with bodies of literature on behavior change in the context of ES and impoverished communities (Simmons and Fielding, 2019; Simmons et al., 2021).

Conclusion

In a case study in a location where coral reef, seagrass and mangrove ecosystems are under threat, we have highlighted that individual "champions" at two levels (community and island) have taken it upon themselves to protect these ecosystems against destructive fishing. In doing so they are not the creatures of government policies or programs: they are entirely self-motivated, though they will use policies and programs as providing logics, institutional and practical resources where these align with their aims. Rather than policies achieving environmental improvements directly, it appears that champions may share goals with policy, and use policy and program opportunities among their strategies for achieving change. Champions can be an influential part of community-based management, as thought-leaders and strategic institutional actors seeking to improve ecosystem outcomes through changing individual and community behaviors. We argue that studying and learning from the strategies of such champions can enhance current understanding in the community-based approaches to ES. This strengthens the potential of "bottom-up" approaches, and casts a different light on the ways policies operate as influences on a problem.

While champions have been studied in a variety of different contexts, there has been little recognition of CC in the ES literature, and scant elaboration. There is also only limited recognition in the community-based natural resource management literature. This study identifies both similarities and differences in Selayar's champions' characters, and ways of operating, to those documented in other fields. While this is interesting, the essential point is how champions act, individually and together, and what this can mean for their vital goal—protecting the ES on which their livelihoods depend, and which are important in their cultural values.

We argue that champions should not be co-opted in policy and program interventions, but that their ideas can contribute to more effective interventions. Better understanding of individual and small-group processes of champions, that may occur outside conventional policy-making and ecosystem governance, can allow sharing of effective strategies to encourage other potential champions and support community agency in protecting ES. Further, understanding the role champions play in energizing their communities toward

ecosystem governance helps inform policy decision making and the use of land, sea, and biodiversity resources. We advocate a recognition of champions as self-organizing, dynamic change agents in their social-ecological systems, enablers of bottom-up change in support of sustainable use of natural ecosystems and protection of ES. We advocate working with them synergistically.

Data availability statement

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by The University of Queensland, Human Ethics Committee. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

AA, DA, and HR identified the need and designed the study. The interviews were conducted by AA, under the guidance of DA and HR. Supporting information from participant observation was supplied particularly by AA and two local assistants, with support from DA and HR. AA, DA, and HR were principally responsible for analysis and interpretation. AP joined the team to assist AA, DA, and HR with literature review and discussion, and general improvement of the manuscript. All authors contributed to writing this article and conducted the literature review.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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