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Improving Fisheries Management through Empowering Women in Small Island Fishing Communities

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Abstract

The dependence of Pacific Island countries upon the ocean resources has been a vital part of their cultural, social and economic development. The high consumption of fish by many Pacific Island countries underscores the critical contribution of fish to food security of the Pacific Islanders. However, increase in fishing pressure has resulted in loss of many important food fish resources. In addition, loss of resources through urbanization, degradation through pollution and changes to habitats has also affected the productivity of fisheries resources.

The paper articulates on an integrated approach to improving fisheries management by way of empowering women in fishing communities. It reflects on a particular strategy to achieve sustainable fisheries through the implementation of a code of practice that aims to change people's behavior, attitude and actions implicit in the current policy debate on achieving sustainable fisheries. The specific focus is to draw attention to the fact the women can potentially play a central role in many coastal communities through their multiple yet subtle activities in this regard, therefore they should be recognized as important agents for such change. As primary caregivers, they are instrumental in instilling the desired social and moral values in children at a young age which are the critical years in the development of children's cultural and value systems, thus influencing children to follow the desired code of practice in fishing and the protection of the marine environment as a possible way to contribute towards building marine stewardship and marine citizenship. However, women are mostly in subordinate positions in society and either they lack the necessary scientific knowledge or are culturally disadvantaged to adequately and actively participate in decision making. In terms of national policy, their direct contribution to social and economic development is not apparent because of the informal nature of their work therefore it often gets ignored by planners and policy makers.

Using the Pacific Islands case, the seminar draws attention not only to the lack of marine studies curriculum in the early years of the education system but also point to the need to integrate and mainstream gender issues into fisheries planning and management. The paper argues that the physical, personal and social skills that mothers indirectly teach are often overshadowed by the bigger picture to achieve resource management policy outcomes.

1. Introduction and Background

The paper reflects on the premise that good fisheries management outcomes have a strong moral and ethical component because fisheries management is more about management of people's behavior and actions. Fisheries managers must understand the motivation and incentives for fishers to identify how they respond to management measures and regulations (Hilborn, 2007). He argues that the key to success in all fisheries lies in understanding human behavior and incentives (Hilborn, 2007), which among other things are influenced by social, cultural and environmental factors.

Environmental values are derived from different views of humanity's relation to the physical world. Whether the views are anthropocentric grounded in 'human-centered' principle or follow the bio-centric principle where all living things have a value and humans have an obligation to protect them (Schug, 2008) indicates that environmental policy making is strongly influenced by the norms and value systems held by decision makers. One can therefore say that fishing communities and environmental agencies are made up of individuals and groups who approach environmental

problems through their own professional and personal values and are moved by their own institutional priorities (Schug, 2008; O' Neill & Spash, 2000). The inclusion of the range of interests and values in environmental decision making can help to apply the precautionary principle such as ensuring safe minimum standards and use of moral principles which recognize intrinsic values of the environment. The challenge however is to find the means to integrate the different values in such a way so that it can contribute towards the effective utilization, conservation and management of marine resources. The most useful reference and policy framework for fisheries in this context is the FAO Code of Conduct for Responsible Fisheries (1995). Although the Code has been elaborated mainly from technological, social, economic and political perspectives, it contains a number of less explicit but fundamental ethical considerations and addresses both human and ecological concerns directly (FAO, 2005).

McIlgorm (2000) further states that improved fishery stewardship may require "a new fisher" relationally mature and societally accountable, to achieve the goals of sustainable fisheries management through a variety of policy paradigms. To be a good steward requires the transformation of character. In addition, by looking at the marine practitioners, McKinley& Fletcher (2010) recognize a societal sense of "marine citizenship" to deliver sustainable management and protection of the marine environment through enhanced individual involvement in policy development and implementation. The degradation of the marine environment can be partially attributed to the collective day-to-day impact of behavioral and lifestyle choices made by individuals. The role of individuals in marine conservation and management is therefore important and can contribute to improve marine governance through marine citizenship. Two important factors identified in the development of marine citizenship are the level of awareness or education and a sense of responsibility or ownership towards the marine environment (McKinley & Fletcher, 2010). Their study suggests that environmental education can provide long-term solution to environmental issues through changed individual behavior and attitude. However, through educational theories much of the influences that shape a person's character and personality are learnt early in life (Morrison 2008).

This paper therefore addresses these issues related to fisheries management and marine education by proposing a possible policy pathway to influence human behavior and attitude in such a way so as to create the right incentives or environment for fishers in the context of fisheries in the Pacific Islands. It draws attention to the fact that women potentially play a central role in many coastal communities through their multiple yet subtle roles in influencing children and that this should be recognized as an important factor for social change. Women are the primary caregivers of young children during critical stages of social and moral development, thus they are instrumental in instilling the desired code of practice in fishing and the protection of the marine environment such as those based on principles and practices outlined in the FAO Code of Conduct for Responsible Fisheries (1995). However, women are mostly in subordinate positions in society and either they have limited basic scientific knowledge or are culturally disadvantaged to adequately and actively participate in decision making (Vunisea 2007). On the other hand, in some communities women have vast traditional knowledge and skills which remain untapped while in some communities they require access to scientific information but are often denied. In terms of national policy, their direct contribution to economic development is not apparent and difficult to quantify because of the informal nature of their work therefore it often gets ignored by planners and policy makers. Unfortunately, their contribution is often not direct but imbedded in other activities which however does not mean that this fact should be ignored.

Using the Pacific Islands case, the paper draws attention not only to the lack of marine studies curriculum in the early years of the education system but also points to the need to integrate and mainstream gender issues into fisheries planning and management. The paper argues that the physical, personal and social skills that mothers indirectly teach are often overshadowed by the bigger picture to achieve management policy outcomes. Placing emphasis on moral and ethical values learnt early in life can be a cost effective policy solution that can also contribute positively towards achieving long term sustainability and ensure inter-generational equity in a region where marine resources are seen as the lifeline.

The study uses an integrated approach to address management of fisheries through review of literature on education, gender and resource management with primary focus on experiences in the Pacific Islands. In addition, results from four villages in Fiji were obtained through primary data using a socio-economic survey where women

were interviewed to gauge the level of their involvement in fishing activities, level of marine awareness, interaction with children and their role as mothers and caregivers.

2. Key issues in Pacific Islands fisheries

The dependence of Pacific Island countries upon the ocean resources has been a vital part of their cultural, social and economic development. The coastal and marine ecosystems of the region are extremely important habitats for sustaining the livelihoods of many Pacific Islanders. Given the high sea to land ratio, limited arable land and poor soils in low-lying islands, reliance on marine resources is extremely important. As population increases, this dependence becomes even more critical. Economic activities such as fisheries, tourism and trade are highly dependent on their marine environment.

The high consumption of fish by many Pacific Island countries underscores the vital contribution of fish for food security of the Pacific Islanders (Bell, Kronen et al. 2009; Gillett and Cartwright 2010). Fish provides 50 -90% of animal protein with intake in rural areas and 40-80% in urban centres (Secretariat of the Pacific Community 2008). Most protein in rural areas comes from subsistence production, where the apparent per capita consumption often exceeds 30kg per year (Bell, Kronen et al. 2009) compared to the global average of 17kg (Food and Agriculture Organization 2010).

There are two major categories of fisheries in the Pacific Islands: offshore industrial that is largely targeting tuna for the export market and the small-scale coastal fishery that mostly serves the domestic food and nutritional needs. Indeed, women play an active role in both these categories of fisheries (Vunisea 2007; Ram-Bidesi 2008; Ram-Bidesi 2010). Most coastal areas are however experiencing a decline in fisheries resources, even in the most isolated locations. Likewise, the region supplies about 55% of the world's tuna resources but this too has become a concern because of declining stocks of important species (Hampton 2008; Gillett and Cartwright 2010).

3. Addressing over-exploitation

Overfishing has resulted in loss of many commercially important food fish such as hump head wrasse, deep sea snappers, giant clams, beche de mer, green snails and trochus (Ram-Bidesi, Lal et al. 2011). Localized areas of over exploitation have been noticed in many coastal areas close to urban centres (King, Fa'asili et al. 2003; Teh, Teh et al. 2009). In addition, loss of resources also results through urbanization and degradation of habitats through pollution such as sewage, agricultural run-off and industrial waste (Thistlethwait and Votaw 1992; Center for Ocean Solutions 2009). Alteration of habitats such as cutting mangroves, dredging sea grass beds, removal of corals and use of destructive fishing methods also lead to loss of productivity of coastal resources and pose direct threat to livelihood of coastal communities. The substitution cost for loss of livelihood and food source could be relatively high and unaffordable in light of replacement through imports. Ensuring sustainability and management of coastal fisheries is therefore critical for sustenance and maintenance of coastal livelihoods.

A number of projects have been ongoing towards management of coastal resources ranging from technical measures through centralized regulatory to decentralized community based management approaches. Collaborative management between communities, government and NGOs has been on-going in most of the Pacific Island countries (for example, Locally Managed Marine Areas in Fiji and the Solomon Islands; Village Fisheries Management

Programme in Samoa and Community based Fisheries Programme in Vanuatu). The underlying rational is to control fishing pressure on the stock through various measures that would either motivate or force fishers to refrain or have self-control over their fishing practices and to be considerate of other fishers or users of the coastal environment. Both the practical and strategic aspects of fisheries management highlighted in the Code aim to raise awareness on the need to recognize the integrated nature of fisheries by introducing the concept of ecosystem based management (EBM). Fisheries management also aims to address peoples' needs and aspirations thereby focusing on people centered management and development approaches so that incentives are formulated for appropriate action. In addition, because of the common property and transboundary nature of the marine environment, fishers are required to cooperate and adhere to agreed set of rules and procedures often under the doctrine of 'good faith'.

The essence of the above management approaches and the rationale behind the FAO Code of Conduct for Responsible Fisheries is that people need to change behavior and attitude towards the marine environment to ensure its effective use and long-term sustainability (Food and Agriculture Organization 2005). Transparent decisions and consideration towards each other through greater cooperation, trade-offs and compromises between individuals, groups, industries and nations are required as stated in the international and regional environmental agreements. People need to realize that they cannot continue to function if they are driven by self interest to maximize their own welfare from shared resources. Regulatory rules, customs and norms become necessary as a means to ensure that accepted and agreed terms and conditions are followed. The concept of 'good governance' is used to refer to this type of management regime. Achieving good governance ultimately contributes to social stability and resource sustainability and hence supports economic development that improves the community wellbeing.

4. Ethical considerations for management action

An essential aspect of good governance therefore is the rules and institutions that will enable people to follow them in relation to their fishing practices. It is not only to create benchmark criteria but also an enabling environment for effective management of fisheries. The aim is to bring about required behavior and attitudinal change in fishers through instituting the values, morals and ethical considerations for appropriate action either voluntarily or as a mandatory requirement to address both human and ecological wellbeing. Ethics are rules of behavior that govern decision making. It is having concern for others and in the general interest of the public. The ethics of self-development and ethics of interdependence reflect on one's own value systems and interaction with others which is governed by a set of norms and beliefs. Values are what we learn during childhood from our parents, religion, communities and immediate surroundings. Morals are the beliefs from the value systems of how we 'should' behave in a given situation while ethics are how we actually behave in the face of difficult situations that test our moral fabric.

If people are considerate about others and develop mutual trust beyond their own culture and custom, it is likely to reduce the transaction cost in management and positively contribute towards strengthening the social capital which encourages mutual cooperation. Thus the economic argument that individuals are always seeking their own self interest must be broadened. Furthermore, there is a growing belief that individuals who act according to altruistic motives, such as cooperation, fairness, honesty, love, self-sacrifice and sympathy, often receive large economic benefits, even in highly competitive environments, whereas individuals who pursue their narrow self-interest may not always succeed in competitive environments (Frank 1988; Frank 2003; Kulshrestha 2005). For example, people may buy eco-labelled fish even if it may cost more because they wish to support the course of achieving sustainable fisheries reflecting on good marine citizenship.

In practice, policy instruments most commonly used in fisheries management include direct regulatory restriction or command and control measures, market based incentives such as permits, taxes and use rights, and moral suasion based on voluntary action under ethical grounds. The two former methods have been the hallmark of fisheries management while the latter has the potential to become an equally effective tool where fishers take certain action or behave out of concern for society to do the right thing or through their moral obligation as "stewards" of the marine environment such as maintaining inter-generational equity. In effect, if people do the right thing as responsible fishers such as those prescribed under the "FAO Code", theoretically at least the cost of management of fisheries can be drastically reduced.

How to influence people to behave ethically and be morally sensitive? For example, consider issues such as those highlighted by FAO in Table 1 in the context of the fisheries sector. This clearly reflects on the individual values, beliefs and customs that are acquired at an early age through personal experiences and education. Marine education and awareness therefore is the cornerstone for bringing about the desired changes in the mindset of fishers and others by instilling the appropriate values at an early age to achieve the needed voluntary action using moral suasion as a policy tool.

Table 1: Dimensions of ethical concerns in fisheries

Subject	Objective
Ecosystem	Ecosystem well-being
Fish stocks	Conservation
Fisheries	Responsible fisheries, sustainable development
Fishers	Safety on vessels, fair access, gender sensitivity
Fishing communities	Food security, poverty reduction, cultural diversity
Other stakeholders	Cross-sectoral equity, societal efficiency
Traditional knowledge	Knowledge by experience and practice
Cultural integrity	Management practices through values and belief systems
Consumers	Rights to food, food safety
Government	Transparent policies

Adapted from FAO, 2005: 7

5. Marine education and learning environment

Early years are important for brain development and for setting the foundation for learning and life (Morrison 2008). Learning is a process of acquiring knowledge, desired behavior, skills, attitude and concerns along with the conception of reality (Wals 2009) . In educational theory (Thomas 1999; Neuman and Dickinson 2002), a child's early years such as in nursery, kindergarten and primary school are important learning environments for the child where much of the social and moral values are developed in a more formal way. In addition, the home and community environment where a child grows up provides an informal setting which also plays an important role in instilling cultural norms and values (Correa-Chavez, et.al, 2011). Social learning theorists demonstrate how children learn and imitate adults behavior by observing them (Bandura, 1986; Correa-Chavez, et. Al, 2011).The early years are therefore important not only for the physiological development but also for psychological development (Talay-Ongan and Ap 2005). A US based special interest organization called 'zero to three' that informs, trains and supports parents and professionals to improve lives of infants and toddlers believe that a child's first three years are crucial for developing intellectual, emotional and social skills (Morrison 2008). Children learn to imitate, follow instructions and gradually acquire analytical skills as they begin school. It is easier to mould children when they are small, then when they are grown up as independent individuals with their own world views. As John Amos Comenius said: "A young plant can be planted, transplanted, pruned and bent this way or that, when it becomes a tree these processes are impossible" [John Amos Comenius (1592-1670) cited in Morrison 2008:55]. If children are targeted at an early age to value community relationships, honour those in authority and fear god, accompanied by a fair understanding of the ecosystem dynamics, they are more likely to fish sustainably and their environmental behavior can be somewhat predicted. Children learn best when they contribute to real-life family activities where the purpose and significance of such activities is clearly understood (Fleer and Raban 2005).

Both formal and informal marine education at an early age is important for learning the basic concepts and to get a general understanding about the dynamics of marine life, the rationale for "responsible fisheries" and therefore, the underlying ethical dimensions of fisheries. Marine education in most of the Pacific Islands as a subject is only taught at the tertiary level such as at the University of the South Pacific and the University of Guam. Only some topics on the marine environment, ecology and physical processes are covered under the disciplines of biology, natural sciences, geography or social studies in primary and high schools. At the pre-school level, students are introduced to the plant and animal life mostly with limited outdoor excursions. Furthermore, in most rural areas there is no access to pre-school facilities.

Marine education therefore is not fully recognized as a core subject even though, the ocean directly affects the people's lives in many ways ranging from the provision of life support systems, maintenance of culture and tradition to economic development and sustenance.

6. Defining Pacific Island children's learning environment

For Pacific Island children, one can argue that they are grounded in environmental values at an early age since the learning experience is integrated into their normal routine of life. Therefore, what is their learning environment? Who plays the key role to influence their socialization, intellectual learning and value systems in the critical early years? Through observations and survey, we know that they spend most of their time with their mothers, sisters, aunties and grandmothers, i.e. female members of the household. These people therefore play a key role in the child's character development. For example, from the survey in three villages in Fiji as summarized in table 2, children were actively accompanying their mothers while collecting shell fish and fishing. All women interviewed indicated that they have shown the techniques of fishing and shell collection to their children.

From the time a child is born until he or she enters primary school, children generally spend a lot more time with the household female members. Their learning revolves around observations on what the mother or grandmother does. Whether it is cooking, fishing, gardening, weaving, cleaning, reading and so on. This creates the ecological and social learning environment for them where they also acquire some of their key fundamental value and belief systems. The quality of emotional attachment between mother and child is an additional important influence on their socialization (Hendrick 1992).

In the Pacific Island countries, women play a vital role in food production and preparation and are therefore recognized as the household nutritional mediators (Ram-Bidesi 2008). In many coastal communities women together with children play a dominant role in fishing and collection of marine plants and animals (Novaczek, Mitchell et al. 2005). Women are also responsible for much of the food processing and preservation. In the household, they are largely responsible for the general household maintenance and hygiene. In this way, they also have an influential role on the health and well-being of household members by choosing the foods to eat. When a child is a toddler, he or she would be kept under the watchful eyes of the mother or the elder women of the family. As they grow, they also venture out with their mothers and grandmothers to the sea or the gardens. Table 2 shows a high percentage of children accompanying their mothers and female members to fishing trips.

Increasingly women also actively engage in the market economy by either selling their own produce or what has been produced by their husbands and sons (Sullivan and Ram-Bidesi 2008). A common scene at the municipal markets or road side stalls is that women are often accompanied by their children who either actively assist them in selling or go with them because they do not have anyone to take care of them while their mothers are away from home. Children learn as they spend hours and days seated beside their mothers emulating and helping at the market place.

In the absence of pre-school education and or active marine education, the learning environment is created by how children spend their time by observation, imitating and by what parents (in this instance, their mothers and grandmothers) tell them. In coastal communities, children also spend extended periods of time with mothers collecting shellfish and other marine products and fishing for either food and or income while fathers may be employed outside of the village, fishing in deeper waters using fishing vessels, engaged in community tasks or just relax with fellow villagers.

Fishing skills and knowledge about species or the ethno-biology is passively acquired from the mothers. If a mother cleans the general household surroundings and dumps the waste into the nearby creek, the child may do the same until he or she learns that it amounts to pollution. The so called 'force of habit' may be hard to break until the child as an adult is convinced of benefits to him or her of doing otherwise. Likewise if a mother practices good hygiene and responsible fishing, her child is likely to follow. The literacy level of the mother, her knowledge, skills and experiences directly has a bearing on the child's socialization, moral and cultural development.

Table 2 summarizes results from surveys in three coastal villages in Fiji in May 2010 and 2011. 30% of the households in each village were chosen at random for interview. In Nataliera village, women often fish to also sell at the Tailevu, Nausori or Suva markets because a bus service operates from the village to these urban centres. Women from the Serua Island village do not sell their catch at the urban markets because of the long distance to travel to bring their catch. They are able to make internal sales within the village where as in Kalokalevu, which is close to the urban center; there is other sources income available. Resources are generally over-exploited and so only a small group of

Table 2: Women and children's fishing in Nataliera, Serua and KalokalevuVillages in Fiji

Women and children interaction	Nataliera Village	Serua Island Village	Kalokalevu Village
	n = 20	n = 15	n = 12
Primary responsibility for children staying at home	mother, sister, grandmother, aunty	mother, sister, grandmother, aunty	mother, sister, grandmother, aunty
Caregiver in the absence of mother	sister, grandmother, aunty	sister, grandmother, aunty	sister, grandmother, aunty, father
Average time at sea (hrs per day/ days per week)	3-5 hrs/ 3-4 days	2-4 hrs/3-5 days	2-3 hrs/2-3 days
Frequency of children accompany fishing trip (>50% of trips)	85%	80%	65%
% women fishers demonstrate skills in collecting and fishing	100%	100%	100%
Children accompany marketing of commodity (% response)	sometimes/occasionally to market – 75% subsistence consumption – 25%	sale of catch within village - 60% subsistence consumption – 40%	Subsistence consumption – 100%

women (20%) are fishing regularly for subsistence needs. In Kalokalevu Village, one woman indicated that the husband looked after the child when she went collecting shell fish since the husband was temporarily unemployed and there was no other family member present. In the case of Nataliera and Serua Villages, often the grandmother, aunty or sister would look after the babies and toddlers while the mother goes fishing.

7. Women as marine educators

Children spend much of their time with their mothers or female members of the household watching or directly involving themselves in a variety of activities. Fishing is an integral part of this and therefore, women can be the primary target for training in marine awareness and education where necessary so that they can effectively disseminate the skills and attitudes for good marine stewardship. In addition, with access to only simple technologies, women over time have accumulated traditional knowledge and practices which enables them to adapt with any changes to production or consumption patterns such as adjusting to seasonal patterns. In this way, women can play a critical role as disseminators of traditional ecological knowledge as part of informal marine awareness. These factors should be promoted alongside the more formal training by the school curricula which are introduced much later in a child's life in the Pacific Islands. Indeed the first hand childhood experience makes a lasting impression that should be reinforced and complemented by the formal training. Empowerment of women through awareness programmes and education, participation in community decision making, and facilitate their access to resources are necessary so that they can effectively fulfill their role in moulding children.

Women therefore play or potentially can play a central role in communities to promote responsible fisheries. Instilling the desired social and moral values through their subtle roles should be recognized and capitalized as part of informal training in marine awareness and education. Furthermore, not only there is limited access to pre-school facilities in many rural areas but also marine education is still not recognized as a subject until tertiary level. Indeed, as stated by (Sharma and Diouf 2010) women are the real barometers of health and heart of any society. Therefore recognizing their role as nutritional mediators and in instilling desired social and moral values must not be clouded by the bigger picture of management strategies for responsible fisheries. The process to achieve such objectives is equally important even though this may require a paradigm shift because the process of social change is slow and results generally long term.

8. Addressing gender issues

It is important to increase awareness on the need to support women's work whether paid or unpaid because these

not only help to facilitate the household production and consumption but also can contribute positively towards building good marine citizenship. Considering the central role of mothers and women as informal educators in early development of children's learning environment as well as being an active group of fishers requires their integration into the mainstream fisheries management and policy. Affirmative policy to support women's education and technical training in shore-based activities such as improvement in post-harvest handling, processing and marketing is also essential to optimize benefits from the fishery. This helps in the empowerment of women who are then better able to support their families and assist in the welfare and upbringing of their children. Access to information and resources can help ease physical burden on women's labour and time, therefore allows more quality time with children. Addressing gender issues in coastal fisheries indeed serves multiple-objectives such as food security, betterment of community health, household economic independence, and primary educators of children, pillars of art and culture preservation, environmental stewards and local resource managers that promote good marine citizenship.

9. Conclusion

The multiple roles of women in households need to be recognized and in particular the role played by women in the upbringing of children in communities. Women in the Pacific Islands and indeed in many other coastal developing countries are culturally responsible to take charge of the general welfare of their children and in instilling the desired moral and social values. Spending longer periods of time with mothers and female household members implicitly influences the environment in which children grow up. For example, spending time together fishing, selling marine products or processing creates a learning environment for these children. Skills and techniques of resource use and management are thus acquired together with the attitudes and belief systems. While these may be later reshaped through formal education and training, but the values and attitude learnt in early life nevertheless play critical role towards character development including ethical environmental considerations such as the practice of responsible fisheries.

Government agencies, NGOs and community outreach programmes in coastal developing countries should have a greater focus on addressing gender issues and women's concerns in the fisheries sector amongst other strategies that can indirectly facilitate the implementation of the FAO Code of Conduct for Responsible Fisheries. Women not only represent an important stakeholder group of resources users and handlers of marine products but they also interact with children very closely who represent the future generation of resource users. Women's multiple roles within households place them in key position to influence their children's attitude and value systems towards practicing responsible fisheries. In addition, women's traditional knowledge on the environment must be protected and complemented by scientific knowledge and information to further strengthen sustainable resource use and management practices. Therefore gender mainstreaming is not only necessary from a human rights perspective but also as a means to more practically address sustainable fisheries management and development concerns in coastal areas.

10. Way forward

While the above paper has highlighted several interconnected issues as a way to improve fisheries management through empowering women, there is however a need for a more comprehensive articulation through inter-disciplinary research in all aspects of this study so as to identify the possible pathways to integrate this strategy into fisheries policy formulation and implementation, marine environmental education and in addressing gender issues.

In the short-term, to supplement local training, resource materials and curriculum methods on marine education and awareness used elsewhere such as in Japan could be used as references or adapted for community training in the coastal areas where formal training in marine education does not start until later years.

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