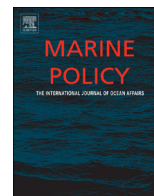




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Recognizing the role of women in supporting marine stewardship in the Pacific Islands



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ARTICLE INFO

Article history:

Received 4 August 2014

Received in revised form

29 April 2015

Accepted 29 April 2015

Available online 20 May 2015

Keywords:

Responsible fisheries

Women in fisheries

Marine stewardship

Pacific Island coastal fisheries

Women and children in fisheries

ABSTRACT

The study analyzes support for fisheries management through the adoption of ethical principles that can initiate change in individual behaviour, attitude and actions implicit in the current policies for achieving sustainable fisheries. It highlights that women can potentially play important roles in many Pacific Island coastal communities through their multiple responsibilities, and should therefore, be recognized as key agents for such change. Using the case of four villages in Fiji, the study demonstrates the close interaction between women and children. As primary caregivers and fishers, women are instrumental in instilling the desired social and moral values in children at a young age, the critical years in the development of children's cultural and value systems. Women would influence children to follow fishing practices that are sustainable and support the protection of the marine environment while at the same time, nurture the culture of marine stewardship and marine citizenship. This, in turn, could encourage individual's voluntary action that can simultaneously serve multiple societal objectives including the reduction in fisheries management costs. Recognizing women's direct and indirect role in the fisheries sector and empowering them in this regard is, however a necessary condition.

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1. Introduction

The high consumption of fish by many Pacific Island countries underscores the vital contribution of fish for food security of the Pacific Islanders [1,2]. Fish provides between 50% and 90% of animal protein with intake in rural areas and between 40% and 80% in urban centres [3]. Most protein in rural areas comes from subsistence production, where the apparent per capita consumption often exceeds 30 kg per year [1] compared to the global average of 17 kg [4]. In many Pacific Island countries, women are the major contributors of subsistence food production [5,6]. Ensuring sustainability and management of coastal fisheries is critical for sustenance and maintenance of coastal livelihoods.

The contribution of women to food security and local economies is only being realized as a policy option in the last two decades as development focus shifts towards maintaining sustainable livelihoods in rural developing countries. There are several studies that highlight the important role women play in the fisheries sector, including but not limited to Williams [7], Chao et al. [8], Choo et al. [9], Bennett [10], Kronen and Vunisea [11], Zhao et al. [12], and Harper et al. [13]. These studies also indicate

that women's contributions are often underestimated and not fully acknowledged. Recognizing and quantifying the role of women in fisheries can have profound implications for fisheries management, poverty alleviation and development policy [13]. On the other hand, it is commonly known that good fisheries management outcomes have a strong moral and ethical component because fisheries management is more about management of people's behaviour and actions as embodied in the term "responsible fisheries". Fisheries managers must understand the motivation and incentives for fishers to identify how they may respond to management measures and regulations [14]. Hilborn [14] argues that the key to success in fisheries lies in understanding human behaviour and incentives which, among other things, are influenced by social, cultural and environmental factors. Environmental policy making on the other hand, is strongly influenced by the norms and value systems held by decision makers [15,16].

This study, therefore, aims to highlight the role of women in the fisheries sector by focusing on their formal and informal work to demonstrate that women not only support food security and household economy but they can simultaneously be the primary educators on marine awareness because they also have a significant influence on the social development of their children. The objectives of the paper are first; to show that as the primary caregivers of young children during the critical stages of their social and moral development, women can be instrumental in

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instilling the desired values that support sustainable fishing practices and the protection of the marine environment. Second, to map the learning environment for responsible fisheries for children as they grow up, and to situate the role of women within this to show the factors that may either support or impede this process, which require policy action.

The paper begins with literature review on the varied roles of women in the fisheries sector and their contribution to food security and household economy while also pointing to the general lack of recognition of women's indirect and supporting roles in households because, the unpaid nature of their work is seen as less important, and therefore, poorly understood. The paper then draws attention to the close relationship between women and children in the daily conduct of their livelihood strategies which indirectly creates the children's early learning environment based on real life experiences. Arguments are drawn from social and educational studies as a sub-theme to show this relationship. Results from case study of four coastal villages in Fiji are then summarized. The discussion demonstrates that women and children spent more time together, as a result children are both actively and passively learning from their mothers and female members of the household. The paper argues that capitalizing on this close relationship can be one of the avenues to help nurture children towards practising responsible fisheries by disseminating information and instilling the appropriate values at an early age which in turn can help support the needed voluntary action as responsible citizens. The role of women in the broader learning environment for children in the Pacific Islands is conceptualized to show that the knowledge and skills and access to resources for women in this respect are influenced by the social customs and the type of gender policies; which in part shapes women's world view, therefore, impinges on how and what they may teach children. The paper therefore, highlights the need to recognize women's multiple roles including informal work and to mainstream this within community fisheries management. Finally, the paper concludes with recommendations that call for inclusion of women in village decision making and for community projects to facilitate access to necessary resources and training for women. This in turn can enable them to effectively fulfil their role in moulding children towards increasing consciousness on marine stewardship.

2. Women in fisheries

The role of women was brought to the development agenda following the UN Decade for Women (1975–1985) that shed light on the inequalities and difficulties faced by women, despite their abilities to support households and in economic development. This was further elaborated during the UN Conference on Environment and Development in 1992, which focused on sustainable development as well as women (chapter 17 and chapter 24 of Agenda 21). It was again further elaborated in 2002 at the Earth Summit in Johannesburg, which placed high priority on poverty alleviation and enhancing food security. This has led to greater focus on small-scale coastal fisheries and aquaculture where a large majority of the workers are women. Research and articles published by the International Collective in Support of Fishworkers (ICSF), the Secretariat of the Pacific Community's (SPC) Women in Fisheries Bulletin, the Global Symposium on Gender and Fisheries organized by the Asian Fisheries Society and the World Fish Center, and the FAO supported Rural Fisheries Livelihoods Programmes (RFLP) in Asia and Africa provide several case studies on the varied roles of women in the fisheries sector and the significance of their contribution to the local economy and households. For example, some of the case studies of women's fishing in the Pacific reported in the SPC Women in

Fisheries Information Bulletin include Kronen [17,18], Molea and Vuki [19], and Verebalavu [20]. Similarly, a number of research studies on women's fishing in Asia can be found in the proceedings of the global symposium on gender and fisheries, such as: Chao et al. [8], Halim et al. [21], Khader et al. [22], Kibria and Mowla [23], Chao et al. [24] and Lentisco [25].

Scanning through the reports of the above institutions such as ICSF and SPC WIF Bulletins and the gender and fisheries symposiums, illustrations of both the struggles in getting women's work to be recognized, and the progressive changes that are being brought about by projects that have addressed gender issues are presented. Largely, women are employed in shore-based processing in Taiwan where they have shown great creativity in developing new products, ranging from high-end pearl and coral items to convenience foods [24]. Women's participation in fisheries education and research varies by states and are linked to female literacy and social status in India [26]. In developed countries, such as Europe and North America, women are more active in shore-based processing [13]. Women have a substantial but undervalued role in the hidden workforce as unpaid support to the fishing enterprises [13].

Whether it is women's participation in fisheries in Africa [10] or Asia and the Pacific or Europe, similar sentiments have been expressed throughout, requiring much greater effort to move beyond descriptions of gender dimensions of fisheries to more rigorous analyses of identifying the underlying reasons for constraints, as well as recognizing their potential direct and indirect contributions. Evaluating their economic contribution has been emphasized [13,27] but recognizing the significance of their supporting roles has not been fully appreciated since these are seen as subordinate tasks that help in facilitating the main fisheries activities such as fishing, marketing or in direct managerial or administrative tasks. The role of women in households as caregivers and mothers is not at all factored into how they may influence their children's perceptions about the marine environment and its use. It is seen that women and children actively participate in subsistence fishery in many coastal communities [5]. Young children of both sexes often accompany their mothers on fishing expeditions and, contribute substantially to the total catch [5].

The small-scale coastal fisheries in the Pacific islands consist of subsistence, artisanal-commercial and aquaculture. Women and children are the most active players in the subsistence sector, fish close to their homes using simple methods and techniques to provide for their daily food needs. They are more active regular suppliers of fish and fishery products compared to men folk who often fish from boats, which are dependent on the vagaries of weather and availability of inputs, such as ice and fuel [5]. In the artisanal-commercial sector, women are in post-harvest activities of marketing and processing to support household livelihoods while men mostly go out to catch fish and attend to gardens. Even in the aquaculture operations, women carry out the daily pond or farm maintenance work to ensure operations are run smoothly, although training and technical support to them may not be forthcoming. In the industrial tuna fisheries of the region, women make up the majority of labour force in shore-based processing activities [28].

On the other hand, in most Pacific Islands coastal fisheries, community-based resource management systems have provided a means to address marine resource management problems as part of collective decision making; see for example: Govan [29], Govan and Meo [30], Veitayaki [31] and Hviding [32]. The reliance has been on community structures and partnerships between government agencies, community leaders and NGOs, but one where women's interests and concerns are not included as part of the decision making process [33–35], even though they are actively involved in the fisheries sector.

Women are mostly in subordinate positions in society, however, and have either limited access to resources or are culturally disadvantaged to adequately and actively participate in decision

making [36]. In some communities women also have vast traditional knowledge and skills that remain untapped while in some communities, they require access to basic scientific information but are often denied due to cultural and institutional constraints.

2.1. Recognizing informal work

In many Pacific Islands, custom, culture and religion have a strong influence on people's behaviour and value systems. The practice of traditional resource management systems; the chiefly system of leadership and placing the church as the central organizing unit in the villages are a few examples of such practices. Moral suasion or social incentive as a policy tool is often applied in businesses to motivate entities to adhere to specific procedures to avoid public shaming. The principles can easily be extended to other areas, such as in the marine sector in the Pacific Islands because social and cultural values remain important. In effect, if people do the right thing as responsible fishers, such as those prescribed under the "FAO Code of Conduct for Responsible Fisheries", management cost, resulting from reduced monitoring, control and surveillance and its enforcement can be reduced. Influencing outcomes based on ethical and moral reasons as a strategy, motivates individuals to adhere to the specified policies and procedures.

Fishers can take certain actions or behave out of concern for their communities and society through their moral obligation as "stewards" of the marine environment. In this respect, 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 behaviour can be somewhat predicted. For example, an early understanding on ecosystem well-being for maintenance of life support systems and its vulnerabilities in small islands context can motivate children to actively partake in marine conservation work through a moral and ethical lens.

Children learn best when they contribute to real-life family activities where the purpose and significance of such activities is clearly understood [37]. In addition, social learning theorists demonstrate how children learn and copy adults' behaviour by observing them [38,39]. Children learn to imitate, follow instructions and gradually acquire analytical skills as they begin school. It is easier to mould children when they are young, than 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 [40]: 55).

One can argue that Pacific Island children in coastal areas can be grounded in their environmental values at an early age since part of their learning experience is integrated into their normal routine of life. They spend considerable time at the beach or on the reefs and mud flats, either playing or directly participating in fishing and related activities with their mothers such as collecting shellfish and other marine products and fishing. Chapman [5] states there is very little distinction made by observers of women's fishing between the catches of the women themselves and those of the young children accompanying them. Fishing skills and knowledge about species or the ethno-biology is passively acquired from the mothers.

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 [28]. A common scene at the municipal markets or road side stalls is that of women who are often accompanied by their children, either actively assisting them in selling or are there 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 Pacific Island countries, women play a vital role in food production and preparation and are, therefore, recognized as the household nutritional mediators [5,41]. Women are also responsible for much of the food processing and preservation. In some coastal communities, women over time have accumulated traditional knowledge on fishing practices, which enables them to adapt with changing production or consumption patterns, such as adjusting to seasonal patterns or knowing exactly where to look for their target species at different times or habitats [42]. Knowledge gained through long periods of experiences is more reliable in terms of coping with variability of climate and market conditions.

3. Methodology

Management of coastal resources and space must be integrated because of the interconnectedness of ecosystems that make up the coastal areas. It can be thought as a system of relationships among people who live and use, or otherwise are concerned (beliefs and behaviour) with the environment; managers and policy makers whose decisions and actions affect the behaviour of coastal people and the scientific community; Natural and social scientists who study environments and human behaviour [43]. Effective management of coastal areas is thus all inclusive of activities, stakeholders and environments. In this light, the sustainable development agenda requires the integration of economy and environment with gender as women's activities have often been seen as subordinate, even though they may make up at least half the national or local population. In the context of coastal fisheries, a gender approach fits well with ecosystem-based management and other approaches that intentionally incorporate social and ecological understanding and work at multiple scales [27]. To this end, this study applies an integrative approach by combining gender perspective, natural resource policy and educational development to address fisheries management problems. Data from households in four villages in Fiji was obtained through observations and using semi-structured questionnaires. Two sets of questionnaires were used; one for the entire village to determine the status of the village fishery and one for women to gauge their level of involvement in fishing activities, level of marine awareness, interaction with children and their role as mothers and caregivers in the households. Questions were designed to get an insight into use of time in the various chores, types of fishing, and engagement in the household. These villages were chosen as part of a broader project on socio-economic assessment of village fisheries that was carried out in the month of May from 2010 to 2013 by the School of Marine Studies of the University of the South Pacific. This gave the opportunity to have a closer examination of women's work and responsibilities in the household and tasks performed as part of the village fishery and household.

In addition, experiential knowledge in project work in coastal community fisheries and literature review are used to support the arguments and help develop the conceptual framework of the learning environment of children in the Pacific Island coastal areas. These case studies, although limited in geography are nevertheless, illustrative of the typical role of women and female members of the family in children's lives by way of spending more time interacting and engaging in livelihood activities and indirectly defining the informal learning environment that has early influence on children's personal development.

4. Results

Four coastal fishing villages are chosen for the primary survey; two villages are located on the largest island of Viti Levu in Fiji that

are accessible by road while two other villages are located on small islands off the coast of Viti Levu and are accessible by punts. All four villages are typically known as fishing villages where the major source of food and/ or income is derived from fisheries resources. Most households fish either regularly or occasionally in these villages with the exception of a few with only elderly people.

4.1. Coastal fishing village activities in Fiji

The village fishing and household activities are briefly summarized in Table 1 by gender. The major fishing grounds for women in all four villages is closer to shore areas and they mostly rely on gleaning of invertebrates and use of handlines and hand nets in shallow waters to catch fin fish, compared to men who do handlining mostly from boats in deeper waters and do underwater diving.

The household activities also show that male members either work outside of the village in wage employment, or do farming and agriculture or engage in village community activities while women engage in domestic duties and work closer to their homes, although some also engage in outside casual work and, as is the case in one village they also market their marine products.

Summarized results from surveys of about 30% of the households in each village chosen at random for interview is presented (see: Table 2). All four villages are in varying distance from the main urban market but share common practice where women are active in coastal fishing. In Nataliera village, women fish for subsistence but may also sell part of their catch at the Tailavu or Nausori market because a bus service operates from the village to these urban centres and it takes about one hour of travel time. Serua Village is located on a small island off Viti Levu and about

two hours from Suva, the capital city, while Qoma village is also located on a small island off the coast of Viti Levu where women mostly fish for subsistence. Women from Serua village do not sell their catch because of the long distance to travel to the market by boat and by road. Instead, they make internal sales within the village. Kalokolevu Village is about 30 min by road to the urban centre. The village has access to other sources of income, such as work in the city.

The study also found that nearshore resources are generally over-exploited and, therefore, only small group of women, about 20% are fishing regularly for subsistence needs. In Kalokolevu Village, one woman indicated that the husband looked after the child when she went collecting shell fish since the husband was unemployed and there was no other family member present. In the case of Nataliera and Serua Villages, the grandmother, aunt or sister looked after the small children while the mother went fishing. In Nataliera village, a group of women also organized themselves on a rotational basis to go fishing and market their products by taking turns to mind babies and toddlers for the rest of the group. In Qoma village, mothers with babies and toddlers went fishing only occasionally but most other women went fishing on average between three to five days in a week. In all four villages children above the age of four years often accompany their mothers for subsistence food gathering (see: Table 2). In Nataliera, 75% of women who sold their products had children accompany them to the market.

From observations in all four villages, children of ages 4 to 10 years were seen under the supervision of their female family members, whether they were playing close by, accompanying them as under their care or directly helping in tasks, such as

Table 1
Typical activity by gender in coastal fishing villages in Fiji.

	Nataliera village	Serua village	Kalokolevu village	Qoma village
No of households in village (P)	67	50	40	38
Total estimated village population	300	180	250	200
Typical fisheries related and household activities by gender				
Major fishing grounds				
Males	Reef, outer reef, oceanic	Reef, outer reef, oceanic	Lagoon, reef passage, outer reef	Lagoon, reef, outer reef, oceanic
Females	Reef, mud flats, mangrove flat, river	Mud flats, lagoon, reef	Reef flat, mangrove swamps, lagoon	Lagoon, mud flats, mangrove flats, reef
Major fishing methods				
Males	Handlining, diving with spear guns/scuba gear, motorised punts	Handlining, diving with spear guns, gillnet, non-motorised/motorized punts	Handlining, diving with spear guns, motorised punts	Handlining, day & night diving with spear guns, under-water torches, use gill nets, cast nets, motorised/non-motorised punts
Females	Gleaning, hand nets, handline, hand spear/digging rod	Gleaning, handline, diving with goggles	Gleaning, handline with and without canoes, diving with goggles	Gleaning, handline, hand nets, digging rod, fish fence
Major household and village tasks				
Males	Construction & maintenance; gardening, farming; fishing using boats; attend village meetings; wage labour—outside village; wage labour at tourist resort	Construction & maintenance gardening; fishing from boats; wage labour outside village; village council work, village meetings; church activities	Construction & maintenance gardening, labour outside village—Suva, Lami; labour at prison; fishing from boats; attend village meetings/occasional child minding	Construction & maintenance; gardening, farming; church activities—fundraising; wage labour outside village; fishing from boats; attend village meetings
Females	Household tasks—cleaning, washing, cooking; fishing/gleaning/marketing; gardening, weeding; handicraft; church activities—fundraising, choir; Caregivers—children, sick & old; occasional casual work at resort & outside village	Household tasks—cleaning, washing, cooking; fishing/gleaning; gardening; handicraft; church activities—fundraising, choir; Caregivers—children, sick & old	Household tasks—cleaning, washing, cooking; fishing/gleaning; handicraft; church activities—fundraising; Caregivers—children, sick & old; wage labour outside village in urban area	Household tasks—cleaning, washing, cooking; fishing/gleaning/net repair; gardening, weeding; handicraft; church activities—fundraising, choir; Caregivers—children, sick & old; occasional casual work outside the village

Note: Household consists of (*i tokatoka* or extended families). Activities reported by 50% or more households are considered as typical of each village.

Table 2
Women and children fisheries interactions in Fijian villages.

Women and children interaction	Nataliera village	Serua village	Kalokolevu village	Qoma village
HH—households n—Sample interviewed	No of HHs =67 n=20 HHs	No of HHs =50 n=15 HHs	No of HHs=40 n=12 HHs	No of HHs=38 n=20 HHs
Caregiver in the absence of mother	Sister, grandmother, aunt	Sister, grandmother, aunt	Sister, grandmother, aunt, father	Sister, grandmother, aunt
Average time at sea: H per day/days per week	3–5 h/3–4 days	2–4 h/3–5 days	2–3 h/2–3 days	2–4 h/3–5 days
Frequency of children accompany fishing trip: > 50% of trips	85%	80%	65%	80%
% Women fishers demonstrate skills to children in collecting and fishing	100%	100%	100%	100%
Children accompany marketing of commodity: % response	Occasionally to market—75% Subsistence consumption—25%	Sale of catch within village—60% internal marketing Subsistence consumption—40%	No marketing Subsistence consumption—100%	No marketing Subsistence consumption—100%

cleaning the household surroundings, fishing, cooking, and fetching water, weaving, or engaged in church activities.

The tasks performed by men (see: Table 2) also meant that either they travelled away from home to work, attended their farms and gardens located away from village dwellings or they engaged themselves in tasks as part of a village group activity, such as construction work, which posed risks so children could not be kept within close vicinity. Many of the community activities are also planned at village meetings, which are conducted in a formal to semi-formal manner, such as with a *yaqona* (kava) ceremony, where often younger children are kept away because of noise and distraction. However, teenage boys often join this group of men to provide a helping hand or as apprentices.

Serua Village is historically known as a chiefly village while in Qoma, the chiefly system of village control is strictly practised. In both these villages, meetings are formally conducted where women only sit at the back quietly as observers whereas in Nataliera and Kalokolevu, the practice is similar in that women can only observe but rules are not as stringent for women if they want to leave the meeting. Another common observation is all four villages was that on normal days in the evenings when there are no village meetings, after dinner and devotion, men usually retrieve to the village hall to casually drink kava and socialize recalling the day's events, play cards, listen to radio and so on as part of their relaxation while women are mostly tasked to clean up, put children to sleep, prepare essentials for next morning's breakfast and day's activities. In addition, some also help children with school homework if they can.

5. Discussion

This section explains how individual decisions affect fisheries management and some of the factors that shape this decision process including education, awareness and social and cultural environments in which the individual grows up. Literature review and the case studies both demonstrate that women indirectly have a significant role in this because of their close association with children. As a result, two themes emerge from the study: One that looks at recognizing the significance of the multiple roles of women in fishing communities and the other, on how these roles can in part facilitate the development of responsible fisheries through an ethical dimension, which in turn can support good marine stewardship and citizenship.

5.1. Division of labour and multiple tasks

The case studies although limited in geographical coverage but supported by literature, show that women fish closer to the

shores areas that include reef flats, lagoons, mangrove and mudflats while men also fish in reef areas, outer reef and in oceanic waters using boats. From Table 1, the fishing gears used by men range from simple handlining to under-water diving while women also use handline but they mostly glean at low tide. This shows that the fishing domain of men and women are not necessarily the same. Women's fishing grounds are generally closer to home because of various reasons. These may include such things as; subsistence food gathering, having limited time at their disposal, the need to quickly respond to any household tasks such as cooking, looking after the sick and old, attending to small children, food processing, making handicraft or attending church obligations such as choir practice and fund raising. When considering the typical tasks of men in the villages, not only they are situated further away from home but they also conduct activities that require higher degree of technical skills and risks, like diving and construction work or engage in formal employment away from the village.

Given the type of work for men and women and from results (see: Table 2), women or female members become the primary caregivers of children in these situations because of the nature of their work. Children spend more of their time with their mothers, sisters, aunts and grandmothers, i.e. female members of the household. Their learning revolves around observations on what the mother, grandmother, aunt or sister does. Whether it is cooking, fishing, gardening, weaving, cleaning, reading, and attending village functions, the ecological and social learning environment for them is created where they also acquire some of their key fundamental value and belief systems. From interviews and results in Table 2 shows that children actively accompanied their mothers in collecting shell fish and fishing in all the four villages. A high percentage of children accompany their mothers and female members on fishing trips (see: Table 2). Earlier studies in the Pacific have also documented women and children fishing together [44–46,5]: 268. All women interviewed indicated that they have shown the techniques of fishing and shell collection to their children. Cleaning the compound, feeding pigs, and attending to nearby gardens were also the primary responsibility of women in all the villages except cutting lawn grass. For illustrative purposes, as was witnessed in one village: The mother dumped the kitchen waste into the ocean; the child may do the same until he or she learns that it causes pollution. The so called 'force of habit' may be hard to break until the child is convinced of benefits to him or her of doing otherwise. Likewise, if a mother practises good hygiene and responsible fishing, her child is likely to follow. The literacy level of the mother, her knowledge, skills and experiences directly have bearing on the child's socialization, moral, ethical and cultural development.

5.2. Conceptualising responsible fisheries

In all four villages, women were also involved in religious teaching of younger children with basic human values, obedience and life skills as part of Sunday school. McIlgorm [47] states that to be a good steward requires the transformation of character. In addition, by looking at the marine practitioners, McKinley and Fletcher [48] 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 behavioural and lifestyle choices made by individuals. The role of individuals in marine conservation and management is, therefore, important and can contribute to improved marine governance through marine citizenship [48]. Amongst the 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 [48].

The study suggests that environmental education can provide long-term solution to environmental issues through changed individual behaviour and attitude. Personal attitude to life, behaviour, and responsibility will shape how the knowledge is used within the constraints of personal capacity to act [49]. This has important implications for marine citizenship, as it implies that raising awareness and understanding of marine issues must be supported by encouraging a value shift towards taking personal responsibility for the marine environment [49]. On the other hand, educational theories state that much of the influences that shape a person's character and personality are learnt early in life [50]. Learning is a process of acquiring knowledge, desired behaviour, skills, attitude and concerns along with the conception of reality [46]. While the early years in school are important learning environments for the child where much of the social and moral values are developed in a more formal way [51,52]; 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 [38].

As the four case studies show, 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 needed for good marine stewardship while, at the same time up-skilling themselves. Indeed, the first hand childhood experience makes a lasting impression that should be reinforced and complemented by the formal training children get in school in later years. 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 multiple roles should be recognized and capitalised as part of informal training in marine awareness and education by NGOs and government outreach programmes, since access to pre-school facilities in many rural areas are also limited. The process of raising marine consciousness is important for island communities surrounded by the ocean, even though this may require a paradigm shift because the process of social change is slow and results are generally visible much later.

Synthesizing the key points of the study helps to frame the broader learning environment for children in coastal areas in the Pacific. As shown through the case studies, the informal environment is created through community influence, which is largely shaped by what women may informally teach. Understanding the factors that influence this role of women and its interconnections to marine stewardship and responsible fisheries is conceptualised in Fig. 1.

The framework in Fig. 1 shows the dependence of children on women who, in turn are influenced by their social values and customs, as well as gender related policy that either support or impede how well they may be placed to create the learning environment for children. The bolder arrow indicates the dominance of socio-cultural factors in Pacific Island communities. Individual personality development eventually will have a transformative impact on the type and character of marine stewardship practised by a fisher while professional development can support moulding of marine citizenship as a responsible fisheries manager. Taking greater responsibility by individuals, whether as a fisher or a fisheries manager, will not only be beneficial from a societal perspective of achieving ecological sustainability and social equity but is also economically sound because of its eventual reduction in management and transaction costs inherent in some of the current conventional management practices.

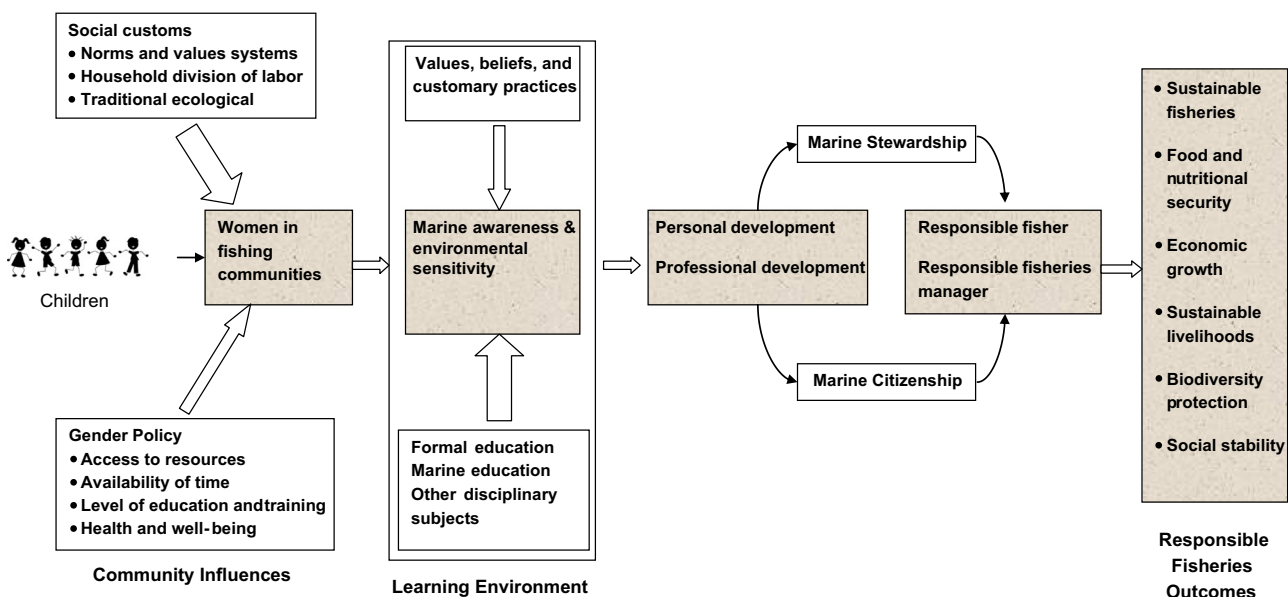


Fig. 1. Role of women in the learning environment on responsible fisheries for children in the Pacific Islands.

Given the important role women can play in building the foundations for responsible fisheries, 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 stewardship and 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 gender 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 simultaneously helps in the empowerment of women who are then better placed to support their families and assist in the welfare and upbringing of their children through improved incomes and knowledge.

6. Conclusion

The study draws attention to the need to recognize multiple roles of women in households and, in particular, their informal role in nurturing of children. 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 to instill 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 or processing creates a passive learning environment for these children. Skills and techniques on resource use and management are thus acquired together with the formulation of attitudes and belief systems. While these may be later reshaped through formal education and training, the values and attitudes learnt in early life nevertheless play critical roles towards character development including ethical environmental considerations, such as the practice of responsible fisheries.

The paper suggests that fisheries departments, NGOs, religious groups and other community outreach programmes should make concerted efforts to include women in the implementation of coastal fisheries projects and to incorporate strategies that promote good environmental values and ethics. The current ongoing programmes on community based resource management systems must ensure that community decision making is inclusive of women because they not only represent an important stakeholder group of resource users 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 positions to influence their children's attitudes and value systems towards practicing responsible fisheries.

Acknowledgment

The author presented an earlier short version of this paper at the International Symposium held at the International Institute for Okinawan Studies at the University of Ryukyus on New Island Studies: Okinawa as an Academic Node Connecting Japan, East Asia and Oceania on 25 January 2013 and published in Japanese as: Ram-Bidesi, V. 2014 Taiheiyo Toshō niokeru Chiiki Shutaigata no Gyogyō Kanri to Sono Igi in: Y. Fujita, K. Toguchi & S. Karimata. Toshōchiiki no Aratana Tenbou: Shizen Bunka Shakai no Ugoutai toshitenō Shimajima. Fukuokashi, Ippanzaidanhoujinn Kyushu Daigaku Shuppankai: 99–123.

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