

Mapping Gendered Spaces for Sandfish Resource Management in Guimaras, Philippines

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Women and men utilize spaces differently and have differential access to resources because of norms and values attached to certain places. In fisheries, the contributions of women are either overlooked or considered less valuable compared to those of men. Women often assume more traditional and supporting roles and attach lesser economic values to their activities. These gender dimensions were analyzed as part of the project on the sea ranching of sandfish (*Holothuria scabra*) in the Province of Guimaras, Philippines. The project was initiated by the SEAFDEC Aquaculture Department (AQD) and supported by the Australian Centre for International Agricultural Research (ACIAR) in 2015-2017 with a two-fold aim of enhancing the population of *H. scabra* stocks while providing a supplemental livelihood to the coastal communities reliant on fishery resources. The study highlighted the importance of analyzing the roles of women and men in the fisheries sector for the management of sandfish and other fishery resources in the intertidal zone.

The gender spatial analysis, on one hand, was intended for understanding the fishing activities of the women and men and their involvement in sandfish collection and trade. This information would serve as essential references for resource management planning.

Sandfish juvenile production for sea ranching

Sea cucumbers are highly-priced sea food commodity especially in the Chinese market but its high demand caused the rapid decline of wild populations due to overfishing worldwide (Purcell *et al.*, 2013; Anderson *et al.*, 2011). The sandfish or *H. scabra* is among the most preferred and depleted tropical sea cucumber species, particularly in the Philippines (Choo, 2008). Fortunately, the technology for hatchery production is established and the responsible sea ranching of this species has shown good prospects in enhancing populations in coastal areas (Juinio-Meñez *et al.*, 2017).

A gender-oriented spatial analysis formed part of the Sandfish (*Holothuria scabra*) Sea Ranching Project at Pandaraonan, Nueva Valencia, Guimaras, Philippines (Fig. 1) implemented in 2015-2017 by SEAFDEC Aquaculture Department (AQD) in collaboration with the Australian Centre for International Agricultural Research (ACIAR). The project was based on the concept of releasing hatchery-bred juveniles, produced from locally-sourced adults, into the wild to be harvested upon reaching the desired size (Leber, 2013), and is mainly aimed at enhancing the local population of *H. scabra* for ecological enhancement and to support the livelihoods of the communities.



Fig 2. The sea cucumber hatchery at SEAFDEC Aquaculture Department in Tigbauan, Iloilo, Philippines

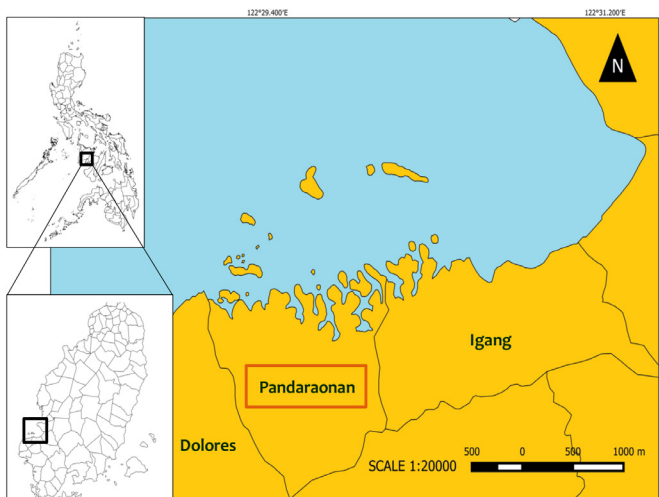


Fig. 1. The Sandfish Sea Ranching Project site in Pandaraonan, Nueva Valencia in Guimaras, Philippines



Fig 3. Sea cucumber nurseries at the Igang Marine Station of SEAFDEC/AQD at Nueva Valencia, Guimaras, Philippines

Sandfish juveniles for sea ranching were produced at the SEAFDEC/AQD sea cucumber hatchery (Fig. 2) using only locally sourced wild sandfish breeders from Pandaraonan and adjacent coasts for spawning. Hatchery rearing lasted up to 45 days, after which the juveniles at early stage of development were transferred to sea-based floating nurseries at the Igang Marine Station (IMS) of SEAFDEC/AQD (Fig. 3) before they were stocked at the adjacent sea ranch site in Padaraonan.

Understanding the gendered space

Space can be regarded as both absolute (*e.g.* measured in units of distance) and conceptual (*e.g.* measured in terms of the values and perceptions attached to a location) in the sense that the physical components of an area are highly interconnected with the non-tangible elements that operates therein. The use of space is influenced by the relations between women and men and the cultural expectations of femininity and masculinity (Knox and Marston, 1998). The mobility of women and men is determined by the norms and values that are projected into places. Building on this, gendered spaces pertain to a place where gender expressions are either permitted or forbidden.

This spatial emphasis allows the display of power and control by one gender to the other and maintains the societal codes of modesty and honor (Fenster, 1999). In coastal communities, women and men have differential access to the fishery resources because of cultural factors that assign limits to each gender. It should be noted, however, that the women across cultures are involved in most aspects of fisheries even

though they are not formally recognized in statistics (Zhao *et al.*, 2013). The women in the Philippines accounted for 10% of the fishing population (Philippine Statistics Authority, 2016) which may not be a reflection of the actual number of women engaged in fisheries as the figure did not take into account the informal roles the women played in capture and post-harvest fisheries. Siason (2001), for instance, reported that the women were highly involved in marine fisheries production, particularly in net mending, processing, and marketing of catch. These activities were done in addition to the “reproductive roles” of women, *e.g.* household chores.

As part of the effort in bridging the knowledge gap on the involvement of women and men in fisheries, a socio-economic assessment and spatial analysis of the areas utilized by women and men in Pandaraonan were conducted. This initiative aimed to examine the gender differences in fishing activities, the involvement of the women and men in sandfish *H. scabra* collection and trade, and to determine how these factors affect the willingness of the community in engaging in the sandfish sea ranching project. The assessment was deemed necessary in order to ensure that the concerns of the stakeholders were taken into account, particularly in resource management and spatial planning.

Initiating community engagement

Community engagement was the crucial part of the establishment of the sea ranching site to ensure that the communities were involved in each decision-making process – from planning, site selection, sea ranch operation, security,

to monitoring of stocks. Two major activities were conducted to obtain information related to the current status of the community and the use of the coastal zone. One of which was a series of focus group discussions (FGDs) and baseline surveys to collect information on the socio-economic status of the households who were involved in fishing or fishing-related activities (Fig. 4). The FGDs were conducted with 60 households and surveys were done using a semi-structured questionnaire that contained questions on the households' socio-demographic characteristics, knowledge of the coastal and marine resources, and awareness of the *H. scabra* sea ranching project. This group of people was purposively selected because they were the ones who were highly involved in the collection and trade of sandfish.



Fig. 4. Focus group discussions and household surveys with the community in Pandaraonan, Nueva Valencia in Guimaras, Philippines



Fig. 5. Mapping workshops to identify the areas utilized by women and men in the coastal zones of Pandaraonan, Nueva Valencia in Guimaras, Philippines



Alongside the discussions and surveys, a series of workshops was also done to map out the areas being utilized by the women and men and to understand their involvement in fisheries (Fig. 5). In the mapping exercises, the women and men were asked to indicate in a map the areas that they use for fishing, gleaning, and other livelihood activities such as farming and charcoal making.

Among the different livelihoods indicated in the map, the workshop focused on fishing and gleaning as these were the two major livelihoods pertinent to the sandfish sea ranching. Fishing and gleaning were conducted within the same area where the sea ranch is located and they were the groups of people who were most involved in the collection and trade of *H. scabra*.

Women: The invisible gender?

As shown in Table 1, all of the men respondents identified fishing as their main source of income whereas 27% of the women said that they were earning from non-fishing activities. Most of both genders have secondary sources of income ranging from casual labor, operation of small business, and fishing-related activities such as gleaning. The income between women and men were significantly different, with men earning 36% higher than the women. It is interesting to note that during the interview, the wives attached a little value to their contribution to their husbands' fishing activities. Most of the women considered their involvement in fishing as an extension of their household responsibilities. The wives

Table 1. Socio-economic profile of women and men in Pandaraonan, Nueva Valencia, Guimaras, Philippines

	Women (n=30)	Men (n=30)
Primary sources of income		
Fishing	73%	100%
Non-fishing (e.g. farming, charcoal making)	27%	0%
Secondary sources of income		
Casual labor	39%	86%
Small business ventures	22%	9%
Fishing-related activities (e.g. gleaning)	39%	5%
Average income per month (US\$)		
Primary	41.88	59.86
Secondary	31.40	55.33
Total (as reported)*	73.28	115.19
Adjusted income, accounting women's involvement in fishing	62.07	77.96

* Significant at 0.05 level
 US\$ 1= PHP 46.29 (exchange rate in April 2016)

who sell the catch of their husbands, for instance, would report the income obtained from the activity as solely the earnings of their husbands and not as a joint wife-husband income. The men, however, were particular at identifying their fishing activities, including the vending of their catch, as exclusively their own income. In order to find a gender balance in the earnings of the women and men, each of their responses were carefully examined and an estimated value were deducted from the husband's income if the wife signified an involvement in a particular aspect of fishing. For instance, if a wife mentioned that she vends the catch, the earnings are divided between the wife and the husband. In doing this, the statistical differences in the reported income of the women and men were negated.

In terms of the respondents' fishery profile, there were no significant gender differences in terms of average fishing experience and the reported average catch per trip. However,

Table 2. Fishery profile of women and men in Pandaraonan, Nueva Valencia, Guimaras, Philippines

	Women (n=30)	Men (n=30)
Average no. of years spent fishing	26 (±17)	33 (±14)
Average fishing trip duration (no. of hours)*	3 (±2)	5 (±3)
Average catch per trip (kg)	2.6 (±2)	3.5 (±3)
Membership in fisheries organization*	57%	90%
Membership duration (average no. of years)*	1.1 (±2)	5.3 (±8)

*Significant at 0.05 level
 Numbers in parenthesis () are Standard Deviation

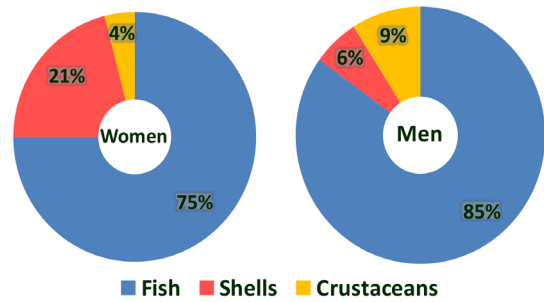


Fig 6. Ratio of catch composition of women and men in Pandaraonan, Nueva Valencia in Guimaras, Philippines

the average duration of fishing trips of men was significantly longer than the women. This was because women mostly collect resources at the intertidal zone during low tide while the fishing activities of the men were not highly constrained by tidal fluctuations (Table 2). This was confirmed based on the types of resources that the respondents collected. Fig. 6 shows that 25% of the women's catch consisted of mollusks and crustaceans while this only comprised 15% of the resources reported by the men. Though majority of the women's reported catch were fish, these species were mostly obtained from the stationary fishing gears which they operate jointly with their husbands. The discrepancy in income can be traced to the differences in the target species of the women and men. Men tend to target species of high commercial value, have access to a wider area, and could stay longer at sea. Women, on the other hand, had to juggle multiple roles as caretakers and income earners. These differences are further aggravated by the prevailing social norms and values that limit the women's access to the sea.

Despite the women's involvement in fishing, a number of women were not institutionally-recognized. When asked about their organizational involvement, only 57% of the women were members of the local fishers' organization which is 33% lower than the men respondents (Table 2). The average duration of membership is also significantly different between women and men respondents with the latter being in the organization much longer.

Similar to previous studies, the roles of the women in fisheries at the project site were not well-recognized compared to the men because casual jobs like net mending, processing, gleaning, and marketing were perceived as minor fishing activities compared to major active capture fishing. This lack of institutional recognition of the women's roles in the fisheries sector is indicative of the importance placed by the society on men's livelihoods while giving secondary recognition to women.

Gendered spaces on the resource map

The results of the mapping workshops highlighted the activities and areas mostly utilized by the women and men in the community (Fig. 7). The respondents utilized a significant

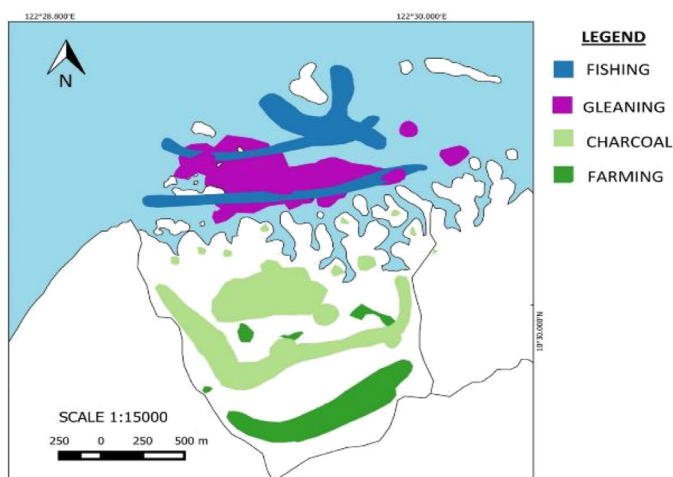


Fig 7. Resource map highlighting the areas utilized by women and men for coastal and upland livelihoods in Pandaraonan, Nueva Valencia in Guimaras, Philippines

portion of the intertidal area for fishing and gleaning during low tide. Most of the stationary gears, *e.g.* fish corral, operate in this site. Although, during lean season where seas are rough, men also fish in the same area using passive gears (*e.g.* gillnet, hook and line).

Women, however, were the ones mostly using the shallow intertidal zone during low tide to collect shellfishes and crustaceans for trade or for consumption. Gleaning was most profitable during spring tides especially during the months from November to February. When asked about their perceptions of the use the coastal zone, women believed that it is not customary for them to engage in fishing in deeper waters. This can be pretty much summarized in the response of one of the women respondents who said that, “*Ang hunasan para sa mga babayi. Ang madalum nga parte sang dagat, para sa mga lalaki.*” (The intertidal zone is for the women. The deeper portions of the sea are for the men).

Women: The pillars of the fisheries sector

When data are not gender disaggregated, it is easy to overlook the differences in women and men’s perceptions and involvement in fishing activities. Moreover, when the analysis focuses on male-dominated activities such as capture fisheries, the involvement of women are subsumed as supporting roles which could lead to the failure to integrate some important gender concerns in policies and programs (Bennett, 2005). The women in Pandaraonan perceived their roles in fisheries as extension of their responsibilities as wives and mothers. They mostly assumed traditional roles as gleaners, fish vendors, and as assistants of their husbands in conducting pre- and post-harvest activities. They were also constrained in shallower areas of the sea, usually in close proximity to their homes. Although the women needed to adhere to a number of conventions, they maintained their ownership of the intertidal zone despite the minimal catch and income they gained from selling mollusks and crustaceans. The reliance of women on

the intertidal zone made them more knowledgeable about the sandfish *H. scabra* as a resource.

All of the respondents were aware of the *H. scabra* sea ranch project, but the number of women who were aware of what sandfish is and engaged in its collection, was significantly higher compared to the men. These findings supported the results of the mapping workshops which showed that the intertidal zone was utilized more by the women, since shallow-water gleaning was conducted only casually by the men during the limited lean fishing months. The women have become more adept at identifying the resources found in these shallower areas than the men. Hence, when asked about their interest of participating in the sandfish sea ranching project, the women were equally interested particularly in attending meetings and doing volunteer work. However, they were less keen in assuming tasks that may require more time or increased physical activity because these entail reduced time for household responsibilities. It was also observed during the major meetings that the attendance of the women has increased over time which showed their growing interest in the project.

Women’s contribution in the fisheries sector are often overlooked, however, an analysis of the condition of the women and men in Pandaraonan, Guimaras showed that the women should be regarded as important stakeholders of the project especially if it involves the utilization of a portion of the area being utilized for gleaning. As efforts on rearing commercially valuable species continues, the women’s fishing activities, regardless of its minimal contribution to the household income, should not be overlooked as an important food source for the households (De Guzman *et al.*, 2016). As the primary user of the intertidal zone, the women’s contribution to resource enhancement projects can be linked to stock security and as knowledge sharers since they are most involved in meetings and project-related discussions.

Way forward

It is essential to analyze the impacts of a resource enhancement project on a macro perspective, especially if it involves multiple stakeholder groups. Socio-economic analysis and gender disaggregation of data are important in order to understand the status of the community and to determine how management decisions can affect the stakeholders. For the *H. scabra* sea ranching project, the viewpoints of the women are being considered in recognition that failure to adequately consider this dimension may result to impaired decision making and reduced sense of ownership and support for conservation initiatives. Knowledge building and increased community engagement helped facilitate the involvement of both women and men in the project. Continuous information, education, and communication (IEC) mechanisms will be put in place to fill in the knowledge gaps about sandfish and other resources, as well as the importance of resource management in sustaining the populations of the wild stocks.

Moreover, knowledge sharing can help in increasing the capacities of the community in managing their resources in order to match the technological advancements being introduced by an external organization. Therefore, it is recommended that local institutions should reconsider formalizing women's membership in fishers' organization for them to have official representation in policies and decision-making.

There has been a growing evidence of women's high involvement in aquaculture and capture fisheries but even though the gender division of labor has changed over time, the prevailing cultural values have been slow in progress (Kusakabe, 2003). Women continued to be less valued than men in terms of decision-making, access to resources, and priorities (Brown and Fortnam, 2018) and the women's wellbeing is sometimes compromised when these cultural values influence policies and governance. The results of this project emphasized the issues surrounding women's and men's access to and perceptions of resources which may have been left unmonitored if gender analysis was not conducted. By bringing into light the overlapping roles of women and men in the fisheries sector, the project can serve as an impetus towards the increased consideration for the integration and mainstreaming of gender into fisheries research and for more gender-responsive governance of the fisheries sector. The outcomes of the project can bridge the knowledge gap on the relationships among gender, environment, and poverty and can serve as one of the initiatives in attaining gender equality as part of the Sustainable Development Goals (SDGs).

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References

- Anderson, S.C., Flemming, J.M., Watson, R., and Lotze, H.K. (2011). Serial exploitation of global sea cucumber fisheries. *Fish and Fisheries*, 12: 317-339
- Bennett, E. (2005). Gender, fisheries and development. *Marine Policy*, 29(5): 451-459. <https://doi.org/10.1016/j.marpol.2004.07.003>

- Brown, K. and Fortnam, M. (2018). Gender and ecosystem services: A blind spot. In K. Schreckenber, G. Mace, and M. Poudyal (Eds.), *Ecosystem services and poverty alleviation: Trade-offs and governance* (pp 326). Routledge (Taylor and Francis Group)
- Choo, P.S. (2008). The Philippines: A hotspot of sea cucumbers in Asia. In M. Toral-Granda, V. Lovatelli, A. Vasconcellos (Eds.), *Sea cucumbers: A global review of fisheries and trade* (FAO Fisher, pp. 119-140). Rome. FAO
- De Guzman, A., Sumalde, Z., Colance, M. D., Ponce, M. F., and Rance, G. M. (2016). *Economics of reef gleaning in the Philippines: Impact on the coastal environment, household economy and nutrition*. WorldFish (ICLARM) - Economy and Environment Program for Southeast Asia (EEPSEA)
- Fenster, T. (1999). Space for gender: Cultural roles of the forbidden and permitted. *Environment and Planning D: Society and Space*, 17: 227-246
- Knox, P. L. and Marston, S. A. (1998). *Human Geography*. New Jersey: Prentice Hall. Retrieved from <https://books.google.co.uk/books?id=HOOD06ITcyAC>
- Kusakabe, K. (2003). Gender issues in small scale inland fisheries in Asia: women as an important source of information. *In: New approaches for the improvement of inland capture fishery statistics in the Mekong Basin*. FAO and MRC. RAP Publication 2003/01. Bangkok, Thailand
- Juinio-Meñez, M.A., Tech, E.D., Ticao, I.P., Gorospe, J.R.C., Edullantes, C.M.A., Rioja, R.A.V. (2017). Adaptive and integrated culture production systems for the tropical sea cucumber *Holothuria scabra*. *Fisheries Research*, 186(2): 502-513
- Leber, K. M. (2013). Marine fisheries enhancement: Coming of age in the new millenium. In P. Christou, R. Savin, B. Costa-Pierce, I. Misztal, and B. Whitelaw (Eds.), *Sustainable Food Production* (1st ed., pp. 1139-1157). New York: Springer-Verlag. <https://doi.org/10.1007/978-1-4614-5797-8>
- Philippine Statistics Authority. (2016). *Women and men in the Philippines*
- Purcell, S.W., Mercier, A., Conand, C., et al. (2013) Sea cucumber fisheries: global analysis of stocks, management measures and drivers of overfishing. *Fish and Fisheries*, 14: 34-59
- Siason, I. M. (2001). Women in the Fisheries in the Philippines. In M. J. Williams, M. . Nandeesh, V. . Corral, E. Tech, and P. S. Choo (Eds.), *International Symposium on Women in Asian Fisheries* (pp. 69-77). Penang, Malaysia: ICLARM - The World Fish Center
- Zhao, M., Tyzack, M., Anderson, R., and Onoakpovike, E. (2013). Women as visible and invisible workers in fisheries: A case study of Northern England. *Marine Policy*, 37(1): 69-76. <https://doi.org/10.1016/j.marpol.2012.04.013>

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