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Knowledge, Gender, and Resources in Small-Scale Fishing: The Case of Honda Bay, Palawan, Philippines

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ABSTRACT / The coastal zone is a place of intense activity where resources, users, and resource-use practices interact. This case study of small-scale fisheries in Honda Bay, Palawan, Philippines shows that resources, space, and gender are intertwined. The study was conducted between June 1997 and July 1998. The data were gathered using free listing, pile sort, ranking, resource mapping, and key informant interviews. The results showed that women's knowledge about fishery resources and their fishing activities are associated with the intertidal zone whereas men's knowledge is associated with coral reefs. In classifying fishery resources, appearance is the main consideration for women whereas a combination of appearance, habitat, and type of fishing gear is the consideration used by men. Market price is very important because of its dependence on the demand of the export market as well as the local market. Women dominate the buying of fishery products. Many women market their husband's catch, process fish, or gather shells and sea cucumber for sale. Among the fishing households, type of fishing gear provides an indication of socioeconomic standing. This paper concludes that access to resources is shaped by gender and age. The differences in resource knowledge possessed by men and women lead to differential access to fishery resources. In addition, the differences in socioeconomic status also influence resource access. The socialization of children into fishing reinforces the gender division of labor and space in the coastal zone.

Men and women differ in their knowledge of resources, and this implies differences in their resource-use practices. Such differences in resource use and knowledge are important for biodiversity conservation and resource management, and underscore the importance of "a gender-based analysis of how spaces and places are used, valued, and struggled over in specific cultures" (Rocheleau and others 1995). As Leach and others (1995) argued, gender is a "key dimension of social difference affecting people's experiences, concerns and capabilities in resource management."

Resource users such as fishers and gatherers make use of their everyday experiences and observations in learning about their environment. If scientists have their taxonomies, resource users too have their categories. For instance, research conducted by Walters (1997) in Ulugan Bay on the western coast of Puerto Princesa City in Palawan showed that local fishers have a detailed system of classification that approximates the scientific classification. In Canada, a multi-disciplinary team of social and biological scientists interviewed fishers to document changes and trends in the fishery and found that "resource users develop detailed knowledge of their resources, their environments, and their fishing practices" (Neis and others 1999).

KEY WORDS: Philippines-Palawan; Fishing; Knowledge; Gender; Resources

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To be able to fish requires at least two things: knowledge about the time-space distribution of fishery resources and the capability to harvest such resources. At the individual level, access depends on one's knowledge about resources, i.e., what can be found where, and how to get it. Access to a fishery may be open to anybody who wants to fish, but in reality, there is differential access because knowledge is not equally distributed. In addition to knowledge, the differences in fishing gear used (some gears catch more than others) with its corresponding varied efficiency, determine the fishers' capability to harvest more or less fish. This paper describes the knowledge possessed by men, women, and children about fishery resources in Honda Bay, their resource-use practices, and the spatial distribution of fishery resources.

Methods

The study was conducted between June 1997 and July 1998 in a fishing village along Honda Bay on the eastern coast of Palawan (Figure 1). Known to the villagers as Aplaya, the fishing village is part of Barangay Tagburos, located 15 km from the capital city of Puerto

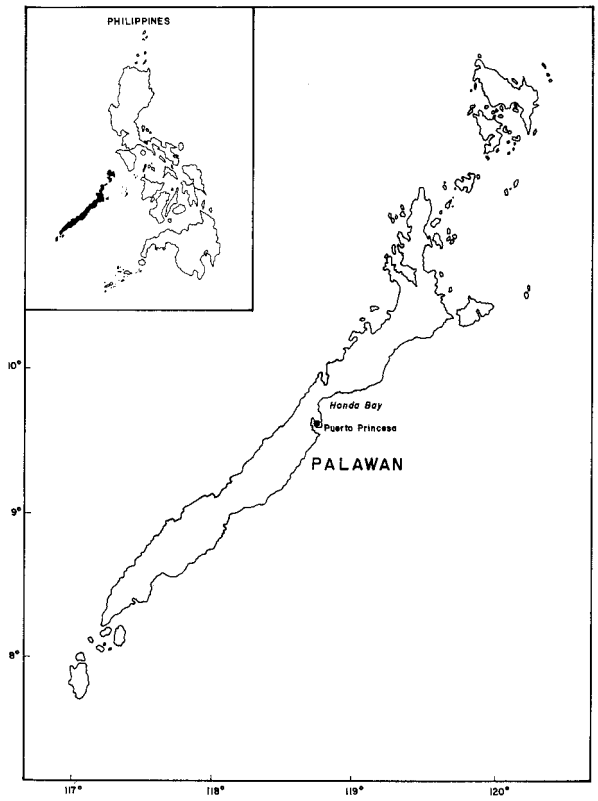

Figure 1. Map of the Philippines showing the location of Honda Bay.

Princesa, and one of 66 barangays comprising the city. In the Philippines, a barangay is the smallest political unit and is divided into several *purok* or districts. Several barangays comprise a city or municipality. In local government records, Aplaya officially exists as Purok Silangan, one of the seven districts that comprise Barangay Tagburos.

The data were gathered using a combination of structured and unstructured interview techniques. These methods included free listing, pile sort, and ranking (Bernard 1994, Weller and Romney 1988). To establish an inventory of fishery resources and determine the differences in knowledge among men, women, and children, free listing tasks were conducted with a random sample of men and women and a purposive sample of children. Thirty (30) men, women, and 24 children (12 boys and 12 girls) were asked to name all the fishery resources that were found in Honda Bay. The question was asked in the vernacular: "*Anu-anong mga yamang-dagat ang mayroon sa Honda Bay?*" which in English is translated as "What fishery resources are there in Honda Bay?" The author asked the question verbally and wrote down the responses of each informant. These free lists were analyzed using ANTHROPAC 4.0 (Borgatti 1996a, 1996b, 1996c), a computer program that generates a list of all fishery resources mentioned by all informants, including the frequency of mention for each resource. The lists for men, women, and children were then grouped into five general headings for purposes of comparison, namely, fish, molluscs, crustaceans, echinoderms, and other aquatic plants and animals.

Results of the free lists for men and women were then used for pile sorting tasks to determine how villagers classify fishery resources and what they pay attention to when classifying or categorizing. Ten men and ten women were chosen from those who did the free lists and were asked to sort all the items listed separately on a four inch by six inch index card onto as many piles as they wanted according to how similar they were. After each pile sort, the informants were asked why they sorted the cards the way they did. Each item was coded for analysis using ANTHROPAC 4.0. Each informant was also asked which resources were important to the villagers. The resources identified by at least five informants were used as the basis for the list of the most important resources. The same informants who participated in the pile sort were asked later in the field research to rank the causes of fisheries depletion identified by key informants (KIs).

To provide a visual representation of the location of habitats and resources, and the spatial relationships between men's and women's resources and practices in the coastal zone, resource mapping was done with a separate group of men and women (Arquiza 1999, Walters and others 1998). Two base maps with a scale of 1:40 000 were used for each group. Using color codes, key informants identified on the map where habitats such as mangroves, seagrasses, intertidal zone, estuaries, coral reefs, sandy beach, and passes or channels were found. Key informants also identified where the most important resources were found, including fishing gear and practices. Codes for men, women, and children were also used to identify resources and spaces in the coastal zone that were associated with them.

Key informant interviews were also done to determine long-term residents' recollection about the place, individual observations about changes in access and control, and perceptions about changes in the importance of resources. KIs were identified using a snowball technique by asking whom people know or remember as the oldest residents in the village. All long-term residents identified were interviewed and KIs also included fish traders and a group of shell-gatherers. KIs were asked about their life before Aplaya and their history of movement from their place of origin.

Study Site

Honda Bay

Honda Bay has a total area of 28,000 ha and has 12 charted islands varying from areas of 1.25 to 139 ha (PIADPO 1989). A characteristic feature of these islands is the wide intertidal zone. Honda Bay is remarkable for the diversity of its fish and corals; its coral genera are more diverse than in Malampaya Sound on the western coast of Palawan, also known as the fish bowl of the Philippines (PIADPO 1989). In a 1989 resource and ecological assessment conducted by PIADPO (1989), 279 species and 41 families of fish were identified; of these, 75 species were considered food fish. There were 15 families in 37 genera of hard coral.

Along the coast of Honda Bay, 15 of the 19 barangays are fully or partly dependent on the sea's resources for their livelihood. In 1990, 85 percent of the estimated 2500 households were engaged in fishing (Sandalo 1994). These are mainly small-scale fishers using boats of three gross tons or less.

Aplaya

Like many places in Palawan, Aplaya developed as a result of the movement and migration of people from within the province as well as from the outside. Palawan's distinction as the Philippine's last frontier, plus a government-sponsored resettlement program in the 1950s, meant that migrants came from many parts of the Philippines. The place that is now called Aplaya used to be inhabited by one of Palawan's indigenous groups, the Tagbanuas. Before the mangroves were converted into fishponds in the 1970s, Aplaya was a source of mangrove bark and mangrove wood.

In a census conducted in 1994, the City Housing Office counted 280 households occupying a total area of 5.17 ha. With an average household size of six, there were more than 1680 persons in the village. In a 1996 survey, the population of Aplaya constituted 50 percent of the total barangay population. Those tracing their roots to Bohol (Boholanos) constituted the most dominant group (SEARCA 1997).

Results

Knowledge About Resources: What Is There to Fish

The 30 female informants had the following average characteristics: 39 years of age, seven years of formal schooling, and lived in the village for 17 years. Eight women were each involved in fishing-related activities such as selling fish and gathering shells, five each had a variety store, seven each raised pigs, one made palm shingles, and two each did laundry. Eight women said that they did not have their own income sources and one woman relied on her family's support. On the other hand, the 30 male informants had the following average characteristics: 43 years of age, seven years of formal schooling, lived in the village for 19 years, and had been fishing for 23 years. All male informants were fishermen and used a variety of fishing gear. Ten men used fish corrals, nine fished with nets, eight with spears, five with octopus jiggers, another five used hook-and-lines, and two used spears and compressed air. Nine men used more than one type of fishing gear.

Table 1. A comparison of free lists of men and women in Aplaya

	Men		Women	
Classification	Frequency	%	Frequency	%
Fish	106	73	55	47
Molluscs	20	14	41	35
Crustaceans	8	6	7	6
Echinoderms	5	3	6	5
Others	6	4	8	7
Total	145	100	117	100

Table 1 shows a comparison of the free lists of men and women in Aplaya. There were 47 items mentioned by women but not by men. Of these, 26 were shells, 14 were fish, three were aquatic plants, two were echinoderms, one a crustacean, and the other a jellyfish. On the other hand, there were 75 items mentioned by men but not by women, 64 items of which were fish and only five were shells. The rest were marine mammals, echinoderms, crustacean, and cephalopod.

Among the women, the most frequently mentioned item was *sikad-sikad* (small conch), followed by *danggit* (a species of rabbitfish), *balat* (sea cucumber), *kugita* (octopus), *samaral* (a species of rabbitfish), *tandok-tandok* (commercial top shell), *saang* (common spider conch), *bakalan* (ark shell), *alimasag* (blue crab), and *bagasay* (venus shell). *Sikad-sikad, balat, tandok-tandok, saang, bakalan*, and *bagasay* were all found in the intertidal zone and were collected by groups of women and children during low tide and sold for cash. The sea cucumbers were sold to a buyer in the village who sold it to a seafood exporter in the city whereas the shells were also sold to a buyer in the village who sold it to vendors in the city public market. Of all the fish species mentioned, *danggit* was most-frequently mentioned because these were processed by some women into a kind of dried fish that was popular among local tourists and sold for a good price. On the other hand, *samaral*, which belongs to the same family as *danggit*, has been a

popular dish in many restaurants in the city. *Kugita*, like *balat*, was exported and sold for a good price. *Alimasag*, although not an export commodity, also sold for a good price in the city public market.

Among the men, the most frequently mentioned item was *danggit*, followed by *samaral*, *talakitok* (jack), *banagan* (lobster), *kugita*, *pusit* (squid), *alimasag*, *balat*, *tauban* (cuttlefish), *mulmol* (parrotfish), *katambak* (emperor bream), *pagi* (stingray), and *lapu-lapu* (grouper). All fetched a good price except for *pagi* and reef fish such as *mulmol* and *katambak*.

The list of resources identified by at least two of the 30 female informants was used in a pile sort task to determine how they classified fishery resources. During the pile sort task, many women grouped fish in terms of appearance and shape but assigned shells to one pile. The other criteria used in classifying the items included type of fishing gear, presence or absence of scales, habitat, taste, and whether the fish was considered first class or not. The women grouped the fishery resources into four major clusters. They grouped all the crustaceans in the first cluster, all the cephalopods in the second, all the fish in the third, and all the shells in the last cluster. Each cluster shared the same characteristics, particularly those near each other in the cluster. For example, in the third cluster, fish that could harm people with their sting such as *bantol* (stonefish), *pagi* (stingray), and *hito* (marine catfish) were near each other in the grouping. Moreover, those usually associated with coral reefs such as goatfishes, spinecheeks, rabbitfishes, groupers, and parrotfishes were near each other in the cluster. In the last cluster, the bivalves were near each other and were separated by a sort of imaginary line from the gastropods.

Following the same procedure, all items mentioned by at least two of the 30 male informants were included in a pile sort task to determine how men classify fishery resources. During the pile sort task, a combination of criteria, with none predominating, were used by the men. These included physical appearance and characteristics, market price, habitat, and type of fishing gear. The men grouped the fishery resources into eight major clusters, but except for the first cluster which grouped the cephalopods together, the similarity in the clusters were not as clear as that of the women's pile sorts. For example, habitat was apparently the basis of similarity in the second cluster, which grouped some of the shellfish together except shrimps, and included *duyung* (dugong) and *alimasag*. In another cluster, there was nothing in common among *pawikan*, *pagi*, *lap* (a species of rabbitfish), *pating* (shark), and *lapas* (abalone).

Table 2. A comparison of free lists of boys and girls in Aplaya

	Boys		Girls	
Classification	Frequency	%	Frequency	%
Fish	45	63	26	54
Molluscs	21	29	16	33
Crustaceans	3	4	2	4
Echinoderms	1	1	1	2
Others	2	3	3	6
Total	72	100	48	100

The results of the men's pile sorts showed that there was more than one consideration when men think of similarity among fishery resources. Appearance was clearly the basis of the women's clusters whereas a combination of appearance, habitat, and type of fishing gear were the competing considerations in the men's pile sorts.

The results of the pile sorts for men and women may be compared with the study conducted by Boster and Johnson (1989), which explored how two groups of people judge the similarity among fish. Using line drawings of fishes, novices represented by undergraduate students, and experts represented by recreational fishermen, were asked to classify the fishes into as many piles as they wanted. Results showed that the novices' classification was based on morphology, which was similar to the scientific classification, whereas the experts' was based on a combination of form and function. Moreover, the novices were more in agreement with each other than the experts.

Table 2 presents a comparison of the free lists of boys and girls in Aplaya. The age of the children ranged from six to 14 years. The youngest was in the first grade and the eldest stopped going to school after finishing the sixth grade. Seven boys and three girls were not in school. All girls and 10 boys had experience in gathering shells. All boys were knowledgeable about more than one type of fishing gear. Six had experience in spear fishing, five in hook-and-line fishing, four in net fishing, three in harvesting from fish corrals, two in the use of long line, and two in collecting abalone. The youngest child started gathering shells when she was five. These children learned how to fish and gather shells from their parents, siblings, relatives, and friends.

The children were able to name almost as many fish as the women and as many molluscs as the men. Twenty-two items were mentioned by children but not by women. Eighteen of these were fish and two were shells.

Table 3. Fishery resources identified as most important by men and women in Aplaya

Men	% (n = 10)	Women	% (n = 10)
Kugita (octopus)	80	Danggit (rabbitfish)	90
Samaral (rabbitfish)	80	Tanguigue (Spanish mackerel)	80
Tauban (cuttlefish)	70	Samaral (rabbitfish)	80
Lapu-lapu (groupers)	60	Suno (red groupers)	70
Talakitok (jacks)	60	Kugita (octopus)	70
Suno (red groupers)	60	Salimburao (Indian mackerel)	70
Bantol (stonefish)	50	Talakitok (jacks)	70
Pusit (squid)	50	Lapu-lapu (groupers)	60
Panter (polkadot grouper)	50	Lapas (abalone)	60
Lapas (abalone)	50	Tauban (cuttlefish)	60
Salimburao (Indian mackerel)	50	Banak (mullet)	60
		Lap (rabbitfish)	60
		Salay-salay (finlet scad)	50
		Tulingan (little tuna)	50
		Pusit (squid)	50
		Bantol (stonefish)	50
		Tipay (pearl oyster)	50
		Suran (unicornfish)	50
		Alimasag (blue crab)	50
		Sikad-sikad (small conch)	50
		Samong (top shell)	50
		Tandok-tandok (commercial top shell)	50
		Balat (sea cucumber)	50
		Busalog (blue-spotted parrotfish)	50

In comparison with the men's free lists, the children named 23 items that were not in the men's free lists. Ten of these were shells, 10 were fish, two aquatic plants, and a crustacean. The children's knowledge about shells was closer to the women whereas their knowledge about fish was closer to the men. Table 2 shows a clear pattern regarding the experiences of boys and girls in a fishing village. The girls' experience was associated with shell gathering and involved going out with the women and boys at low tide. Boys, on the other hand, acquired knowledge about the intertidal zone from the women but they also went out with their male relatives and friends who taught them how to use different types of fishing gear. As they grew older and joined the ranks of men, they rarely ventured into the intertidal zone, which was associated with the fishing activities of women and children.

Perception Regarding the Importance of Resources

The 10 men and 10 women who did the pile sorts were asked to identify the fishery resources considered important in the village (Table 3). For the women, a good and stable price was the main consideration for choosing what is important. A resource is important to the villagers if it paid a good price that was not affected by the availability or volume of other fishery resources in the market. Fish that fell under this category were called first class fish. Two women stated that shells were important for the women whereas fish were important for the men. Moreover, the catch composition of the fishing gear used by their husbands was also considered in determining the important fishery resources in the village. As among the women, market price and type of fishing gear were the predominant criteria for deciding which resources were important among the men.

The most important fishery resources identified by men were a combination of export commodities and first-class fishery products. The export commodities were *kugita* (octopus), *tauban* (cuttlefish), *suno* (red groupers), *bantol* (stonefish), *panter* (polkadot grouper), and *lapas* (abalone). The first-class fishery commodities included *samaral* (rabbitfish), *lapu-lapu* (groupers), *talakitok* (jacks), *suno* (red groupers), *pusit* (squid), and *salimburao* (Indian mackerel). On the other hand, in addition to export commodities and first-class fishery products, women identified shells and sea cucumber as important fishery resources. In addition to the first-class fishery products identified by men, women included *danggit* (rabbitfish), *tanguigue* (Spanish mackerel), *banak* (mullet), *lap* (rabbitfish), *salay-salay* (finlet scad), *tulingan* (little tuna), and *suran* (unicornfish). Fishery resources found in seagrass beds and the intertidal zone such as *sikad-sikad* (small conch), *samong* (top shell), *tandok-tandok* (commercial top shell), *tipay* (pearl oyster), and *balat* (sea cucumber) were important for women. For both men and women,

the following resources were important: *kugita*, *samaral*, *tauban*, *lapu-lapu*, *talakitok*, *suno*, *bantol*, *pusit*, *lapas*, and *salimburao*.

Market price was very important to fishing households in Aplaya because they were dependent on the demand of the export market as well as the local market in Puerto Princesa City. Women dominated the buying of fishery products and were linked to buyers and exporters in the city. Many women sold their husband's catch, processed fish, or gathered shells and sea cucumber for sale. Villagers differentiated between first-class fish and those lumped under *isdang-bato* (reef fish). *Isdang-bato* included *ubakan* (goatfish), *katambak* (emperor bream), *silay* (spinecheek), *saling-gukod* (spinecheek), *timbungan* (goatfish), *bangkilan* (tuskfish), and *mulmol* (parrotfish). Unlike first-class fish, the reef fish were separated into different sizes (small, medium, and large) and sold as a group. If there were plenty of fish in the market, the sale of reef fish suffered. For example, during the dark phases of the moon, the market was usually flooded with plenty of *galungong* (roundscad) caught by commercial ring net operators. This depressed the price of other fish in the market, particularly the reef fish, as consumers would rather buy roundscad because it is easier to clean. When a villager said, "*maraming galunggong*," or "there is plenty of roundscad," it would be time to dry their fish rather than sell it fresh. The supply of roundscad had become an indicator of the price of fish in the market.

Although economically marginal compared with fish, cephalopods and crustaceans, women and children considered shells as an important source of cash. The gathering of shells and sea cucumber could contribute as much as 50 percent of the total household income. The income from shell gathering provided the daily school allowance of many schoolchildren and a source of cash for young female adults who have stopped going to school. For them, it was a quick way to earn money because only a small amount of capital was needed.

Women and children gathering shells were also affected by the fluctuations in the price of fish. When fish catch was high the demand for shells declined because consumers would rather buy fish than shells. This also occurred during the dark phases of the moon when there was plenty of roundscad. The gatherers learned to adjust to these demand fluctuations by controlling the amount and type of shells they gathered during this period. When the supply of fish was low particularly during the bright phases of the moon, the demand for shells increased and they gathered more.

Resource-Use Practices: How to Catch the Fish and When

Resource-use practices refer to the methods of extraction and conservation of fishery resources and the knowledge possessed by resource users about the conditions that affect their fishing activities. In Philippine fisheries, small-scale fishing is defined as fishing using boats of three gross tons or less, or fishing without boats. The fishers of Aplaya belong to this category. Many types of gear and methods are used. The choice of gear is influenced not only by a person's preferences, experiences, and knowledge but most importantly, by the availability of capital. At first glance Aplaya may seem to be homogeneous socio-economically. The houses are similar in build and size except for a few concrete and bigger ones. But among the fishing households, type of fishing gear differentiates one from another and provides an indication of socioeconomic standing.

The types of fishing gear and practices in the village included *baklad* (fish corral), *lambat* (net), *kawil* (hook-and-line), *pana* (spear), *pangugita* (octopus jigger), *hipon-hipon* (squid jigger), *kitang* (long line), *panginhas* (shell gathering), and *pangilaw* (fishing using a gas lantern). One of the fishing entrepreneurs financed a group of men to spear fish using *kompresor* or compressed air. Fish corrals were used by 8 percent, nets by 14 percent, hook-and-lines and long lines by 11 percent, spears by 48 percent, octopus jiggers also by 48 percent, and squid jiggers by 6 percent, of the fishing households. Shell gathering and fishing with lantern provided income for at least 20 percent of the fishing households.

The construction of a fish corral involved the biggest capital outlay, followed by net, long line, and hook-and-line. Fishing households using spear, octopus jigger, and squid jigger usually owned more than one type of gear. The most widely used fishing gears were spear and octopus jigger, which cost a few hundred pesos. Almost all fishers who used spears also used octopus jiggers. Shell gathering and fishing with lantern cost the least and were generally the domain of women and children, except in cases where men came to the intertidal zone to augment a low catch of fish products from their fishing activities.

Many of the fishery resources could be caught using a variety of gears. Fish corrals and nets caught more species than hook-and-lines, long lines, and spears. The fishing activities of women and children in the intertidal zone yielded not only shells but also export commodities such as sea cucumber, abalone, and stonefish.

Table 4. Seasonality calendar of fishing practices in Aplaya

Fishing practices	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lambat (net)				√	√	√	√	√	√	√	√	√
Baklad (fish corral)	√	√				√	√	√	√	√	√	√
Pana (spear)	√	√	√	√	√	√	√	√	√	√	√	√
Kawil (hook-and-line)				√	√	√	√	√	√	√	√	√
Kitang (long line)				√	√	√	√	√	√	√	√	√
Pangugita (octopus jigger)	√	√	√	√	√	√	√	√	√	√		
Hipon-hipon (squid jigger)						√	√	√	√	√	√	√
Pangilaw (fishing with lantern)		√	√	√	√	√	√					
Panginhas (shell gathering)	√	√	√	√	√	√	√	√	√	√	√	√

Sometimes, men also fished within the intertidal zone to gather abalone and stonefish.

The period from December to February is a lean period when the northeast monsoon or *amihan* blows. As the saying in the village goes, "*Pag dating ng amihan, taob na ang kaldero*," or "When the northeast winds come, the pot stays clean (kept upside down)." The months from March to May are a period of calm waters, which is called *kalmada* by the villagers. The period between June and November is the season of the southwest monsoon or *habagat*, generally a time of abundance for the people of Aplaya because the eastern coast is sheltered. Again, one of the village's wise men say, "*Hindi na mababahayan ng gagamba ang kaldero ko*," literally, "Spiders can no longer find a home in my pot." Whether lean or peak depends not only on the monsoons but also on the type of gears used. All types of fishing gears may be used year round, but there is generally nine months of good fishing for all major gear types. Table 4 presents the seasonality of fishing practices in Aplaya as discussed.

The Spatial Distribution of Fishery Resources: Where to Fish

The fishermen and gatherers of Aplaya do not carry nautical charts or maps of the coastal zone when they go out fishing or gather shells. What and where to look for what they want have been etched in their minds. In a manner of speaking, the map of Honda Bay is committed to memory. Resource access in fishing has a lot to do with this mental map of habitats and resources. Fishery resources are not only mobile but also inconspicuous, and fishers and gatherers know where they are.

Mangroves, seagrasses, and intertidal zones dominated the map drawn by the women (Figure 2). The intertidal zone is identified with women and children, whereas the coral reefs and the deep water are identified with men. Although the women claim the intertidal zone as their own space, Table 5 indicates that men use it as well. Men set up their shallow water fish corrals and crab nets, and women do their shell and sea cucumber gathering in the intertidal zone. In addition, men do spear fishing, octopus and squid jigging. These types of fishing practices, however, do not interfere with the shell and sea cucumber gathering of women. Women differentiate between the intertidal zone itself where they gather shells and sea cucumbers, and *kanto ng hibasan* (edge of the intertidal zone) where men use their spears and jiggers.

Women generally do not fish, and their activities are limited to shell and sea cucumber gathering, which involves the use of baskets, sacks, and lanterns. For a long time, women and children in Aplaya have used the intertidal zone of all the islands in Honda Bay, and rotated their gathering activities in order to let the intertidal zone rest. Although their activities are restricted near the shore, women and children travel far, and still need a boat to go to these islands. The boat is usually steered by a male, and may be the husband of a gatherer or village buyer. Women identified the coral reef and deep water as exclusively men's space, where men carry on their fishing using hook-and-lines, octopus jiggers, and nets. Even if the women do not fish, they still know the spatial distribution of fishery resources, particularly those that are important to their husbands.

The map drawn by the men was dominated by coral reefs and passes/channels, and showed that the gender division of space and labor in fishing is as real for men as it is for women (Figure 3). Coral reefs are important to the men of Aplaya, where valuable resources such as octopus and groupers are found. The intertidal zone is not exclusively women's space, because men use it for hook-and-line, long line, and fish corrals. However, the men recognize this space as women's domain. Table 6 presents the resources and fishing practices found in the different habitats as shown in the men's map.

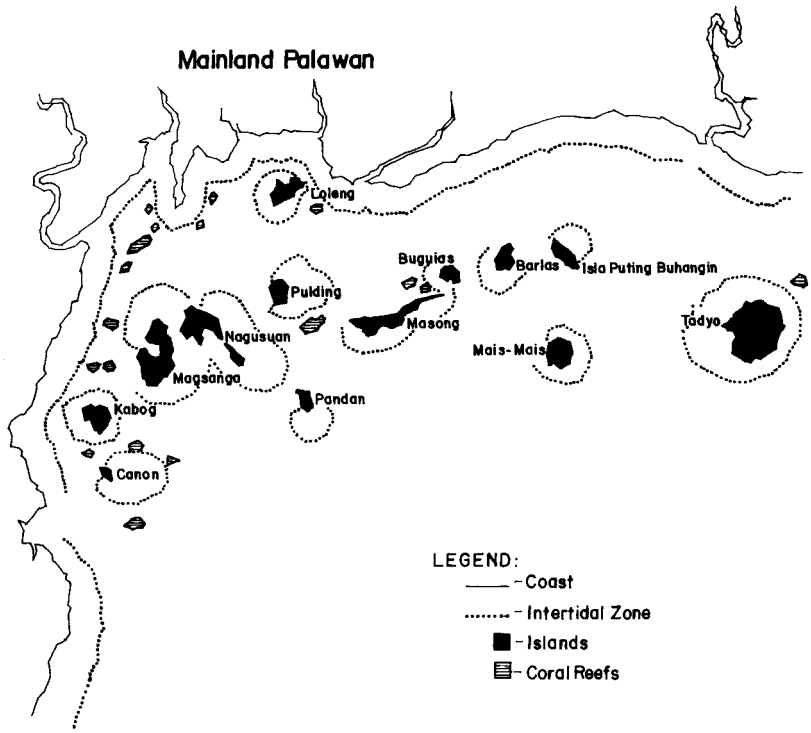

Figure 2. Women's sketch map of Honda Bay showing the location of the intertidal zone and coral reefs. Modified from color-coded sketch maps.

Perception Regarding the State of Fishery Resources

During the course of the field research, fishers and gatherers alike lamented that there were fewer fish and other resources than before. In order to validate the statements from conversations and interviews, the 10 men and 10 women who did the pile sorts were asked to indicate their observations about the state of fishery resources in Honda Bay. All 20 key informants were unanimous in their observation that fishery resources were less than before. These informants agreed on the four major causes of fisheries depletion, which were: use of sodium cyanide; dynamite fishing; influx of migrant fishers, and ring net, purse seine, and trawl fishing.

The use of sodium cyanide was rampant during the height of the live fish trade in the mid-1980s. Dynamite fishing was widespread during the 1960s and 1970s. In the 1990s, there were occasional reports of blast fishing in Honda Bay, allegedly by fishers from outside Palawan. Migration of other fishers to Aplaya had been continuous. Relatives and province-mates came to visit and some stayed for good. Others were seasonal migrants from the western coast of Puerto Princesa and other provinces in Luzon who came to fish during the southwest monsoon. A few of them decided to stay permanently.

The encroachment into municipal waters of commercial fishing vessels using ring net, purse seine, and trawl had been a perennial problem among small-scale fishers in the Philippines (SEARCA 1997). Although many fishers in Aplaya used motorized boats, their operations were no match for the boats using ring and bag nets, quite a few of which came from a nearby barangay. In the West Sulu Sea of which Honda Bay is a part, ring net has been the major fishing gear used, with approximately 20 commercial fishing vessels using engines of 80–260 horsepower (de la Peña, personal communication). When the catch of these commercial fishing vessels were unloaded at the Puerto Princesa city market, there was so much supply that the price of fish plummeted. The situation was good for the consumers but not for Aplaya fishers who got a very low price for their fish.

Discussion and Conclusion

The coastal zone is a place of intense activity where resources, users, and resource-use practices interact. This case study of small-scale fisheries in Honda Bay, Palawan shows that resources, space, and gender are intertwined. Access to resources and knowledge about those resources are influenced by gender and resource-use practices.

Table 5. Resources and fishing practices in the different habitats as shown in the women's resource map

Habitats	Fishing practices	Resources
lusayan or baryaw-baryaw (seagrass)		danggit (rabbitfish) samaral (rabbitfish) banak (mullet) salay-salay (finlet scad) alimasag (blue crab) sikad-sikad (small conch) tandok-tandok (commercial top shell) balat (sea cucumber)
hibasan or katihan (intertidal zone)	baklad (fish corrals) lambat pang-alimasag (crab net) pangugita (octopus jiggers) pangilaw (fishing with lantern) panginhas (shell-gathering)	kugita (octopus) lapas (abalone) bantol (stonefish) tipay (pearl oyster) tandok-tandok (commercial top shell) balat (sea cucumber)
kanto ng hibasan (edge of the intertidal zone)	pana (spears) hipon-hipon (squid jiggers)	tanguigue (Spanish mackerel) busalog (blue-spotted parrotfish)
bahura (coral reef)	kawil (hook-and-line) pangugita (octopus jiggers)	suno (red groupers) kugita (octopus) talakitok (jacks) lapu-lapu (groupers) tauban (cuttlefish) lap (rabbitfish) bantol (stonefish) suran (unicornfish) samong (top shell)
laot (deep water)	lambat (net) kawil (hook-and-line) kitang (long line)	salimburao (Indian mackerel) tulingan (little tuna) pusit (squid)

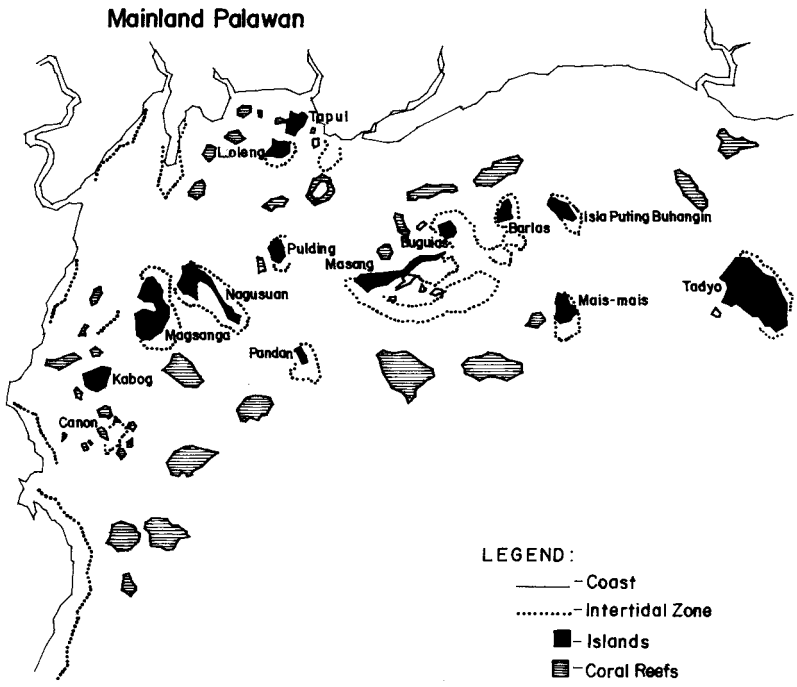

Figure 3. Men's sketch map of Honda Bay showing the location of the intertidal zone and coral reefs. Modified from color-coded sketch maps.

Table 6. Resources and fishing practices in the different habitats as shown in the men's resource map

Habitats	Fishing practices	Resources
bakhawan (mangroves)		mangagat (mangrove jack) banak (mullet)
bukana (estuary)	kawil (hook-and-line) kitang (long line)	mangagat (mangrove jack)
lusayan (seagrass)	baklad (fish corrals) lambat pang-alimasag (crab net)	katambak (emperor bream) danggit (rabbitfish)
hibasan (intertidal zone)	baklad (fish corrals) lambat pang-alimasag (crab net) kawil (hook-and-line) kitang (long line) panginhas (shell gathering) pangilaw (fishing with lantern)	samaral (rabbitfish) bantol (stonefish)
batuhan (rocky shoreline)		lapas (abalone)
bahura (coral reefs)	kawil (hook-and-line) pana (spear) pangugita (octopus jigger) hipon-hipon (squid jigger)	kugita (octopus) tauban (cuttlefish) lapu-lapu (groupers) talakitok (jacks) suno (red groupers) pusit (squid) panter (polkadot grouper) kugtong (large grouper) maming (humphead wrasse) maya-maya (snappers) banagan (spiny lobster) suran (unicornfish)
kanal (pass or channel)	lambat (net) kawil (hook-and-line) kitang (long line)	salimburao (Indian mackerel) bisugo (threadfin bream)

Men and women differ in their knowledge about fishery resources. "The intertidal zone is for women, the coral reef is for men. Shells are for women, fish are for men." This statement from a female informant captures how space and resources in Aplaya become gendered. The environment is important in reflecting and reproducing gender relations (MacKenzie 1984), and in Aplaya, the gender division of space is reinforced by the socialization of children into fishing. The environment is the medium within which social action takes place and its physical and biological characteristics influence the types of activities that happen there. The characteristics and features of the environment are not only physically and biologically determined but socially constructed as well, in that users' perception and knowledge of that environment affect the way people respond to it.

Based on anecdotes of long-term residents, husband and wife went fishing or gathered sea cucumber together during the early days of migration to Aplaya. At that time, women were already selling their husband's catch in the town's public market. The intertidal zone fronting Aplaya and the nearby island of Cañon was then rich with sea cucumbers. The gender division of labor in fishing probably began with the influx of male migrants, many of whom started in fishing by working with their relatives. The gathering of shells and sea cucumber became the domain of women and children when the intertidal zone fronting the village became depleted, and gatherers had to go to other islands in Honda Bay. Compared with fishing, the income from shell gathering is less and one has to gather plenty of shells to earn an equivalent income. On the other hand, sea cucumber has to be gutted, boiled, and smoked before it can be sold, and women carry out these activities.

The considerations used by men and women in identifying the most important fishery resources reveal a thoroughly commercialized mentality. The categories used in selecting the important resources in Aplaya reflect this mentality, e.g., first class fish, and suggest that the importance of a fishery resource is dictated by its market price. Another implication is that the men and women of Aplaya can readily respond to new market demand. This was very clearly demonstrated with the introduction of the live fish trade in the mid-1980s. Four types of fish were marketed for the live fish trade: *panter* (polkadot grouper), *suno* (red groupers), *loba*

(brown groupers), and *maming* (humphead wrasse). Fishers from Aplaya were recruited and organized into groups to fish in the waters surrounding Palawan. Furthermore, when the live fish trade was introduced, the use of *kuskos* or sodium cyanide became rampant, prompting the Puerto Princesa City government to ban the catching, gathering, possessing, buying, selling, and shipment of live fish from Palawan waters from January 1, 1993 to January 1, 1998. Fishers began to catch octopus with the imposition of the ban. Today in Aplaya, the term 'live fish' evokes memories of drinking sprees, abundant cash, and a time of plenty.

A fishing village is a stratified community of men, women, fish corral owners, hook-and-line fishers, traders, buyers, and others. Gender, age, social status, and wealth differentiate the members of a community. The individuals and groups that make up a community have different modes of access to resources and claims of control over resources. Furthermore, different ways of looking at the problems in fisheries vary individually or in groups (Olive 1993).

Access to resources is shaped by gender and age. The socialization of children into fishing reinforces the gender division of space and labor in the coastal zone. When male and female children go with the women in the intertidal zone, they are gradually introduced to the resource knowledge of women. And when male children go fishing with their fathers and uncles, they slowly acquire the resource knowledge of men and learn that the men's space is the coral reef and not the intertidal zone. The differences in resource knowledge possessed by men and women lead to differential access to fishery resources. In addition, the differences in socioeconomic status also influence resource access. Those who have more capital can have greater access by using a type of fishing gear that catches more fish or buying more boats.

Women's knowledge about fishery resources has implications for current debates and initiatives towards biodiversity conservation. The loss of sea cucumber, shells, and other invertebrates in the coastal zone not only means a loss of livelihood for women, but also a loss of knowledge about these resources. When women lose access to the intertidal zone because they are displaced by competing activities such as tourism or as a result of resource depletion, the situation is not considered serious because women's fishing is looked upon as secondary or supplementary. Many initiatives in coastal resource management are focused on the management of coral reef fisheries and reflect the importance attached to men's space vis-á-vis women's space.

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