
TAGAPORO: THE ISLAND DWELLERS'

COASTAL RESOURCE PROFILE
OF BARANGAY DEWEY, BOLINAO, PANGASINAN



UNIVERSITY OF THE PHILIPPINES
COLLEGE OF SOCIAL WORK AND COMMUNITY DEVELOPMENT

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Participatory Action Research for Community-Based Coastal Resources Management (PAR C-B CRM) Project

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The UP College of Social Work and Community Development (CSWCD) is conducting a joint project with the UP Marine Science Institute (MSI) in the municipality of Bolinao, Pangasinan. The project, Participatory Action Research for Community-Based Coastal Resources Management (PAR C-B CRM) is innovative in the sense that it brings together the biological scientists, the social scientists, and the community members in the common search for sustainable and equitable modes of resource utilization. The two-year project has the following general objectives:

- 1) to develop a participatory process of generating knowledge and understanding of the coastal communities' resources and social system through which the people educate themselves to take action to equitably use and manage it in a sustainable manner;
- 2) to lay down the basic structures and mechanisms necessary for setting up a C-B CRM; and
- 3) to develop, use, and validate PAR methodologies appropriate for understanding the resource and social systems of coastal communities.

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BOLINAO, PANGASINAN**

University of the Philippines
College of Social Work and Community Development

**Participatory Action Research
for Community-Based Coastal Resources Management
(PAR C-B CRM) Project**

in cooperation with
UP Marine Science Institute

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University of the Philippines -
Social Action Research and Development Foundation Inc. (UPSARDF)
College of Social Work and Community Development (CSWCD)
Participatory Action Research for Community-Based
Coastal Resources Management (PAR C-B CRM) Project

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This work was carried out with the aid of a grant from the International Development Research Center (IDRC), Ottawa, Canada

Acknowledgement

OUR SINCEREST GRATITUDE to the following individuals and institutions for their valuable contribution to this undertaking:

The local government of the Municipality of Bolinao and the barangay leaders and residents of Dewey, for their assistance and cooperation in the participatory rural appraisal (PRA);

The UP Marine Science Institute's (MSI) project leaders and staff (IDRC project) for their assistance in providing data on the biophysical aspect of the resource assessment;

Dr. Angelito G. Manalili, dean of the UP College of Social Work and Community Development (CSWCD), and Dr. Sylvia H. Guerrero, president of the UP Social Action Research and Development Foundation (UPSARDF), for providing a home for the project and for their encouragement and moral support to the project team;

Dr. Federico Cruz and Dr. Zenaida Catalan of the UPLB Institute of Environmental Science and Management (IESAM) and *Ms. Rebecca Rivera* of Tambuyog Development Center (TDC) for sharing with us their experiences in PRA;

Prof. Jocelyn T. Caragay, who reviewed the early manuscripts of this volume;

Dr. Lianna T. McManus who reviewed the final text for this volume;

Prof. Maria Milagros C. Laurel for her editorial assistance,

Suyen Rodriguez and Cynthia Cruz for the illustrations, Boy Dominguez for the cover artwork, and Francis Perez for editing and layout of this volume;

Mira Pandela, Marlene G. dela Cruz, Resty Reyes, Onofre Pandela, Rose Zamora, Esther Hilomen, and Cesar Advincula for their clerical assistance and in facilitating the work of the research team; and

All our colleagues at the CSWCD and friends with the NGOs, for sharing their time, insight, and technical understanding with the project team in order to bring this work to completion.

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Unlike the neighboring barangays of Goyoden, Pilar, and Victory whose soil teem with rich vegetation, all that thrive in Dewey are coconut trees, breadfruit, aromas, horseradish, and a few fruit bearing trees like mango, star apple, *chiesa*, and *camachile*. There are also ipil-ipil trees and ornamental plants like sampaguita and bougainvillea. Given such limited land resources, the people have nowhere to turn to but the open seas.

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WHEN THE PEOPLE from the neighboring barangays came to gather seashells near the shorelines of Dewey, oftentimes they stepped on the scattered spines of dried Aroma twigs. This was also experienced by the women who bartered vegetables, fruits and other farm products with fish. Once pricked, the people usually uttered, "*Ambale puro diwi yatin mada-daan?*", which translates, "Why are there so many spines in this path?" From that time on, this barangay was popularly known as Poro Diwi - Spiny Island.

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ORGANIZATIONS IN BARANGAY DEWEY are either government, non-government, or church-initiated. Organizational thrusts range from the social, political, economic, or religious in nature.

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BEING IN AN ISLAND SETTING, fishers of Dewey are almost totally dependent on the marine environment for their subsistence.

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IN ADDITION TO CAPTURE FISHERIES, Dewey households are engaged in home-based activities such as shellcraft production, fish drying, and *bagoong*-making that provide them supplementary sources of income. It is interesting to note that all three are still dependent on marine resources.

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Based on oral and written history, one need not go far from shore and fish for long hours to catch enough for the day's food, with little extra to be traded for other needs. That is not the case anymore. Looking ahead, much needs to be done.

Sharing

AN INTRODUCTION

Participatory rural appraisal (PRA) is the initial phase of the Participatory Action Research for Community-Based Coastal Resources Management (PAR C-B CRM) Project being conducted by the UP College of Social Work and Community Development (CSWCD) in Bolinao, Pangasinan. The project is being carried out in cooperation with the UP Marine Science Institute (MSI).

The coastal barangays Arnedo, Luciente I, and Dewey served as pilot sites for the project. This profile of Barangay Dewey, an island Northeast of mainland Bolinao, is part of a four-volume series containing the results of the PRA. Included in this series is a volume documenting the PRA process in the three barangays.

The separate volume on the PRA process discusses some of the theoretical aspects of the method while documenting the praxis in actual community work. It highlights some specific and special features of this particular appraisal, unraveling oftentimes unique and enlightening experiences.

The physical characteristics of the barangay are discussed in chapter 1 of this volume. It includes, among others, a description of territorial and geographical features of the island.

Chapter 2 goes over a brief history of the island constructed from written and oral accounts of some community members. It tells about how the island underwent changes from a community once blessed with natural wealth to one with degraded environment and depleted resources.

Chapter 3 enumerates the several organizations in Dewey. These organizations are either social, political, economic, or religious in nature. It gives a brief description of some of the major organizations in the island.

The book enters into a more specific examination of the community's resources in chapter 4, sketching a short inventory of both terrestrial and marine resources. It describes how, given the very limited land area, people in Dewey are heavily dependent on the depleted marine resources. It discussed the economic importance and status of each ecosystem such as mangroves, coral reefs, seagrass beds, and various resources such as sea cucumbers and seaweeds in the coastal zone.

Chapter 4, however, did not touch on fisheries as the next chapter is devoted entirely to this major resource. The value and importance, different methods, seasonality, utilization patterns, and economic and tenure arrangements of capture fisheries in Dewey are discussed in chapter 5.

Other predominant economic preoccupation in the island, meanwhile, were taken up in chapters 6 and 7, dealing with gleaning activities and home-based industry, respectively. Shell gathering and shellcraft, fish paste processing and fish drying are among those livelihood activities community members are engaged in.

Chapter 8 tries to synthesize the discussions of the previous chapters drawing much on the data presented to identify patterns in the status and utilization of resources in Dewey. It seeks to explore possible areas of intervention as far as resource management is concerned. At the same time, it proceeds to suggest specific short-, medium-, and long-term concerns for a community-based coastal resource management program.

The data collected in the three barangays through separate but continuous and sometimes, simultaneous processes are presented in the three volumes in almost the same format.

All in all, this volume in particular, and the series as a whole, raises more questions than answers - hoping to generate more efforts, specially on the part of the people themselves, to confront problems and issues besetting their community and environment. It believes that this very process is empowering in itself as it provides venues where people can assume a more pro-active role and take concrete steps in addressing the fundamental problem of poverty and environmental decline.

This volume may have very well been written by the people

themselves. It is a product of their toils to discover and learn more about themselves and the problems they are facing. The discoveries and realizations herein, little as they seem, are being shared so they may add to the growing body of knowledge generated through participatory processes.

The PAR C-B CRM project in Bolinao, Pangasinan is ongoing, currently in the stage of in-depth research and implementation of the action component of the research.

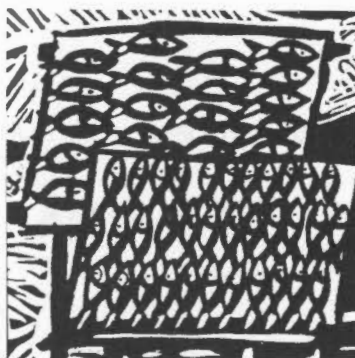
This is another testimony to the daily toils and struggle of the marginalized majority, through which it is hoped that others find a different, yet somehow common experience. It is further hoped that we find in it a cause and inspiration for our own personal struggles.

Moreover, the reader is encouraged to read further onto the three other volumes and share in this journey of discovery with and by the people.

1

Barangay Dewey

A COMMUNITY PROFILE

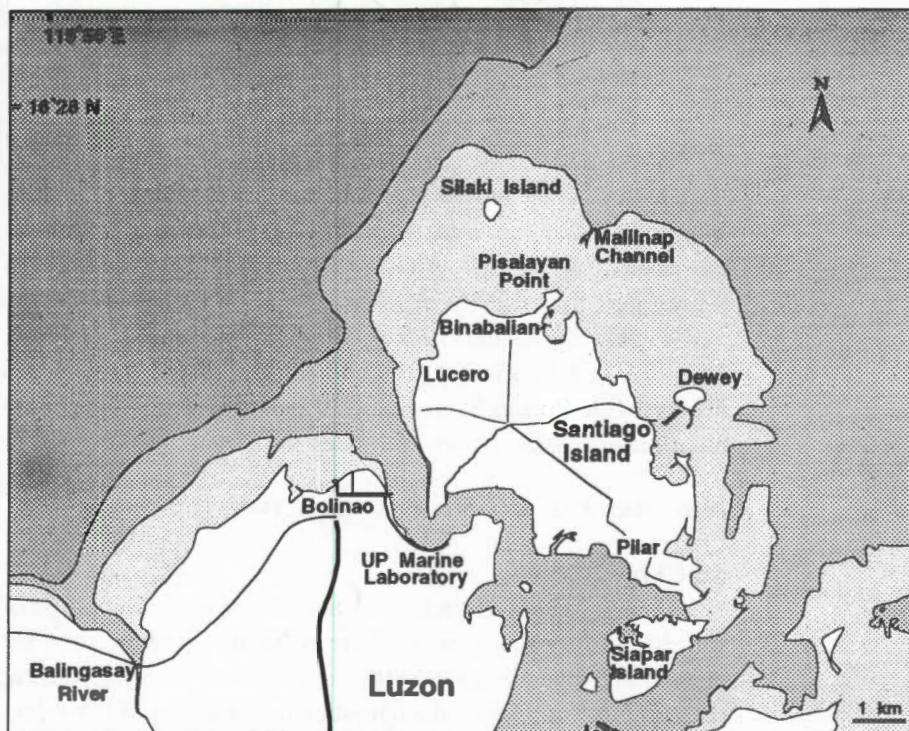


GEOGRAPHIC CHARACTERISTICS

The island barangay of Dewey is the smallest among the ten coastal barangays of the municipality of Bolinao. It has a total land area of 13.42 hectares. It is bounded on the North by the China Sea, on the East by the Lingayen Gulf and on the South and West by Santiago Island.

The island is seven kilometers by sea from mainland Bolinao. It is accessible by *banca* (small boat), with the trip usually taking 30 minutes from Arosan, Bolinao.

Fig.1. Dewey Island is located Northeast of mainland Bolinao.



Dewey has six *puroks* namely: *Naragsak*, *Nalinak*, *Mabuhay*, *Linglingay*, *Saranay*, and *Nagasat*. The fishers' settlements in the island have somehow clustered according to the type of fishing gear they use. *Puroks Naragsak* and *Nalinak* are inhabited mostly by *karukod* (drag seine) users. *Puroks Nalinak*, *Mabuhay* and *Linglingay* are generally populated by deep sea fishers, while *Puroks Saranay* and *Nagasat* are settled by a combination of *karukod* users and deep sea fishers.

NATURAL AND PHYSICAL CHARACTERISTICS

Soil Type

Dewey Island has a relatively flat terrain with sandy type of soil. Its land area is so small there is hardly enough space for agriculture, save for some backyard gardening activities during the rainy season. Unlike the neighboring barangays of Goyoden, Pilar, and Victory whose soil teem with rich vegetation, all that

thrive in Dewey are coconut trees, breadfruit, aromas, horse-radish, and a few fruit bearing trees like mango, star apple, *chiesa*, and *camachile*. There are also ipil-ipil trees and ornamental plants like sampaguita and bougainvillea. Given such limited land resources, the people have nowhere to turn to but the open seas.

Climate

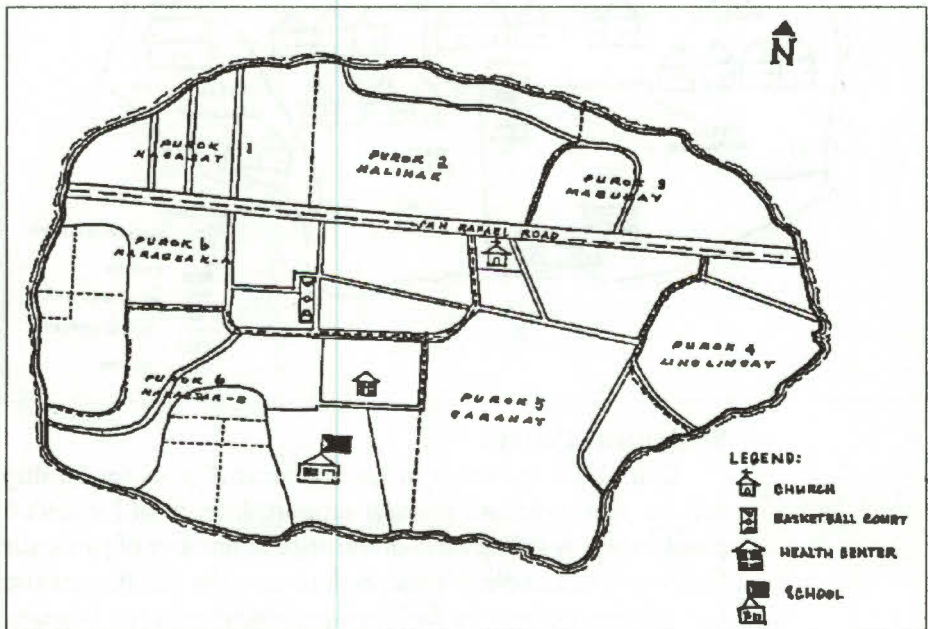
Climate in the island is classified into wet and dry. The wet season falls within the months of July until October, and the dry season from November to June.

DEMOGRAPHIC CHARACTERISTICS

Population

According to a survey conducted by elementary school teachers in 1993, the population stands at 2,076 in Dewey. Unfortunately, no data is available in terms of sex and age distribution. Instead, the rural health unit provides the following data on children and women: there are 399 children aged 0-6,

Fig. 3. Map of Dewey showing the six puroks and the various landmarks.



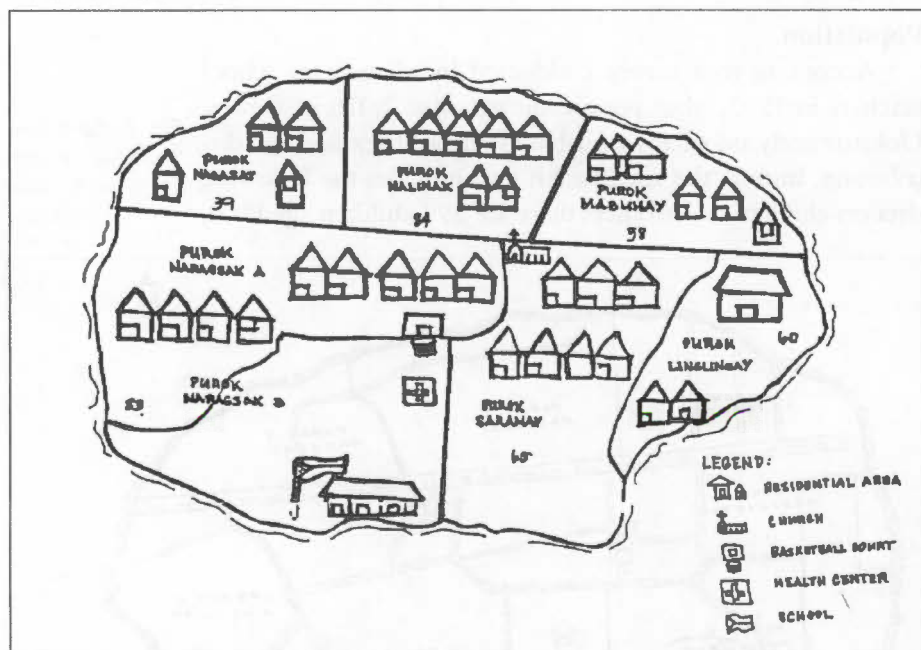
and 304 women within the 15–45 age range. (This data is based on their maternal and child care program.)

Records of the Sangguniang Kabataan (Youth Council) show that there are 132 youths (18–21) in the barangay. Of these, 114 are out of school. Out of school youths are further classified as youth fishers and migrant workers.

At present, there are around 430 households in Dewey. Almost all the families are related either by kinship or by affinity.

Of the six puroks, Naragsak and Nalinak have the largest population. Puroks Saranay, Mabuhay, and Nagasat, are almost similar to Nalinak in terms of land size, though less densely populated. In terms of land size, Naragsak has the largest area followed by Saranay.

Fig. 4. Settlement pattern in Dewey.



Settlement Pattern

Clans tend to cluster in specific areas [Fig. 4] for kinship and for economic and political support. In each of Dewey's 6 puroks, there is a noticeable dominance in number of particular families. For example, Nagasat is dominated by the Ramos and Cali families, Nalinak by the Narvases, Mabuhay by the Lopezes,

Linglingay by the Reolegios and Amoradas, Saranay by the Quilas and Naragsak by the Espinosas and Camasos (like the family clusters in Naragsat, the Espinosas and Camasos are not as large as those clans mentioned in the other *puroks*). Equally significant in number as the Lopezes and Narvases clans is the Cariño family, though they are not as closely clustered as the two.

Housing structure in Dewey range from the large, all-concrete structures to the simplest dwellings made of nipa shingles, wood, and bamboo. Puroks Nagasat and Saranay have the most number of concrete houses, though there are a few large ones at Nalinak and Mabuhay. The cluster of the small houses made of light materials are in the Nalinak and Naragsak areas, where most of the subsistence fishers reside.

The land occupied by a clan is usually owned by a land-owner relative who has granted favor to his/her kin. By cluster, it means their houses are not merely built near each other, but that there is also a bond and a certain degree of economic interdependence among them.

DYNAMICS OF SOCIAL RELATIONS

Generally, families in Dewey are closely knit, but priorities of assistance are given by well off families to their first degree kins. Social affairs such as marriages, baptisms, and anniversaries are occasions when relatives extend their support, financial or otherwise. Intra familial conflicts are usually settled amicably, but if one or both parties are unwilling to compromise, an influential or an elder family member is asked to mediate.

The type of operation a fisher engages in determines the kind of relationship he may have with the other members of the community. For example, between a small fisher, who operates alone using light gear, and a fisher who joins a fishing group (like the *parisris*, *balbalyun*, and *radar*), the small fisher may need less interactive skills than the group fisher who has to practice "*pakikisama*". In this way the latter establishes smooth relationship with the group and gain approval of the *amo* or "manager" (capitalist/gear owner).

A *parisrisan* group of fishers usually refer to the owner of the outfit as *amo*. The gear and the vessel require a large capitalization which very few in Dewey can afford. There occurs an implicit interdependence among the crew, a kind of unwritten agreement obliging the fisher to join the group in every fishing expedition. The *amos* on the other hand, are expected to extend assistance to the fishers during the *gawat* period (July to September), when fishing is too dangerous and unpredictable. In anticipation of the *gawat*, it has been a practice among settlers to save as much money, rice, and fuel (charcoal or kerosene).

Fisher families who are unable to save for lean times are the ones faced with difficulties, so they resort to borrowing money (or goods) from their *amo*. The *amo* lends money to the small fishers who work for them, and the latter's payment comes when they are able to go fishing again. The fishers in return, having been bailed out by the *amo* in their dire need obtains *utang na loob* (indebtedness), and repays him with loyalty. If the *amo* is a close relative, the poor fisher may sometimes be given the chance to own a fishing boat which he will pay in installment.

Fishers whose houses are built in their *amo*'s land are also expected to support the landowner's political candidates. If the fisher fails to support the latter, he/she gets ejected from the landowner's property.

Financial obligations to the *amo* are easily transformed into political debts, as loyalty to one person is best demonstrated during activities such as elections. To the fishers it is just one small way to repay their indebtedness to the *amo*.

Another factor which should be considered when studying social dynamics is land ownership. Approximately, only 12 families have their own land. The rest, either rent, or because they are relatives, are allowed to stay without rent.

ECONOMIC ACTIVITIES

Fishing is the major economic activity in the island. As of 1989 a survey conducted by the school reveals that there are 273 fishers in Dewey. According to one key informant, this

number is expected to have increased due to the influx of migrant fishers.

The same survey (1989) indicates that there are 93 individuals who own motorized bancas. Though more than 70 percent of Dewey households derive sustenance from fishing, only 112 fishers own production tools or gear.

With the foregoing data on the number of fishing gear, it may be safe to assume that a considerable number of fishers are gearless who merely join fishing groups capitalized by local "big-time" fishing operators. These operators own the gear and vessels, and get to finance fishing ventures.

Fishing activities in Dewey can be categorized into subsistence and large scale fishing. Subsistence fishing activities use traditional gear like *bintol* (crab traps) or *nasa* (fish traps), *sigay* (gill net), *karukod* (drag seine), *parisris* (drive-in-net) and various hook and line gear like the *tora-tora* or jigger. Fishing vessels of subsistence fishers are either motorized bancas or bamboo rafts. They usually fish within the reef flat and slope.

On the other hand, large scale ventures catch fish in the deep sea (including the international waters) using large nets and high powered motorized bancas. This activity is capital-intensive and entails great risks to the health and safety of the fishers. Under this setup, fishers form a fishing group composed of an average of 10 bancas. One fishing trip in the deep sea entails high capital which can be broken down into gasoline, ice, food and other miscellaneous expenses.

There are six (6) groups of fishers (locally called *pangkat*) employed by six different operators or capitalists. These fishing operators are residents of the barangay. Though these groups operate independently from each other, they have common target fishing grounds — the Payao or fish aggregating devices set up by large fishing capitalists in areas near Zambales or in the international seas. The fish aggregating devices are also locally referred to as *radar* or *payao*, and fishers call this type of fishing expedition *pagraradar*. One among the 6 operators has installed his own radar in the deep sea.

The other economic activities in the island are in one way or another still directly related to fishing. In Dewey, the people's

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economic undertakings indeed revolve around the resources of the sea. These activities include fish vending, fish trading, fish drying, and *bagoong* making (salted fish paste). Likewise, poor fishing families supplement their income with that derived from seaweeds and shell gleaning and salt-making. A few people engage in shellcraft and boat making.

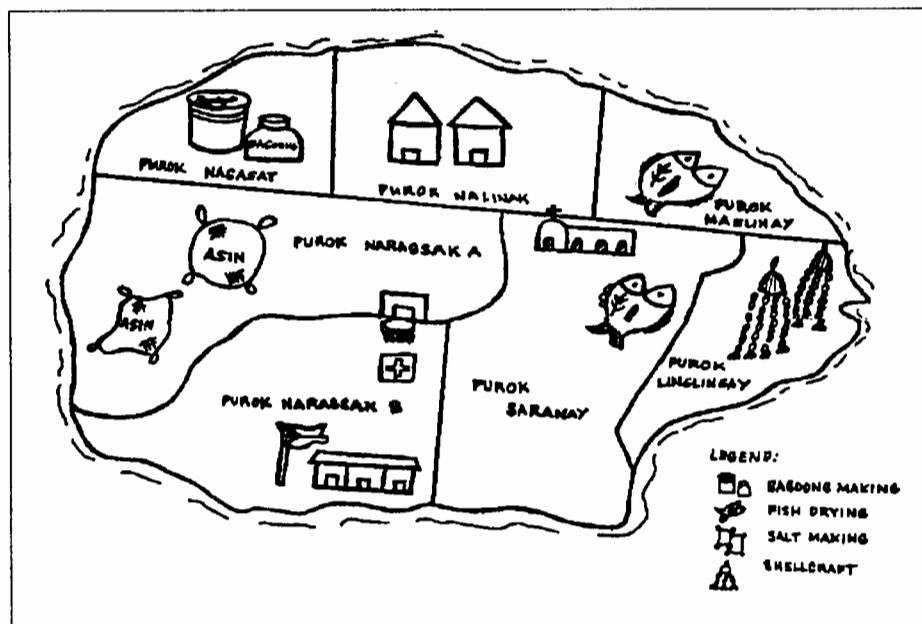


Fig. 5. Dewey economic activities.

Overseas employment has proved to be a significant source of income for a number of families in Dewey. At present, there are around 86 overseas contract workers (OCWs), majority of whom are women with ages ranging from 17-35 years. Most of them are employed as domestic workers in Singapore, Hongkong, Malaysia, and countries in the Middle East. These OCWs are major contributors to their families' economic needs. Their earnings augment those which are derived from fishing. Some residents also engage in livestock raising like hogs, ducks, and fighting cocks as additional sources of income for the family.

A few professionals, mostly teachers, are not dependent on fishing as a source of livelihood.

SOCIAL SERVICES

Health

The government-run Rural Health Center provides health services to Dewey residents. A midwife visits the center once a month to extend health care services for infants, children, and mothers. These include immunization, natal and prenatal check-ups, and weighing of preschool children to determine their nutritional status. Medicines for common illnesses like diarrhea, flu, and fever are available in the health center. Medicines though are not constantly available with local supply largely depending on those sent by the provincial health office. There are two local male *hilots* (who are also barangay health workers) who assist mothers during childbirth.

Since there is no medical personnel based at Dewey, residents go to the private doctors at the town proper in case of emergencies.

Education

There is only one school in the island, the Dewey Elementary School. According to school records, a total of 381 children were enrolled in 1992. The school has a head teacher and eight teachers who handle classes from kindergarten to grade six.

For secondary education, children enroll either at the Pilar High School in Barangay Pilar, the Cape Bolinao High School or the Bolinao School of Fisheries, the latter two being in the town proper. Some well-off families send their children to private schools in Dagupan City and Ilocos.

Few families are able to send their offspring to college. Only a few young people, by virtue of their families' economic standing, are able to pursue college either in Baguio City, Pangasinan and Manila.

Electricity

Dewey is covered by the electrical services of the Pangasinan Electric Cooperative. Because of the island's distance from mainland Bolinao, electric connections or posts are coursed through Santiago Island from Anda, Alaminos.

Transportation

Being an island barangay, the primary medium of transportation to and from Dewey are motorized bancas. *Balsa* or bamboo rafts are also used.

Communication

Television and radio broadcasts are the people's main source of news and latest information on the weather, fashion, and current national events. Communication through postal services is also possible. A resident gets the mail from the municipal mailman once a week or checks correspondence whenever one is in town. Domestic and overseas telecommunications services are available at the town proper.

2

The spiny island

A BRIEF HISTORY



In the history of Dewey written by Benjamin P. Raciles, an elementary school head teacher, it is stated that although Dewey is the official name given to the barangay, many people refer to it as *Poro*. Mr. Raciles recorded two accounts of how this came about as narrated by village elders whose parents are among the island's early settlers.

According to one account, *Poro* originated from the Ilocanos, since the term *poro* is the Ilocano word for island. Up to the present, the people refer to themselves as *Taga-poro* or island-dweller in Ilocano.

The longer and more interesting account is considered as the Bolinao version. Mr. Raciles writes:

*According to the Bolinao old timers, during the dry season, most of the twigs of the thorny aroma plants found in the island dried up and fell into the sandy soil. Others were blown by the wind or carried away by the high tide. When the people from the neighboring barangays came to gather seashells near the shorelines of Dewey, oftentimes they stepped on the scattered spines. This was also experienced by the women who bartered vegetables, fruits and other farm products with fish. Once pricked, the people usually uttered, *Ambale puro diwi yatin mada-daan*, which translates, Why are there so many spines in this path? From that time on, this barangay was popularly known as *Poro Diwi*, Spiny Island.*

In the early 1950's, some American visitors came to the island for a field trip. Incidentally, a barangay assembly was held at the plaza. These foreigners curiously went closer to the meeting place and inquired about the name of the barangay. From the

answer given by the natives, they only recognized the word *Diwi*. Hence, they suggested to change it to *Dewey* which to them sounded better, in honor of the American naval officer Admiral George Dewey.

Among the early settlers who are now in their 70's and 80's, many still believe that the first version, *Poros* is the traditional name. Likewise, most of the Ilocano settlers who dominated the Bolinao speaking people preferred to call it *Tagaporos*.

This account supports what is generally observed as the practice of local residents and outsiders in referring to the *barangay*. More importantly, it highlights the two ethnic groups, the Ilocanos and the Bolinaos, from which the present composition of the *barangay* owes its origins.

The senior residents of Dewey point to three families as the first settlers of the island, the Cariños, the Calis and the Cisters. These families were originally from the town center and had transferred to Dewey within the first three decades of this century. Some of them first went to the other barrios in Santiago Island before finally settling in Dewey. From this account, the Bolinaos were apparently the first inhabitants of the island.

The migration of the Ilocanos in the late 1930's to early 1940's slowly changed the composition of the island's population from being purely Bolinao. Most of these early migrants were escaping from difficult conditions brought about by the second world war.

However, artifacts excavated from the island in the 1960's may prove that the area has been inhabited earlier than what is generally believed. A document from the Bolinao museum written by National Museum researcher Avelino Legaspi has the following information:

Mr. Quintin Caasi and Mr. Delfin de Perio of Bolinao, Pangasinan first reported the presence of "pot-hunters" in Dewey Island, Bolinao, Pangasinan and brought to the Museum samples of the items excavated during the later part of January 1964.

The good pieces of trade potteries and gold objects, beads and other cultural materials were sold to some collectors in Manila by the "pot-hunters".

The lot that was dug was about twenty (20) square meters. More than a hundred skeletal remains were excavated by the pot-hunters who started working at Dewey Island during the early part of January 1964. By the early part of March they abandoned the area that they had dug up.

Unfortunately, the available document presented limited information on the artifacts recovered. It was not even clear on the identity of the pot-hunters and how Mr. Legaspi got hold of the information in the first place, since it was not an official archaeological excavation sanctioned by the National Museum.

Local residents who were paid to act as diggers in the excavation sites remember a few information. According to them the sites were located in Sitio Nagasat. The work was laborious and they were given very small compensation. One key informant remembers having discovered a sword and a helmet in his particular dig. He said he was disgusted with the whole experience since he was promised a part of the proceeds from the sale of the items, but nothing materialized. After leaving the island, nothing was heard from the pot-hunters again.

Another informant said that the skeletal remains were of long-bodied people. Though this is also inconclusive since human bones appear longer than its actual size. The discovery of these remains, more than a hundred according to the National Museum researcher, is quite interesting in relation to stories from some community residents themselves about the island being a former burial ground.

With these scanty information, it is hard to make any conclusive statement on the island's first settlers. Additional research is definitely needed in this area.

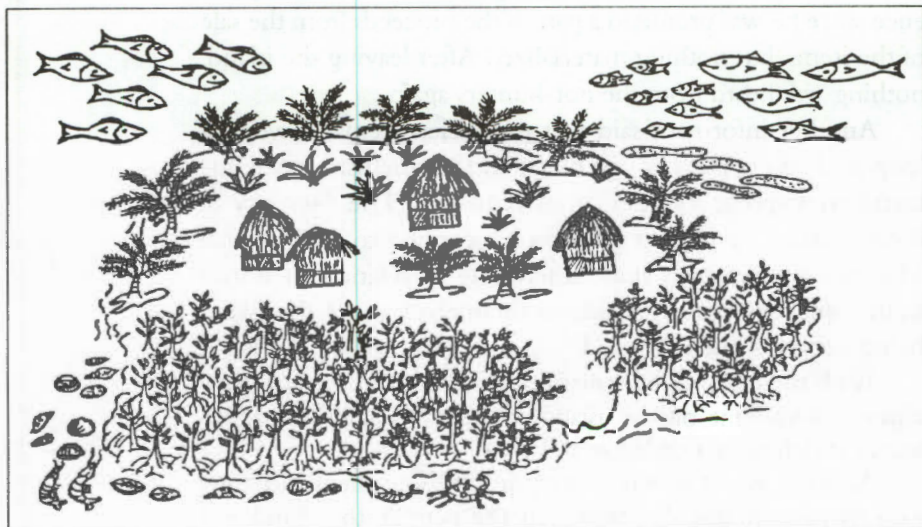
Another aspect worth looking into is how the island grew into its present size. According to the people, the island was originally smaller than its present area of 13.42 hectares. As the population grew, the people saw the need to reclaim portions of the shore to expand the space for residences. Sand and dead corals from the reef flat were used for this purpose.

Senior residents attest to the thick mangrove area located in the southern part of the island fronting the present site of the elementary school. Over fifty hectares of different mangroves

species used to exist, extending until Barangay Goyoden. The thickness of the growth was such that, once inside, a person would need a guide in order to get out from it. In the historical narrative explaining the origins of the barangay's name, Mr. Racelis has some additional information:

According to the early Bolinao group, they believed that some sixty years ago, the island was once a forest. It was densely vegetated with spiny trees like aromas and mamana. They were plentiful in the central part of the island. In the northern part, a tuber root crop called buga or wild tugui abundantly grew and almost covered three hectares. Along the shorelines, mangroves were found and believed to be habitats for monkeys and undomesticated animals. Other spiny plants like maguey, yabyaban and kamatsili were also dominant in almost all parts of the island.

Fig. 6. How Dewey resources looked like in the past, as perceived by the community.



The thick mangrove area provided habitat to a variety of marine resources around the island. Various species of fish and shells abounded. Senior residents attest that when they were children, they could not help stepping on fish while walking along the reef flat. There were times when they did not even have to use any gear in catching fish. All they had to do was

scoop them with their bare hands. Because of this abundance, the fish were left on the shores to rot. There is even an altered version of the Dewey origin popular among the residents. It changed the spine of thorns in the written account into spines of fish.

Some of these accounts may seem hard to believe to the objective listener. But generally they are told to impress to the listener the declining state of resources already felt by the residents.

The island's rich marine resource was the main incentive for those who decided to settle in the island. Fishing has always been the main occupation of the residents.

The major gear used was the *karukod* (drag seine). This was made of *kuton*, a local material. Other types of gear were the *kayakas* (drive-in-net), *karukop*, and *kariskis*. The motorized boats were introduced only in the 1950's. Until then, fishers used bamboo rafts locally called *balsa*. Bamboo used to abound in Santiago Island. A piece cost about fifteen centavos in the 1940's.

Osmundo Cali, 79 years old, is one of the oldest residents of the island. He has been a fisher since he was a young man of 18. The residents consider him an expert of sorts in the use of different kinds of gear. He was awarded "Fisherman of the Year" by the municipality of Bolinao during the term of President Magsaysay. He introduced to the barrio the use of the *parisris* (drive-in-net) in the 1970's. Mr. Cali recalled that in the past, the use of *karukod*, provided the fishers of Dewey with their main source of income. According to him, if not for the use of the *karukod* many households would have no means of livelihood. Although it was primarily used in catching rabbitfish fry or *padas*, this gear caught almost everything because of its small mesh size. Compared to other gear, it was relatively affordable for most fishers to own. Not surprisingly, the present crop of fishers echo Mr. Cali's observation. According to them, the municipal ordinance regulating the use of this gear is not reasonable since it is the small fishers who are most disadvantaged.

Another economic activity that was introduced in the 1930's was fish drying. Around ten households were involved during

its peak period. Although the activity was introduced by migrating settlers from other towns, Dewey eventually became famous for its dried fish even at that time. As in the present, the products were primarily sold in Vigan, Ilocos Norte. In fact, it was through this activity that most of the last wave of migrants from the Ilocos first knew of the island. Different species locally referred to as *sari-sari* were utilized unlike now when around 80 percent of the produce are mostly rabbitfish or *barangen*.

Fish corrals or *pasabing* were already set up even in the early 1940's. Most of the structures were owned by people from neighboring Goyoden. Just like in the present, the *pasabing* were placed along migration pathways within the seagrass beds. The local government at that time already leased out the area on which the structures were constructed.

According to senior residents, the practice of subdividing municipal fishing grounds for private ownership was already instituted in the 1940's. The payment of concession rights for the fishing areas has been one of the main sources of the town's income even in those days. A sampling of names of those who have previously assumed leasehold of rights show a listing of the barangay's past and present economic and political elite. Among these are the Puruganan, Cali, Cariño and Lopez clans.

In the 1970's, the barangay experienced a boom period in shellcraft making. It used to be that people from Binabalian and Goyoden glean within Dewey territory for shells to be used as raw materials in shellcraft. When enterprising residents realized the economic prospects of this home-based industry, they quickly learned the technology and established their own small ventures. Local residents began collecting shells for this purpose. Among the big local entrepreneurs involved in shellcraft trading in the mid 70's were Jose Puruganan and Mariano Dispo.

Shellcraft making afforded residents work opportunities in the gathering of shells and in the various stages of assembling the product. The extent of the activity was such that almost every household in Purok Naragsak and Linglingay was engaged in the enterprise one way or another, either as gatherers or assemblers.

In Purok Linglingay, the housewives were the most productive. As assemblers, they were paid piecemeal virtually con-

fined in their work areas day and night to meet their quota. In some households, entire families helped out. The women remember making full use of their time instead of socializing with each other. They jokingly allude that the only time they had for their husbands was in fulfilling their duties in the marital bed. Because of this activity, they were able to bring in the much needed additional income for the household.

Shellcraft production slowed down in the 1980s. The assemblers point out that at around this time, the costs of raw materials increased tremendously making the activity no longer profitable. It was only the trader who profited from the enterprise, hence workers ceased production. Currently, only Jose Puruganan is engaged in the buy and sell activities on a much smaller scale than before. Apparently, there is a declining demand for shellcraft products in the local and international market.

The women shellcraft assemblers make very minimal reference to the diminishing status of the different shell species as reason for the decline in production. They notice the decline, but the information is not voluntarily given. Presently, there are fewer households engaged in shell gleaning but the main reason given is the lower market demand for the resource.

Alongside the shellcraft industry, another home-based economic activity that experienced a similar shift in production is fish paste or *bagoong* making.

In the 1970s, Dewey was one of the major producers of *bagoong* in the entire municipality. Although there were less than ten households directly engaged in the activity during its peak years, there used to be high volume of production. One producer could make an average of three jars in one production. One local producer had even attracted a Japanese trader to invest and expand the market. But at present, only one household is still engaged in the activity.

Unlike in shellcraft, the *bagoong* makers are more definite in pointing out the decline in resources as the main reason for lower production. It used to be that various species of fish were utilized, making it a year round activity. But starting in the 1980s, fish catch began to decline. It became harder for the

producers to maintain year-round production so in order to cut down on expenses, the activity became seasonal. Consequently, production became dependent on the annual appearance of the *padas* during the migration season of *barangen*.

In the 1970s, some local entrepreneurs went into trading various marine resources. The trend was brought about by the demand of Japanese consumers for sea cucumber and sea urchin.

These resources were already being gathered long before the Japanese entrepreneurs arrived, but on a much smaller scale, mainly for home consumption. Local people say that residents of Binabalian and Victory were actually the ones who gathered the resources within Dewey boundaries for commercial purposes. The demand in the Japanese market only intensified the exploitation.

3



Organizational diversity

COMMUNITY ORGANIZATIONS IN DEWEY

Organizations in Barangay Dewey are either government, non-government, or church-initiated. Organizational thrusts range from the social, political, economic, or religious in nature. Furthermore, these organizations can be classified as active or inactive (as categorized by the Sangguniang Kabataan during a 1993 Leadership Training Seminar).

The Youth Council categorized the following as active organizations: the Barangay Council, Dewey Credit Union, Pastoral Council, Barangay Health Workers, Parent-Teacher Association, and Civilian Volunteer Organization. They considered inactive the following organizations: the Project Compassion, Dewenian Club, and various purok organizations.

Other organizations in the barangay are the Dewey Fishermen and Sea Farmers Cooperative, Dewey Multi-Purpose Cooperative, PLAN Association, and the Family Planning Organization of the Philippines. The status of some of these organizations are discussed in the following section.

Barangay Council

The Barangay Council is the legislative body of the village. It is composed of the *Punong Barangay* (Barangay Captain) as presiding officer, the seven regular *Kagawad* (councilors), the chair of the *Sangguniang Kabataan* and the secretary and treasurer. Being elected officials, (except for the secretary and treasurer, who are appointed) the Barangay Council members are duly recognized persons of authority by the residents. Other community members "designated by law or ordinance and charged with the maintenance of public order, protection and security of life and property, or the maintenance of a desirable and balanced environment, and any barangay member who comes to the aid of persons in authority, shall be deemed agents

of persons in authority" (Book 3, Local Government Units, Title 1, Chapter 2, Section 388).

The one sworn into office as Barangay Captain in 1989 was Jose Purugganan. However, during the municipal elections in May 1992, he resigned from his post to run for the municipal council. Two of his councilors did the same but none of them won in the elections.

All three posts were filled by virtue of the Council's appointment procedures. Purugganan's position was claimed by Guerrero Jacob, the highest ranking councilor who got the most number of votes in the past election. He is the barangay head up to the present, and will serve the full term of his predecessor's office. The Council likewise appointed Anastacio Vergara and Modesto Raposas as councilors.

The resigned barangay officials have reverted to private life, although they are still consulted on significant community matters. The former *Kapitan* is managing his shellcraft business while one of the former *Kagawad* is now working in Saipan. The other councilor reportedly still has plans of running for the post of Sectoral Representative (Fishers and Farmers Sector) in the coming municipal election.

Recognizing that the barangay council is a key component of the basic political unit in the country, community members thought the barangay should start mobilizing the people to pursue development programs. Critics claim that the council has yet to enact a new ordinance to impose discipline among its members.

Barangay Development Council

The Barangay Development Council (BDC) is also headed by the Barangay Captain. According to the Local Government Code of 1991, its membership is composed of the village councilors and representatives of non-government organizations operating within the barangay, and a representative of the congressman.

The same code also provides the key task of the Barangay Development Council: the formulation of a comprehensive multi-sectoral development plan that will set the direction of

economic and social development of the barangay. This development plan must be approved by the *Sangguniang Bayan* (Municipal Development Council).

The BDC of Dewey has submitted its 1993 Annual Barangay Development Plan to the Municipal Development Council. The plan focuses on four aspects — economic, social, infrastructure, and local administration. Among the projects incorporated in the plan which have been implemented are the following: installation of a water system with the help of the Archdiocese of Alaminos and the provincial government; and, the renovation of the barangay plaza, the funds for which was raised through a beauty contest held during the barangay fiesta.

Sangguniang Kabataan

The *Sangguniang Kabataan* (Youth Council) is composed of the chairperson, seven regular members, a secretary and a treasurer. It has a total membership of 132 young people, ages 18-21. Officers are elected by the youth.

The *Sangguniang Kabataan* is probably the most active organization in the island. Majority are students who attend school outside the barangay. The chairperson, a third year college student taking up education at the Pangasinan State University, spearheaded efforts on self-awareness and leadership training among the council officers.

SK officials are vocal about their observations and criticisms of the Barangay Council. They perceive the latter as ignorant of their roles or obligations to the community. They also see the need to train "second liners" (leaders), believing that there must be a youth leader among the ranks of the young fishers who stay full time in the community.

Civilian Volunteers' Organization

The Civilian Volunteers' Organization originated from the *Barangay Tanod* (village peacekeeping force). Coined by Bolinao's former mayor Emerito Miguel, the 10-20 civilian volunteers of the CVO are referred to as *Lupong Tagapamayapa* (Peace and Order Council). Civilian volunteers are appointed by the Barangay Council, and sworn into office by the municipal Peace and Order Council.

There are ten CVOs in Dewey tasked to keep peace and order and act as mediator whenever conflicts arise in the village. The Barangay Council, however, still plays a big role in settling disputes within the barangay. The CVOs' term of office is three years.

Barangay Health Workers

Barangay Health Workers are volunteers who assist the midwife in the Rural Health Center in extending health services. BHWs undergo seminars and training on primary health care to equip them in their roles as health volunteers.

Aside from assisting the midwife in direct health services such as weighing, immunization, and ration-giving, BHWs also provide health education to mothers about proper hygiene and sanitation, child care and first aid.

There are ten active BHWs in the island - eight women and two men who are also 'hilots'.

Dewey Credit Union Incorporated (DECUDI)

The DECUDI was founded in 1988 by the Archdiocese of Alaminos with the help of the Sariling Sikap Inc. (SSI). It aims to help poor fishers by extending production loans and care for members' spiritual growth. As of 1993, the DECUDI has a total of 86 members from three barangays of Santiago Island: Dewey, Pilar and Binabalian. Most of the members are economically well-off residents of the community.

Each member pays a PhP20.00 membership fee and a capital share of PhP300.00. A member is limited to a maximum of 10 shares. A member with one capital share can avail a maximum loan of PhP5,000.00. Officers, on the other hand, can loan up to a maximum of PhP10,000. The DECUDI has three committees, namely Supervisory, Credit and Election Committees.

Parents-Teachers Association (PTA)

The PTA is a school-based association whose main objective is to support undertakings related to school improvement. Members come from the parents of all schooling children. Membership is compulsory.

Meetings are called by the PTA President and school head if there are projects which require the parents' support or financial contributions. Since the school lacks needed facilities and funds for the repair of rooms or construction of chairs, the parents are relied upon for help.

Dewey Pastoral Council

The Pastoral Council is a Catholic organization introduced in the barangay by the Diocese of Alaminos in the early eighties. The Pastoral Council officers, concerned about the situation of their indigent members, requested funds from the Bishop of Alaminos for projects that will generate alternative livelihood. The member families were grouped into three, with each group having five members. Each group was granted a loan for two motorboats and fishing nets. Instead of asking the beneficiaries to repay their loan, the Diocese required them to set aside savings to buy another net and motorboat. This would then be loaned to other poor fishers, thus increasing the number of project beneficiaries. (The members are also obliged to attend to their religious duties regularly.)

The Pastoral Council tasked Benjamin Raciles, school head teacher and the only trained lay minister in the island, as caretaker of the fishing gear. He took charge of scheduling turns for the use of the gear. The beneficiaries' savings are entrusted to him for safekeeping. He also regulated the use of motorboats allegedly to prevent these from being used in illegal fishing.

At present, the boats are still functional, but the nets need repair. Though at first the scheme seemed feasible, only the original member families were able to take turns in using the gear. Most of the fisher beneficiaries quit borrowing the gear. Some of them have become members of the different *pangkat* who go deep sea fishing.

At the moment, the Pastoral Council's activities are focused on religious matters. Its officers lead in holding weekly prayer meetings.

Family Planning Organization of the Philippines (FPOP)

The FPOP, a national non-government group, trained two women from Dewey on family planning. These women

eventually became the distributors of low cost contraceptives in the community. They also coordinate the once a year health service provided by FPOP in the community.

Essentially, the FPOP volunteers act like family planning counsellors. They educate interested women on the value of family planning and the options they have on contraception. Women are also encouraged to discuss the matter with their husbands. In Dewey, women who use contraceptives are of an undetermined number. Distributors say that their clients' use of contraceptives depend largely on the effect of the latter on their bodies, and of course, the availability of money.

The women distributors procure the contraceptives from the FPOP headquarters at Alaminos.

Youth Conservation Corp (YCC)

The Youth Conservation Corp is the youth arm of Plan International, an agency involved in child sponsorship. Organized in November 1992, the YCC aims to support PLAN International in its environmental conservation program. At present, there are ten youths active in YCC, four of them have attended various environmental seminars. The YCC is also engaged in introducing permaculture technology to school children in coordination with the head teacher. The group has also started a mangrove reforestation project in Dewey, with the assistance of the local Department of Environment and Natural Resources (DENR).



The rate of no return

RESOURCE INVENTORY

LAND-BASED RESOURCES

Dewey residents, unlike the neighboring barangays do not have sufficient agricultural resources from which to derive alternative income. This is mainly because of Dewey's small land area. Only a limited variety of edible plant species can be found in the barangay. Among these are coconut trees, fruit trees like bread fruit, mango, star apple, *camachile* and *chiesa*. Vegetables suitable to the island's sandy soil are raised in backyard garden plots. Among these are *malunggay*, *pechay* and *patola*.

MARINE-BASED RESOURCES

Marine resources are the living and nonliving things found in the diverse ecosystems of the marine environment. These ecosystems are not bounded within a territorial or geographical division of a local government unit. Therefore, its coverage may include the municipal waters of a coastal barangay extending toward the deep sea where fishers virtually have free access to the resources therein.

Being in an island setting, fishers of Dewey are almost totally dependent on the marine environment for their subsistence. Marine resources within the coastline include fine sand and seashells. Found within the intertidal zone are seagrasses, seaweeds, invertebrates like sea urchins and sea cucumbers and crustaceans like shrimps and crabs. Various fish and coral species are found in the deeper portion of the reef flat and reef slope. Octopus and squid can also be found within these areas.

Mangroves

Some thirty years ago, the northeastern portion of Dewey Island was covered by around 54 hectares of natural growth of various mangrove species. This estuarine area provided habitat

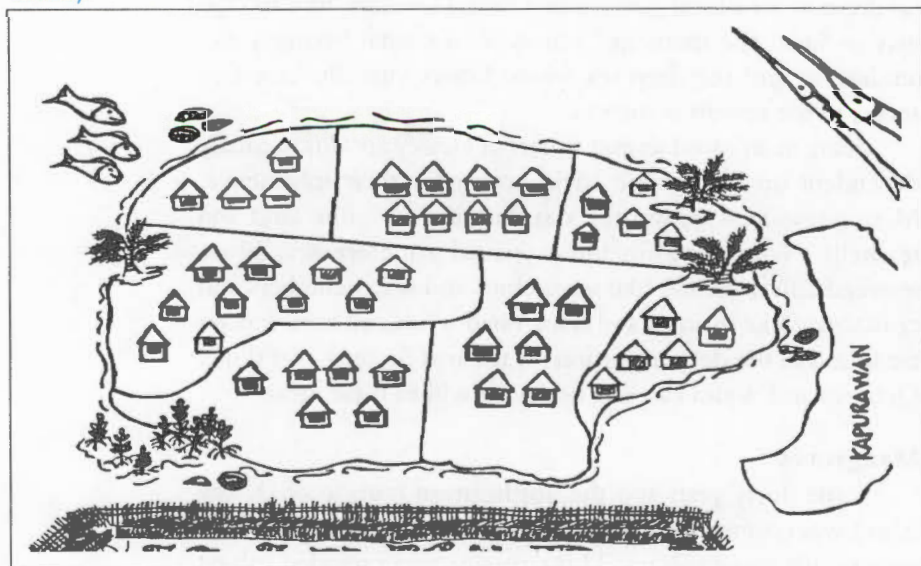
for different species of fish as well as shells, crabs and shrimps. In the past, mangrove branches were used as firewood and coloring agent for nets. During the 1960's the site was converted into a fishpond by private individuals from the town. All mangrove growths were totally cut off. There are residents who recognize the importance of mangroves to the marine ecosystem. At present, there are about eleven mangrove trees and 200 seedlings found in the Purok Saranay. The present mangrove patch was cultivated around the latter part of the 1980's through separate initiatives of two senior residents. These were mainly to prevent soil erosion on the reclaimed areas near their respective houses.

In the later part of 1980's, there have been efforts by the Department of Environment and Natural Resources in mangrove reforestation. These proved unsuccessful due to inadequate management.

Seagrass Beds

Seagrass beds or *palaypa* are found in the intertidal zone on the northern and western part of the island. These serve as food and shelter to shells, sea urchins, sea cucumbers and various fish species.

Fig. 7. Dewey's present resource status, as perceived by the community.



Around the island, it is common for seagrass beds to be accidentally uprooted by passing motorized bancas and *sayud-sod* (push net) users. The people are generally unaware of the damage this can cause to the ecosystem, mainly because they do not see its immediate value to them.

Seaweeds

Unlike the seagrass, the seaweed is an economically important resource for the people of Dewey. These are found mostly along the reef flat until the *beng-beng* (breakwaters). The most common species are the *ar-arosep* (*Caulerpa racemosa*), *ar-aruting*, (*Caulerpa lentillifera*), *kulinatnat* (?), *balu-balulang* (*Hydroclathrus tenuis*) and *pokpolo* (*Codium edule*) and *kulot* (*Acanthophora* spp.).

Seaweeds are known to thrive within the months of October until April. During this period, some 30 households depend mainly on seaweed gathering for their income. People say that seaweeds die and disappear during the rainy season. However this is not completely true since small clusters of *ar-arosep* remain during the rainy months, particularly on the portions near Silaqui Island.

The most preferred variety is the *ar-arosep*, described by many as the "pure" or "orig" (original) seaweed. People call this *ubas ng dagat*, (sea grapes). It commands the highest price among all species at PhP100 per can specially during the months from November to December. During this period, the aggregate resource stock is still not as abundant. It is also more difficult to gather at this time since it initially grows on coralline areas along the breakwaters. Also, during the period, there is less competition since only a few gather. One area where *ar-arosep* is known to thrive is called *baya-baya* by gatherers. From February to March the growth goes inward toward the reef flat (*loob ng beng-beng*). Consequently, the price decreases to a low of 30 pesos per can as the season reaches its peak in March.

If waves along the breakwaters are strong, gatherers may choose to collect the *kulinatnat*, the next preferred variety. This species grows in the sandy portions of the reef flat from November extending even until May. If the season for *ar-arosep* is over, gatherers collect *kulinatnat* on a bigger scale.

The least preferred variety among gatherers is the *aruruting*, mainly because its tiny branches and light quality would require more amount to fill up one can. Besides, this variety appears irregularly. Whenever it does, there is very limited growth. Generally, people have not noticed any marked change in the status of seaweed stocks.

Other Commodities

Sea horse, locally called *kaba-kabalyo*, is found in the intertidal area of Dewey, although not as abundantly as the other marine resources. They are commonly caught along the seagrass beds very near the barangay. Because it is rarely found, no immediate value is attached to it. Most of the senior residents, however, know of its medicinal qualities especially among Filipino-Chinese (e.g., as cure for asthma and easing of childbirth). Generally, however, no one has ever tried using it for this purpose. Most of what they know are apparently obtained from secondary sources and not through actual practice.

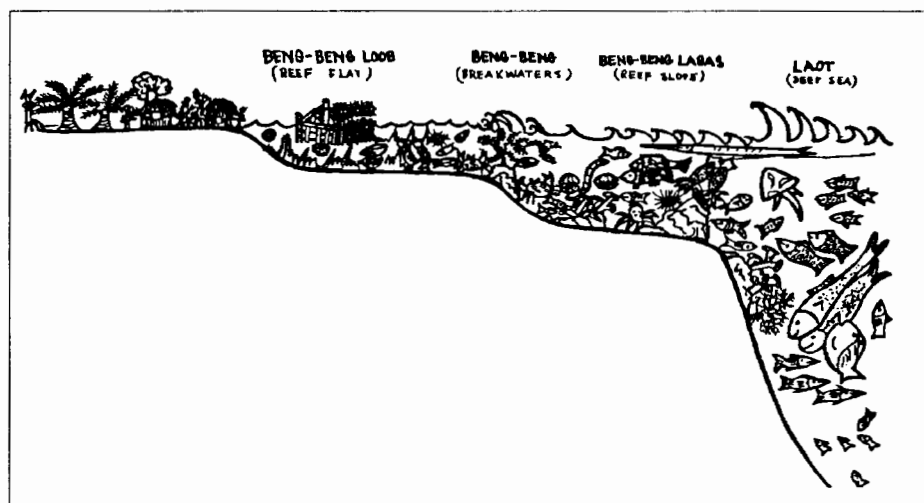
About two years ago, the sea horse acquired an economic value in Dewey. On the rare occasions that it is caught, it is sold to a local buyer who then markets it in Manila. Local prices range from two pesos to five pesos per piece depending on the size and quality.

The *kaba-kabalyo* is not collected intentionally. It is often accidentally caught by shell gatherers using the *sayudsod* (drag net). It is easily trapped along with seagrasses that get entangled in the net. Thus, the gatherers carefully sort out their catch. They say that the sea horse is a very soft creature, so it is easily dismembered when not handled properly. It is also known to die shortly after being surfaced from the water.

The *kaba-kabalyo* is then left to dry in the sun for half a day or until they are already brittle. The dried commodity is then stored in a plastic bag. The buyer waits until he has collected a considerable amount before going to Quiapo in Manila to sell.

Sea horses can be gathered during the whole year, though it cannot easily be determined at what particular time of the year it is abundant. People attribute its sighting to pure luck. During over two years of collection, the local buyer has amassed

approximately one hundred *kaba-kabalyo* from Dewey *sayudsod* users. In his first transaction with a Chinese buyer from Quiapo, he sold each sea horse for seventy pesos, regardless of size. He has collected less than fifty pieces then. He was promised by the same buyer a hundred pesos for each piece on his next delivery. However, his second transaction did not materialize. He was not able to find the buyer at his usual stall in Quiapo. Thus, he was forced to sell his supply, over sixty pieces of them, at a



meager five pesos each to a trader who was available then. The amount he got was not even enough to pay for his transportation fare.

The status of sea horse stocks is not easily apparent to the people. They simply do not have enough basis to know because they rarely see it anyway. At present there is no conscious effort to gather since sea horse is generally perceived as a non-valuable resource. This may change, however, if outside demand increases, especially now when a local buyer has started to attract the attention of the *sayudsod* and *karukod* users. The relatively low price/value it commands in the community may also change once the buyer has found a more lucrative market.

Although the *kaba-kabalyo* may not be as valuable as the other resources, efforts should be done to ensure that it will not suffer the same fate as the other depleted marine resources.

Fig. 8. Transect of past marine resources of the barangay as perceived by the community.

Another resource found within the intertidal zone is the *sea cucumber*, locally called *balat*. In the 1970's this commodity was gathered for commercial purposes. A local entrepreneur used to buy it raw from the gatherers, dried it and sold the semi-processed product to a Filipino-Chinese buyer. Eventually, this entrepreneur worked in Saudi Arabia, forcing the business to close altogether.

After this venture, no one else in the barangay went into similar efforts. People perceive it as hard work with very minimal income. Some people from Binabalian, however, occasionally ordered small volumes from gatherers. Up to the late 1980s, fresh sea cucumbers were sold within Dewey at PhP1.50 a kilo, while the dried ones were sold at PhP7.00 a kilo.

The very few who gather this commodity use it only for home consumption. They say that it is not their intention to collect sea cucumbers. They are primarily shell gatherers who only pick sea cucumbers found in their gleaning area. The residents say that the real gatherers are mainly from Goyoden and other barangays in Santiago Island, who sell these to buyers in Binabalian. When sea cucumber gatherers come to Dewey, residents do not prevent them from gathering the commodity. They do not even have to ask permission from anyone. Some even dry their newly harvested catch in Dewey. Relatives and friends from the area are requested to watch over these. Residents are generally indifferent of the intrusion and are seemingly not very concerned about the status of the resource.

The various kinds of *sea cucumber* found along Dewey shores are the following: *buli-buli*, *puti* or *purong balat*, *pinya*, *khaki*, *dudlu*, *baku*, *biker*, *suswang*, *black beauty*. All these varieties are edible but the preferred variety is the *puti* or *tunay/purong balat*. They are usually used as ingredients in noodle dishes. People claim these are seldom eaten, at least not by Dewey residents. They point to the Filipino-Chinese communities in Manila and elsewhere as its real consumers. They explain that there are other resources preferred over *sea cucumbers*. Those who do, eat it only to spice up beer-drinking sessions.

People have noticed a considerable decline in the number of *balat* seen along the shores. It used to be abundant the whole

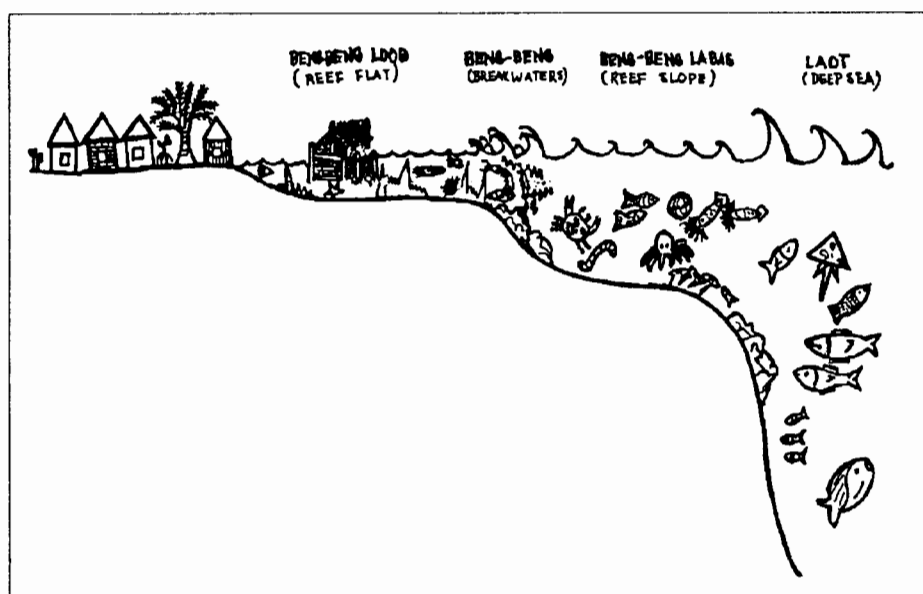


Fig. 9. Transect of present marine resources in Dewey, as perceived by the community.

year round, such that shell gleaners could not help stepping on these stationary creatures. Nowadays, not even the *black beauty*, the most common species, can be seen as numerous as before. People do not blame the decrease solely on the over exploitation of the resource although they consider this as one reason. Instead, they think that the sea cucumbers may have changed their habitat because the area has ceased to be suitable for them. They add that there may not be enough seagrasses in the area anymore so the population moved further to the reef area where there is more available food.

There is no apparent danger to overexploit this resource. The present disinterest in the resource as a potential food and income source is in a way advantageous to its conservation. Any future shift in attitude will depend mainly on economic necessities only the people themselves will know in time.

Another resource within the intertidal zone that has been remarkably depleted through the years is the *sea urchin*. There used to be two abundant varieties, locally called *maritang-tang* (Ilocano) or *kuden-kuden* (Bolinao). The stocks of the black species called *pana-pana* has also decreased in number, but not

as serious as the other two. In the past, the *maritang-tang* (*Tripneustes gratilla*), the orange variety, was collected both for domestic consumption and commercial sale.

The gonads of the sea urchin are the edible part. The people observe that it is best to collect sea urchins on a full moon because the gonads are fleshier. People say it coincides with their spawning season so they assume that the flesh is actually the would-be juveniles. The orange variety is preferred over the green because its gonads are fleshier and tastier. The green *maritang-tang* is said to be bitter tasting and is considered inedible. This variety is also known to die during the rainy season unlike the orange one which thrives the whole year.

People eat sea urchins raw during beer-drinking sessions or as part of their regular viand. Fishers are known to eat it fresh, straight from the sea, whenever they accidentally collect it during their fishing trips. All they do is remove the seagrass lodged on the gonads. When cooked, it is sauteed with tomato and tamarind. Others preserve it with salt or sugar to prevent early spoilage. If properly processed it can last up to one week. Fresh gonads are preserved with *tawas* or lime. Due to its thorn covering, the *pana-pana* is harder to handle so not everyone is inclined to collect it although its gonads are also edible.

Sea urchins are a highly priced delicacy among Japanese consumers. It was reported that Japanese buyers used to go to Bolinao in the 1970's until the early 1980's. The resource's eventual depletion can be traced to its intensified collection in the 1980's for the foreign market. In the past, collectors from Dewey sell their catch to a local trader who then markets it to a buyer in Binabalian.

The municipal ordinance banning commercial collection of the resource during its spawning season is well known throughout the island and people seem to be supportive of it. However, it came a little too late. At present, very minimal collection is done primarily for home consumption simply because sea urchins are very seldom seen in the area.

Various kinds of *sea snakes* are also found in the intertidal zone. These are locally called *tunggarong* (Ilocano). Sea snakes

are seldom collected in Dewey mainly because of the cultural connotation usually associated with this resource. People are not inclined to touch them and are even more wary to eat sea snakes.

According to the adventurous fishers, among the edible varieties are the *usub* (all white), *barangitan* (spotted) and *kumusing* (black). People say that these are not poisonous snakes. They bite to protect themselves from attackers, but once the blood from the wound is removed, no harm will come to the victim. The variety called *iwit* is often used as bait by fish trap users. These are usually found in the area between Dewey and Santiago Island.

Various species of *sea shells* are likewise gathered along the intertidal zone both for commercial and home consumption. Shell gathering is usually done during the low tide. The activity does not require any vessel nor equipment such that almost anyone, children or adults, can do it.

Commercial gathering is done mostly by *sayudsod* users. They supply the raw materials for the shellcraft industry which thrived in the late seventies to mid-eighties. Besides local gleaners, many gatherers also come from neighboring barangays.

More gleaners gather shells for household consumption. It is generally observed that people glean shells at anytime of the day to augment their daily food needs. The most commonly available variety is the *di-dila*. It thrives in seagrass beds and can easily be collected that even small children are taught to help their older siblings. Besides being edible, the empty *di-dila* shells are also used as a material for shellcraft. Other varieties collected are the *biat-biat*, *balinggasa*, *kasyo*, *banar*, *pusa-pusa*, *tamyaw*, *badong-badong*, *luga-luga*. All these are edible and can be found during the whole year, except the *tamyaw* which is most abundant in December. Other varieties abundant in the past such as the *kapo-kapo* and *bangkalanay* can no longer be found in their usual habitat.

Molluscs are found along the reef flat until the reef slope areas. *Kurita* or octopus is a valued resource in the community.

It is not easily caught so *kurita* fishers usually employ two or more fishing gear. The octopus is abundant from January to May. The two most common are the black and white varieties. Fishers believe that octopus live in specific habitats along the reef slope.

Fin Fishes. Among the fish species collected in Dewey waters are *barangen* (*Siganus fuscescens*) or rabbitfish, *gumian* (*Parupeneus*) or goat fish, *talakitok* (*Carangidae*) or large caballa, *rogso* (*Lutjanus spp.*, *Lethrinus spp.*) or snapper, *mulmul* (*Leptoscarus vaigiensis*) or parrot fish, *layalay* (*Tylosurus spp.*, *Strongylura spp.*) or gar fish, *sungayan* (*Naso Literatus*) or surgeon fish, *oreles* (*Thunnus spp.*) or yellow fin tuna, *burasi* (*Liza spp.*) or mullet, *balasot* (*Hemiramphus spp.*) or halfbeak, *bagsangtaaw* (*Apogon spp.*, *Pempheris spp.*) or glassfish, *lapulapu* (*Cephalopholis spp.*, *Variola spp.*) or red grouper, *baya-baya* (*Myripristis spp.*, *Sargocentron spp.*) or ember fish, *galunggong* (*Decapterus spp.*) or scad, *sapsap* (*Leiognathus spp.*) or slip mouth, *dalagang bukid* (*Caesio spp.*) or fusilier, *talanggutang* (*sepia latimatus*), *bagsang*, *malaga*, and *angrat*.

The fishers agree that there is a considerable decline in the volume of catch over the years. Their view and actions, however, seem to suggest that this has not reached alarming proportions. Fishers report that in the past, their catch could average from 100 to 300 kilograms per trip against the present volume of 10 - 50 kilograms. But mainly, the fishers attribute the decline to stiff competition among themselves. They also mention blastfishing and the use of sodium cyanide as possible factors, but consider these practices secondary. In the main, they point to the increasing number of people who are heavily dependent on the resources as the cause for the decline.

5

On rough waters

CAPTURE FISHERIES



This section describes the various economic activities of the people in Dewey. These activities are classified into three clusters: marine-based capture fisheries, gleaning, and home-based industries.

Value and Importance

The people of Dewey consider fishing as their most important economic activity. The barangay's limited land area of 13.2 hectares leaves little opportunity for any agricultural activity besides growing fruit trees and vegetables in the backyard. At present, fishing and gleaning provide food and are the main sources of income to majority of the families. More than 70% of the population is dependent on the marine resources in one way or another. Different sections of the community directly or indirectly exploit in varying degrees the resources found in the different ecosystems of the marine environment. Traditionally, these ecosystems are not bounded within a territorial or geographical division. However, Bolinao municipal ordinances dividing certain fishing areas for private use have increasingly altered the open access nature of the fisheries.

Even as late as the 1940's, older residents remember that fish and other marine resources had no monetary value. Mainly, they were consumed within the barangay and exchanged for agricultural products that were absent in the area. This was true for other fish products as well. Residents exchanged dried fish and fishpaste they produced for rice and vegetable products from the other barangays in Bolinao and Bani.

This picture has drastically changed in the more recent years. Greater competition among users now characterizes harvesting due to the increasing dependence of a growing population on the marine resources. The demand for more fishery

resources has resulted in its continued depletion. Fishers have no choice but to put in more labor and capital in their fishing operations. All these result in a two-way strain on both the marine environment and the people heavily dependent on it.

Technology and Capitalization

Of the 273 full time fishers in Dewey in 1989, only 112 individuals have fishing gear of their own.

Generally, people say that gear ownership has become quite difficult for most fishers because of the large capital investment this requires. Similarly, the ownership of motorized bancas has been limited to a few. Small fishers and their families use the more inexpensive bamboo rafts as vessels for fishing, transportation, and other marine related activities. On the other hand, the 1989 census counted 93 individual owners of motorized bancas. Now, the number can even be lower. Former owners of motorized bancas chose to sell their vessels to settle financial obligations. Increasingly, motorized banca ownership is becoming a status indicator next only to owning a house and lot.

Thus there are two prevailing schemes in gear and vessel ownership and utilization. On one hand, there are the fishers who have their own gear that they themselves use. Mainly this is the *sigay*, (gill net) used within the intertidal and reef flat area. The *sigay* has several varieties but the most commonly used is the *palubog* or *palned*. This requires a capitalization of PhP800 to PhP1,000.

Gear operation usually requires one to two persons and the use of a bamboo raft that the fishers themselves own. A bamboo raft costs about PhP1,000. Other gear included in this category are the *nasa* (bamboo fish pot) and *karukod* (drag seine).

On the other hand, there are the capitalist/operators who own bigger nets and motorized bancas. They finance fishing expeditions of groups of fishers that go beyond the breakwaters and are not limited to a particular fishing ground. A *pangkat* or fishing group is composed of poor fishers who have no access to capital. They choose to work for a capitalist instead of investing on their own gear and vessel. This scheme transfers management of the gear to the head of the fishing group provided

the capitalist-operator controls the marketing of all subsequent catch. Among the gear in this category are the *parisris* (drive-in-net), *basnig* (bag net) and *balbalyun* (drive-in-net). The *parisris* costs as much as PhP20,000, while capital outlay for *basnig* and *balbalyun* are PhP25,000 and PhP40,000, respectively. Deep sea fishing operations entail the use of motorized bancas. Motorized bancas are bought at PhP25,000 – PhP30,000 depending on the vessel's quality and age.

Aside from these gear, the capitalists / operators also own fish corrals and fishpens built within the intertidal and reef flat areas. These structures also require large capitalization of as much as PhP10,000 to PhP20,000. Only a few non-Dewey residents owned these structures.

Seasonality and Time Devoted to Activity

Fishing is a year round activity. Fishers, however, choose specific fishing grounds depending on the seasonality of particular target species. The type of gear used varies according to the season and fishing ground they select. The peak season is called *taglinak* or the harvest season of the sea. This usually occurs around the months of February to May, granting there is no radical change in climatic conditions.

Some fishing gear are operated exclusively during the daytime like *palutang* while others are used at night, an example of which is the *palned*. There are those that can be interchanged day or night. Choice of gear is also dependent on the species caught. Generally, there are equal numbers of individual daytime and nighttime fishers. Their primary consideration is the weather. Specific time of day for fishing and the number of hours devoted to it also varies. Generally, fishers who use larger nets and motorized vessels can go out for longer periods and farther distances than those with simpler gear.

Labor Power

The teenage or adult male members of the family are the main players in fish catching activities. The people consider fishing as hazardous. As a rule, therefore, women are not encouraged to directly participate in fish capture expeditions

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Women generally participate in pre and post harvest activities. Similarly, women take active part in all aspect of seaweeds and sea shells gleaning. Seaweed production entails skills in diving and bamboo raft handling which some women can do competently as the men.

The fishers, whether they own the gear or not, are responsible for its preparation as well as of the vessel and other fishing equipment before each fishing trip. They are tasked with the overall maintenance of these materials. Other family members (women and children included) help individual owners in these tasks.

Volume of Produce

The volume of catch per type of gear varies considerably, depending on the species, seasonality, and fishing grounds targeted by the fisher. Gear efficiency and time devoted to the activity are also significant factors affecting the catch. Catch volume would range from zero to several hundred kilos depending on the above-mentioned factors. For example, in times of poor weather conditions, *sigay* users have returned from trips without a single catch. The fish corrals haul the biggest catch annually during the migration period of the *barangen* (*Siganus fuscescens*). Large volumes of catch are also attributed to *pangkats* who operate aggregating devices or *radar* in the deep seas.

Post Harvest Utilization and Marketing

Subsistence fishers either sell or take home the catch depending on the immediate and specific need of the family - cash or food. If the catch is more than two kilos, about half a kilo is allotted for home consumption while the rest are sold. If the catch is exactly two kilos, the whole amount is automatically sold. The family should be contented with whatever is available for them to eat. During the rainy season when fish catch is low, the parents or children gather shells in the intertidal area to augment the family's food and income needs. Sometimes even this is not sufficient. There are days when it is extremely difficult for them to fill a small milk can of about three liters in an hour or so of gathering.

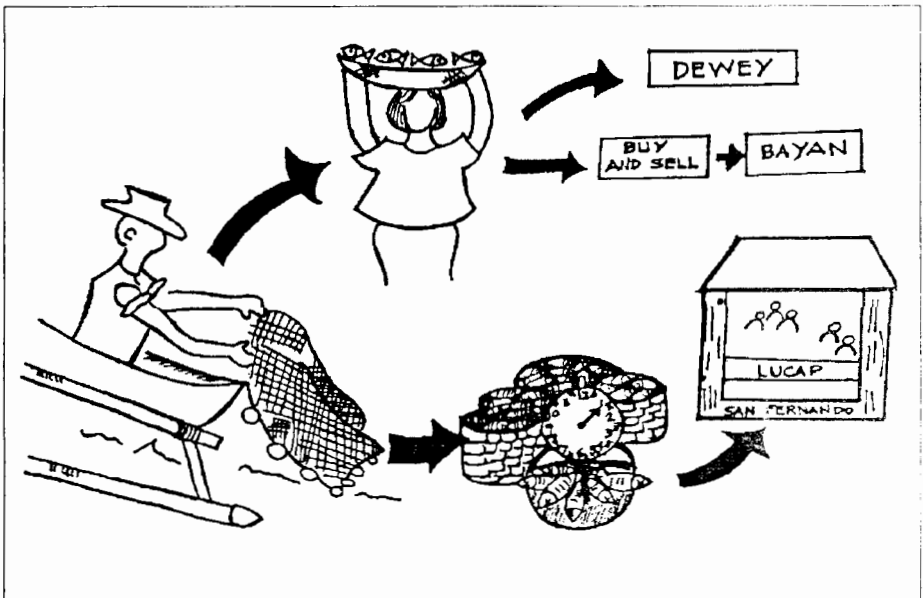
Individual owners of fishing gear have two options in selling their catch. They can choose to sell their catch directly to consumers or go to an established fish trader in the barangay. There are seasonal and year-round fish traders in the area. Seasonal traders are usually wives of fishers who sell the catch not only of their husband or other family members but those of other fishers as well.

In the first option, the fisher's wife or any female member of the household sells the catch within the barangay immediately after arrival from the fishing trip. Since the catch rarely exceeds ten kilos, these are sold out fast. There is a regular market within the barangay. Fish vending is a year-round livelihood activity for some women within the barangay.

Under the second option, fishers go to an established fish trader in the community. There are now two full-time fish traders in Dewey both of whom are women. Each has a group of fishers who regularly sell their catch to them. They also have separate markets so there is no apparent competition between the two of them.

One of the traders has a permanent stall in the Bolinao town market where she sells fish daily whole year round. She

For the purpose of this study, the fish traders were interviewed and their activities were observed.



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can make up to three deliveries in a day on periods when particular species are very abundant. The aggregate volume can go as high as 100 to 150 kilos a day. She admits that income fluctuates during the year since the seasonality of fish catch easily affects business. However, she confides that losing in this business is a very rare occurrence. At the least, she says, fish trading generates break-even returns for anyone who knows how to handle business.

Although she has about twenty fishers who sell their catch to her regularly, she does not turn down anyone who approaches her for single deals. This usually happens when fish is plentiful in the barangay. This also means accepting everything that the fishers offer, whatever the species and volume maybe. For her, every piece of fish is a valuable addition to her stock. This gives her definite advantage because she never lacks fish to sell. She compares her position to other traders and intermediaries who meet with fishers at sea to corner the best catch. She admits, though, that there are instances when her regular fishers sell to other traders especially when the price of fish is good. In these instances, many other traders suddenly mushroom in the community. These are seasonal or one-shot traders who simply take advantage of the opportunity to earn extra income.

To prevent her regulars from going to other traders, she takes several measures to ensure their loyalty. She allows them to get advance payment for a catch as long as the money goes to a necessary household expense. She says she does not want to tolerate indiscriminate spending so she only gives money if assured of its purpose. She also accepts invitations to act as godparent of the fisher's offsprings. On these instances her ties with the fishers and their kin are strengthened. Also, on particular instances when catch and income is good, she sponsors drinking sessions for the fishers within her premises. Lastly and more importantly, she is strict with her cash-on-delivery mode of payment. She will never buy on credit even if this means borrowing the capital from other sources. Fishers want cash payment immediately, she says, because they also have urgent household expenses to worry about. Besides, as she herself stated, this is the main reason why they go out fishing everyday, so it is important they should be **given what** is due them immediately.

Her average daily expenses in fish trading amount to around PhP100. This includes the following: two blocks of ice at PhP27 each; one gallon of gasoline at PhP40 each in the town market, the price is higher by PhP10 in the barangay; labor expenses of two loaders at PhP2 for each basket carried. She also pays an annual rental fee of PhP100 for her market stall aside from the daily PhP2 ticket pass in the Bolinao wharf.

The other woman trader sells her fish in Camiling, Tarlac where she has relatives who help manage the business. She transports her stocks daily so she incurs bigger expenses. She also trades seaweeds when it is in season.

On the other hand, capitalists / operators have the prerogative of choosing whether or not they will market the catch directly. Some gear owners, because they have the capital, labor, and equipment, handle the marketing of catch themselves. This is more profitable since it is the buyer who determines the price of the catch. The fishers are left with no choice but to agree to the price set by the capitalist. Even if gear ownership has already been transferred to the head of the group, the arrangement ensures the capitalists' right to buy the fishers' catch at prices which the former dictate.

MAJOR FISHING METHODS & TYPES OF GEAR

Radar

A *radar* is a fish aggregating device made of bamboo and coconut leaves positioned along the *laot* or the deep sea. These fish aggregating devices are owned by big capitalists from Bolinao and Manila. *Radar* owners often manage big fishing vessels and gear.

Dewey fishers "encroach" on the *radar* without permission from the owners. They use large nets like the *basnig* in harvesting. Residents generally believe that it is within the radar area where blast fishing is done rampantly. Fishers get as much as 100 kilos of *galunggong* (*Decapterus*) or scad and other so-called first class species in one fishing trip.

Among all the fishing practices in Dewey, fishing in the *radar* requires the biggest capital. Fuel cost alone amount to as

much as PhP6,000 per trip. Additional capital is needed for explosives.

Blastfishing is a well-known activity in the community. The nature of this fishing practice necessitates that information about it be gathered in the most discerning of circumstances. No direct questions have been asked so far of the residents. Information has been voluntarily and subtly given by them in conversations when the issue could not be easily ignored. Generally, people adopt various conciliatory explanations in their acceptance that indeed, such an activity is practiced by some fishers. In all these conversations, the incriminating nature of this ille-

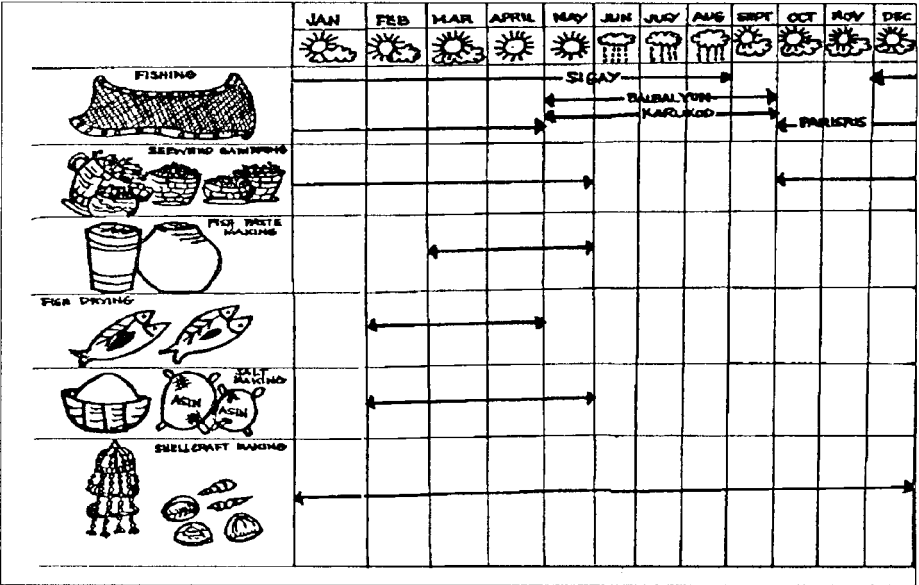


Fig. 11. Economic activities calendar of Dewey.

gal activity always defines the manner in which blast fishing is discussed. It is as if everybody and nobody at the same time can be implicated in the activity. No direct mention of the actual names of those involved have been made. The people are mostly non-judgemental, cautious and defensive in their acceptance that blastfishing exists in the area.

Residents have given various reasons why this activity may not be completely controlled. One is the issue of poor and discriminating law enforcement. In fact, Dewey is one of the areas under regular surveillance by the local police force.

Individuals and groups have been arrested, fined and brought to court. Apparently these measures are not enough for people to stop the practice. At present, there is one case being handled by the municipal court involving a perennial violator.

People seem to know of the environmental dangers of blast-fishing albeit in a very limited manner. It is common to hear them compare its effects with that of sodium cyanide fishing. (The use of sodium cyanide in capturing aquarium fishes is a known activity in one of the barangays in Santiago Island). People say that blastfishing is selective. They believe it only affects the intended catch and nothing else. On the other hand, residents argue that sodium cyanide leaves a more lasting harmful effect on the marine environment. They say it affects a wider area since the toxic substance can easily be swept off by the waves. Many believe that fishers do not use explosives along the coralline areas since the species they most favor, like the *galunggong*, do not thrive in them. Furthermore, they say that the radar are set up far away from the coralline areas.

Balbalyun

An important fishing method used along the intertidal zone and the reef flat is the *balbalyun* (Ilocano) or *tigray* (Bolinao). *Balbalyun* refers to the act of hitting the water with bamboo poles to drive the target species towards the direction of the nets. From a distance of about half a kilometer, two nets are set up one after another to trap the incoming school of fish. At present, there is only one set of nets utilized in the area. In the past, there were two other capitalists owning similar nets but they ceased operation when the nets were broken.

The *balbalyun* covers a wide area of fishing ground within a whole day period. It can include almost the entire intertidal zone and reef flat area of Dewey, from the eastern portion going westward near Silaqui Islands. This coverage can vary in each fishing trip. In deciding where the group will go on a particular trip, the manager relies on his fisher's instinct, attuned to seasonal and climactic conditions.

This method is used during the rainy months from May to September. The main target species of the *balbalyun* users are

the migrating *layalay* or gar fish (*Tylosurus spp.*, *Strongylura*). On rainy months, fishers believe that the *layalay* along with some other species take refuge along the reef flat to avoid the big waves beyond the *beng-beng* or breakwaters. Other species caught are the *balasot* or halfbeak (*Hemiramphus spp.*), *malabang*, *rogso*, *gumian* or goat fish (*Parupeneus spp.*) and the *kurita* or octopus (*Octopodidae*). Despite the rain, the water inside the *beng-beng* is relatively calm and cool during this period. The fishers usually go out even on rainy days. The only hindrance which they avoid is the big waves in certain parts of the fishing area, especially going towards Silaqui Island.

Balbalyun requires the participation of a maximum of thirty fishers at a time and the leadership of an experienced manager. The manager of the fishing group always prefers to have a big number of fishers together. The act of hitting the water is important in the whole process. More people doing this means a wider area coverage and lesser chances for the fish to move away from the direction of the net. The greater number of participants increases the chance of catching more fish. However this is not the case most of the time. There are days when the group has to be satisfied with only a minimum of eight to ten members. Usually, the number does not go beyond twenty.

Before the sun rises, *balbalyun* fishers converge on the shore where the two motor bancas to be used are stationed. At this time the manager already knows who the participants are for the day.

Each net is carried from one fishing area to the next by a bamboo raft tied to a motorized banca. Two fishers are assigned to each banca. One fisher operates the banca while another is on the raft and guides the banca's direction while being towed. The manager of the group usually takes either one of these roles. Most of the time, he is joined by a relative or a close friend who acts as his partner.

Upon reaching the fishing ground, the motor banca is anchored. The fishers assist each other in setting the nets at the bottom. They are placed about three meters apart from each other. The fishers make sure that the nets are arranged in a manner such that the mesh will not stretch wide enough for the fish to struggle free.

Even before the two motor bancas have reached their desired spot, the rest of the other fishers already start hitting the water with their bamboo poles to drive the intended catch towards the direction of the net. *Balbalyun* users usually have local names for the fishing grounds they cover within the reef flat area. The manager determines where the group would fish during a particular trip. In one fishing trip he may decide that the first stop of the net handlers be the *beng-beng na basit* (small breakwaters), while the rest of the fishers come from the direction of *pinatubo* or white sand. The length traversed by the fishers in moving to the direction of the net usually covers half a kilometer. Besides hitting the waters with their six foot bamboo poles, the fishers also make loud noises during the entire procedure. The noise further hastens the movement of the fish. Each fisher is positioned about ten meters apart from each other forming an almost straight line. As they move towards the net, the fishers on both ends of the line formation close in forward to slowly form an arch. This is done to ensure that the prospective catch will not pass through the sides should they change directions. As they approach the net, they eventually form a U-shaped figure with a wide opening. It takes them around thirty to forty five minutes to complete the procedure.

Usually, portions of the initial catch are consumed for a late breakfast together in the fishing ground itself. They form small groupings of four to six fishers to share packed rice and drinking water. After this short break they then proceed to the next fishing area. The succeeding fishing grounds going from *pinatubo* towards Silaqui Island are the *pamugudan*, *dalan ranom*, *sidio*, *baya-baya*, *balinik*, *malnig*, and *matiplok*. When the group reaches Silaqui at about noontime, they take a break for lunch. Lunch consists usually of steaming rice and a small portion of the catch, usually the smaller fish and squids. After eating, they resume and go towards the same direction they came from. They repeat the same process until the manager decides they have caught enough for the day.

In *balbalyun* the fishers are valued primarily for their skills in raft stirring or *pagtitikin*. The act consists of hitting the water first then stirring the raft. These two movements, combined, is

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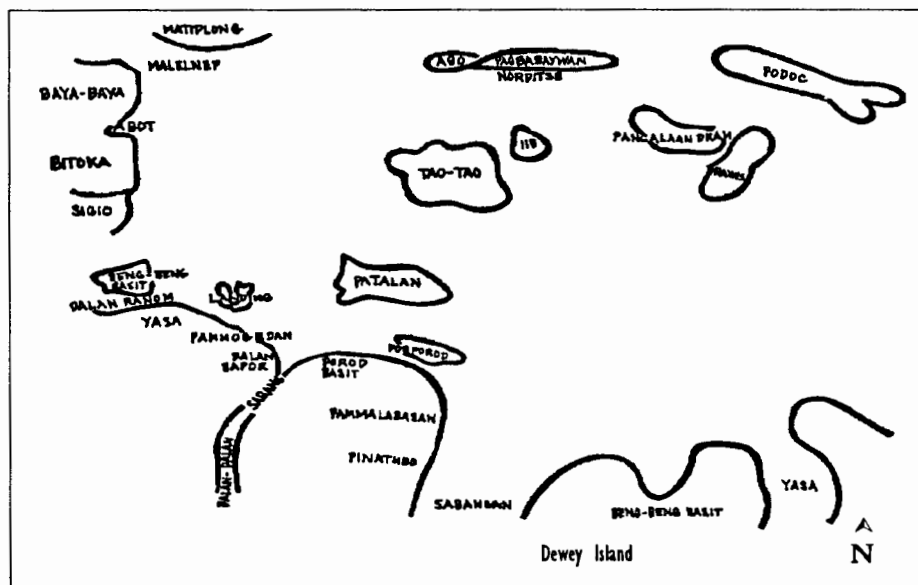


Fig. 12. The fishing grounds as drawn by a fisher.

called *pag-aabog*, or driving the catch towards the net. The manager says that he can easily spot from his distance those who are not doing a satisfactory job. He usually reprimands them later to improve their performance.

Fishers are also expected to know how to dive. This is useful when disentangling the catch from the net, although not everyone is required to dive. Diving is usually delegated to the younger participants.

Besides these skills, there are no strict regulations for the *balbalyun* participant. Fishers as young as thirteen years old and as old as sixty five have been observed to join the group. Even fishers from neighboring Goyoden are welcome to join. According to the manager, the ability of the fisher to work with a group, combined his individual skills are vital in *balbalyun* fishing.

A close look at the composition of the group in a particular fishing trip would show that most of the participants are relatives, close neighbors or friends of the manager. Still it is not entirely the manager's decision alone which determines this composition since everyone is indeed welcome to participate in *balbalyun* operations.

To bring in more people, even beginners are not discouraged from joining. The group calls these neophyte fishers *treyni* a derivative of trainee. These are mostly teenagers from thirteen and above who are starting to learn the trade. These young people are motivated to learn by their desire to contribute to household incomes. Usually, two *treyni* are assigned to one raft. One hits the water, while the other stirs the raft. They call this partnership *double engine*. The *double engine* gets one portion in the share of income. The two young people divide their share equally.

Obviously, the decision of fishers to join a *balbalyun* expedition is largely determined by the potential income this may bring to the family. *Balbalyun* fishers generally follow a system of sharing their catch: net - 2 parts; banca - 1 1/2 part; fisher - 1 part. The income of a fisher varies according to the volume of catch and the number of participants. On lean periods, with twenty to twenty five participants, a fisher can earn an average of PhP20/day, not even enough to buy a kilo of the squids he may have caught. The aggregate volume of catch during this lean period ranges from 30 to 40 kilos of *layalay* and squid. On the other hand, individual income during peak months, given the same number of participants, can average from PhP350 to PhP500/day. During this period the aggregate volume of catch ranges from 100 to 150 kilos.

Sigay

The *sigay* is a generic term for the various gill nets which are most commonly used by Dewey fishers along the reef flat and on the reef slope. There are two main types, the bottom set gill net or *palned* and the drift gill net or *palutang*. Besides the difference in setting requirements, these two types are set apart according to their mesh size, number of fishers required, and the time of day or night employed. In general, different types of *sigay* are used during different times of the year, depending on what species the fisher wants to catch.

Because of the relatively low capital requirements, most fishers have their own *sigay*. Likewise, since most are used only along the reef flat area and not beyond the reef slope, fishers use

the bamboo rafts for vessels. When the weather is favorable and the waves are not strong, the fisher can go as far as the breakwaters, where the water depth ranges from ten to twenty meters.

The drift gill net (*palutang*) is often used to catch *batalay* and the *balasot* or halfbeak (*Hemiramphus spp.*) which thrive from February to September. Compared to the bottom-set gill net, the *palutang* is more expensive. However, it catches bigger fish species. A fisher-made *palutang* can cost as much as PhP800, while a *palned* is cheaper at PhP500 to PhP600.

The *palutang* is a night time gear. However, fishers refrain from using it during a full moon since the fish can easily spot it when illuminated. The fisher usually leaves home before sunset. This way, he can choose his fishing ground ahead of the others. Extreme competition exists among fishers.

He arrives at his chosen fishing ground after around thirty minutes. Usually it is still early to drop the net. By this time the water is only just beginning to settle at a certain level which will be maintained for the rest of the night. If the net is dropped prematurely, it may be swept by the current beneath the surface. The net is usually dropped at a depth of three to five meters, after which the fisher waits for more than an hour. Some say they feel idle while waiting. To kill time and keep themselves warm, most fishers indulge in one to two packs of cigarettes for the rest of the night. Perhaps it is mainly because of this that smoking is one of the habits fishers find difficult to abandon.

Fishers using the *sigay* at night have bigger expenses. Aside from those already mentioned, they also have to buy kerosene (PhP2.50/night) for their lamp, and three batteries (PhP21/ a week) and light bulb (PhP10/ a week) for a flashlight.

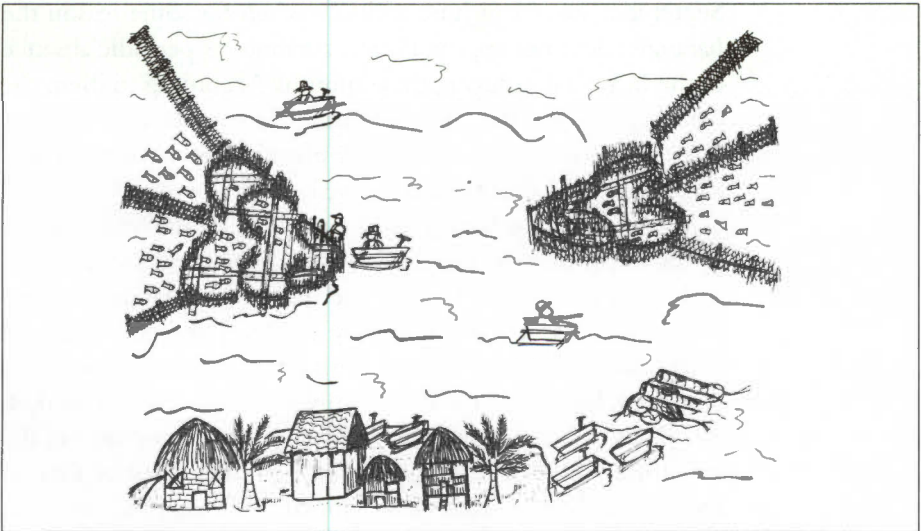
Sigay fishers have noticed a marked decline in their catch over the years. Though catch during the peak seasons are still profitable, average yield during the lean months often does not reach a kilo. Sometimes fishers go home without any catch at all. Some *sigay* fishers ascribe this decline in catch to the introduction of the *parisris* or a drive-in-net by the Visayan immigrants in the early 1980's. The *parisris* is bigger and covers a wider fishing ground. Generally it catches the same species as the *sigay*.

Fish Corrals

Mainly because of the *barangen* migration season, *pasabing* (fish corrals) play an important part in the barangay's socio-economic activities. Fish corrals have been in use as early as the 1940's. According to residents, there had been more or less the same number of structures and little change in ownership of these fish corrals through the years. Ownership of a *pasabing* could either be by an individual or by a group. During the *barangen* migration season, there have been fifteen fish corrals along the reef flat area surrounding Dewey. Only two of these are owned by Dewey residents, the rest belong to people from neighboring Goyoden. The people say that very few invest in fish corrals because its construction and maintenance is too labor intensive. Besides, according to them, one doesn't have to own a *pasabing* to benefit from the harvest of the *barangen*.

Fish corrals are set up mainly during the months of February to August. The cost of one structure ranges from PhP10,000 to PhP15,000. A *pasabing*, if properly maintained can last up to

Fig.13. Fish corrals put up in concession areas are major sources of income for the municipality.



three to four years. As a precaution, during months when the waves are strongest, usually from October to May, structures are dismantled or transferred to areas with less wave action.

The fish corrals are constructed along the area locally called *dogodog*, the usual path within the intertidal zone of Dewey

where various migratory fish species pass. Within the *dogodog* are fishing grounds where fish corrals are traditionally placed by their longtime owners. Starting from the eastern portion or *amianan* of Dewey, these areas are locally called: *paray-ray*, *sosyodad*, *gimwit*, *paderes*, *saliputot*, *rinumka*, *loong*, *sabang*, and *dalan ranom*. Through the years the *paray-ray* and the *sosyodad* have the most number of harvest so it usually has the most number of fish corrals at a time. This year there are five structures in *paray-ray*, and four in *sosyodad* while the rest of the areas have only one each.

During the migration period of *barangen* from March to May, the catch of the *pasabing* is shared equally by the owners and the concession holders. At this time, it is the *postor* who handles the entire fishing process, from the hauling of catch to the marketing. Although the highest earnings are achieved within those three months, there are still considerable yield the rest of the year. The migration of the *barangen* does not stop entirely in May. There can still be continued harvest until August and September, except in June and July when for some reason the *barangen* does not appear. Fishers attribute its periodic absence to the heavy rains during these months. According to them the *barangen* takes a different route to avoid the strong waves, but this explanation seem not entirely plausible since the rainy season covers the other months as well.

Aside from the *barangen*, other species are normally caught by the fish corrals like the *laki* or squid (*Sepiotheutis lessoniana*) and *malaga* (*Siganid*). During the rest of the year, the harvest including those by other Dewey residents are collected and marketed by Eduardo Cabana, himself a fish corral owner from Goyoden. He brings the catch only as far as the town market.

Everyday, the owners or their representatives examine the structures. On a good day, about two to three kilos of various species can be collected while during lean months, the catch could be half a kilo or even less, just enough for household consumption. The maximum daily income of fish corral owners from March to August can reach up to PhP300.

Fish catch is classified according to size. The biggest and highest priced is called the *tala*, costing from PhP50 to PhP70

a kilo. Species under this classification are considered first class. Among these are the large caballa or *talakitok* (Carangidae), *malaga* (Siganid), *angrat*, and *laki* (Squid). These are often brought to the town market. But if the first class catch is more than ten kilos, these are sold by the Goyoden trader to other traders going to Bani, Alaminos or Dagupan.

What fishers consider second class species or *segunda* such as the goat fish or *gumian* (*Parupeneus*), snapper or *rogso* (*Lutjanus* spp., *Lethrinus* spp.), parrotfish or *mulmul* (*Leptoscarus vaigiensis*) gar fish or *layalay* (*Tylosurus* spp., *Strongylura* spp.) are usually sold for PhP20 to PhP30 a kilo at the town market.

Small sized varieties of various species locally referred to as *sari-sari* are considered third class. These may often be *barangen* and *rugsu* sold at PhP15 a kilo also at the town market.

ACCESS AND TENURE

Concessions

The migration route of the *barangen* (*Siganus fuscescens*) is favorably located along the intertidal zone and reef flat waters of Dewey. Mainly because of this strategic location, this is a primary area among the fishing grounds leased out by the municipal government. The fishing grounds are divided into zones. Zone 1 covers the whole municipal waters of Santiago Island composed of the following barangays: Lucero, Binabalian, Goyoden, Victory, Pilar, Salud, and Dewey. Traditionally, Zone I commands the highest price during the annual bidding for concession rights. Concession rights are awarded on a yearly basis. The rest of the other lots with their respective territorial sites are the following: Zone 2 - comprising the municipal waters from Trenchera Point in Barangay Luciente I westward to Dalan Tonoy of Barangay Arnedo; Zone 3 - covering the municipal waters from Dalan Tonoy up to the west bank of Balingasay River of Barangay Balingasay; Zone 4 - spanning the municipal waters from the west bank of Balingasay River to Piedras Point of Barangay Patar; Zone 5 - covering the municipal waters from Trenchera Point of Barangay Luciente 1 south-

ward to Mangadia Point of Barangay Luciente 2; Zone 6 - comprising the municipal waters from Mangadia Point southward to Gagaban Bay of Barangay Zaragoza.

Concession ownership can be by individual or group. Because of the large capital required, especially for Lot 1, the usual practice is group ownership. The person with the highest share capital is called the *postor*. Although there is consultative decision making in the group, the *postor* takes full responsibility and control over management. The concession owner/s institute a set of rules or policies that govern the management for the whole year. Essentially, the owner/s have the exclusive right to harvest the resources within the entire fishing ground.

The bidding for the rights usually takes place in December of the previous year. On previous years, the municipal office allows lease payments on an installment basis. Beginning 1993, however, they required that the full amount of the bid be paid on the actual day of the bidding. For 1993, Lot 1 has been awarded to a group of Dewey residents at a cost of PhP81,000. The *postor* is Gabriel Lopez. The rest of the incorporators are Edy Lopez, Narding Lopez, Roberto Rabara, Juanito Amorada, Virgilio Cariño, Jesus Alura, Mariano Dispo, Romeo Carsula, Osmundo Cali, and Lito Amorada. The highest capital share is around PhP40,000 while the lowest is about PhP1,000.

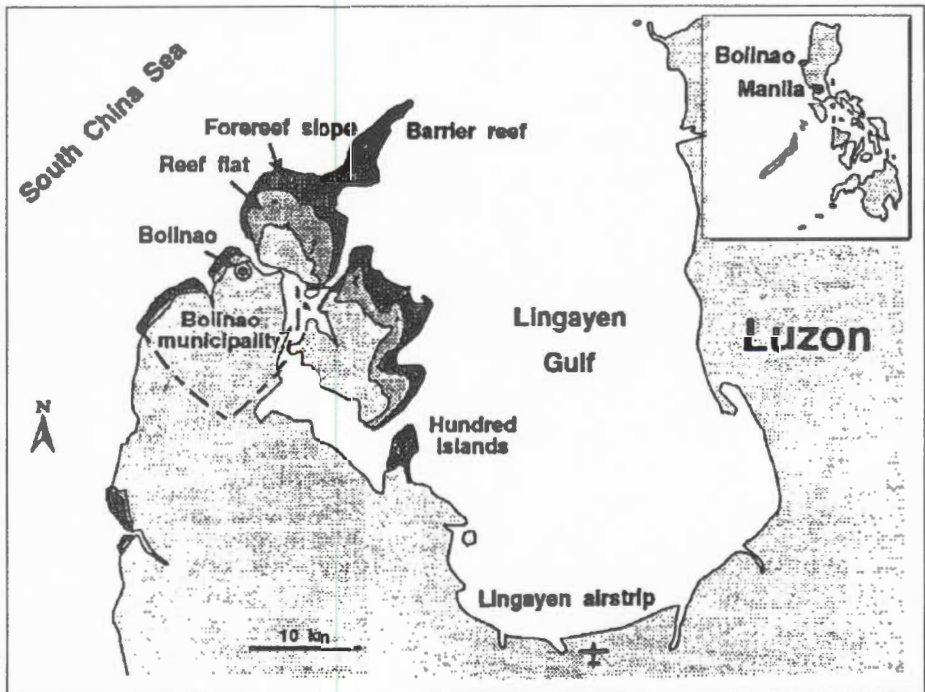
These concession holders are among the prominent people in the community. Most are related through kinship and political affiliation. The father of Gabriel Lopez, Domingo, was himself a *postor* a few years back. Interestingly, Gabriel has a reputation even among residents of other barangays as a *big time fisher*. He owns several big bancas engaged in fish trading that reach as far as La Union. Some people say that if ever he chose to run for the Barangay Captain in the local election, he has a good chance of winning. Moreover, it seems that his management of the concession for 1993 is favorable to some quarters in the municipal office who are vocal of their preference for it to be retained.

The other members have more or less the same credentials and have occupied top positions in the community. Mariano Dispo served as barangay chairman for six years aside from be-

ing the number one councilor in the barangay at present. Osmundo Cali was also a former *postor* in the 60's. Virgilio Cariño ran for municipal councilor during the last elections. Although he lost, he got the highest number of votes over the two other candidates coming from Dewey. Most of the concession owners have motorized bancas that enable them to engage in fish trading.

Almost 90% of the income of the concession comes from the annual three months harvest of the *barangen*. The *barangen* is caught primarily through the *pasabing* (fish corral) owned by individuals who are not necessarily share holders in the concessions. The rental arrangement within the concession area vary depending on the rules set by the *postor*. On three successive days within the months of February to April, which is the spawning period of the *barangen*, any type of fishing activity is prohibited within the concession areas, particularly on the sites surrounding the fish corrals. Watchers are stationed by the *postor* to ensure that the entire harvest is all accounted for. Likewise,

Fig. 14. Map showing the extent of the Bolinao municipality and reef system.



the *postor* has the sole authority to market the whole catch. The usual sharing system is fifty/fifty. Half of the earnings will be divided among the concession holders while the other half goes to the fish corral owner.

Normally, those who fish within the concession area are obliged to pay an annual fee to the rights holder. The rates depend on the type of gear used. For example, in the previous years, fishers using *karukod* (drag seine) were charged PhP100 (small), PhP150 (big), and PhP50 for *sigay*. Shell and seaweed gleaners are usually exempted from this fee. When earnings during the *barangen* harvest season is not enough to recover expenses, the owners usually enforce this ruling. This year however, the *postor* has forgone this arrangement in place of the three day fishing ban during the *barangen* migration season.

6



Gathering gifts from the sea

GLEANING ACTIVITIES IN DEWEY

Gleaning is one of the major economic activities among the subsistence fishers of Dewey Island. Fishers glean various edible as well as commercially valued resources such as shells, seaweeds, echinoderms, and other invertebrates. Though gleaning is usually small scale, it not only supplements a family's regular earnings from capture fishing but also serves as an alternative source of income during the months of October to May.

The succeeding discussions will tackle the different resources gathered by Dewey fishers from the marine environment and their significance as an economic undertaking.

SHELL GATHERING

Value and Importance

For Dewey residents, shells are a significant resource not only as a subsistence food item but also as a raw material with commercial value. Majority of the island's population gather edible shells along the intertidal zone for their daily viand. Since shells are available all year round, it has become a part of the islanders' regular diet. A few families gather and sell edible shells outside Dewey. Fewer still gather and sell shells as construction material to residents in nearby Barangay Goyoden.

There are approximately eight families in the island engaged in small scale gleaning for shellcraft. For them, shell gathering either supplements income derived from capture fishing or provides an alternative source of income. In the latter case, fishers gather shells on a full time basis and do not engage in other economic activities. Full time gleaners depend solely on shell gleaning throughout the year, and specially during peak months (October-May) when shells are abundant.

Production and Marketing

Among the edible shells gathered in the island are *kumukusay*, *liswek* (*Strombus luhuanus*), *bariyawan*, and *nuga-nuga* (*Fasciolaria trapezium*). *Kumukusay*, *palay-palay* and *sigay* (*Cyprea* white) are commonly used for shellcraft. *Susong balasang* is a species used as construction material.

More people engage in shell gathering during the months of October to January, when shells are most abundant. (The local people explain that the cool water temperature at this time is favorable for shell growth.) This period coincides with the slack season in fishing, and so, people shift to shell gathering to augment family income. Men, women and children alike engage in this activity.

On the average, a family harvests around two liters of assorted edible shell species in a day. On the other hand, gleaning shellcraft materials yields an average of two to three sacks or eight to twelve cans (each can is equivalent to 17 liters) a day. Undoubtedly, this volume has tremendously decreased compared to average harvests in the past. According to a key respondent, around five to ten years ago, a shell gatherer could easily fill up one 'kaing' of various shell species in an hour. (A *kaing* is a basket holding approximately 68 liters.) Today, it takes a gleaner at least half a day to gather one *kaing* of shells. In addition, said the same respondent, shells gathered then were definitely larger in size, unlike the very small ones they often find at present.

Edible shells are usually gathered by hand in the gleaning site locally referred to as '*Pantar*'. Gleaners refer to this as '*karang-karang*' which literally means "handpicking" or "picking up". In this process, shells are selected according to the kind and size. Raw materials for shellcraft are gathered using a '*sayudsod*' for a bigger harvest. Gleaners refer to the process as '*pagsa-sayudsod*' which entails raking the bottom of the intertidal zone with a scissors net. The *sayudsod* can be operated by an individual but at least two people are needed to place the shells inside a sack and load the harvest on the raft. Using the *sayudsod*, assorted shells are gathered, and it is up to the gleaner to sort which shells can be sold for food and for raw materials.

Once the harvest is hauled, the edible shells are immediately separated from those to be used for shellcraft. The edible shells, if plentiful, are brought and sold by the women to Bolinao or Bani during market days (Thursday, Sunday, Saturday and Tuesday). A liter of shells (locally measured using a *limon*) is priced at 5.00 to 6.00. The non-edible shells for shellcraft-making undergo different stages of processing. First, they are put in a sack and placed near the shore for one week to decay. This process is called '*palungsot*' in Ilocano. The shells are then rinsed and roasted (*pagsasangag*) to whiten them. These are then soaked in a bleaching solution for a day to eliminate the foul smell and give them a shinier texture, then sun-dried. The shells are again sorted out according to kind and size. Finally, they are sold to the local capitalists and shellcraft traders within the barangay. Prices of processed shells vary from 15.00-25.00 per liter, depending on the variety.

Problems and Opportunities

Shells are among the most valued marine resources in Dewey Island. The elders still remember the time when shells were abundant in the northern portion of the island. According to them, prior to the 1960s, this area had lush mangrove vegetation. It was later converted into a private fishpond for milkfish culture. Since then, shell gleaners noticed that some shell species they considered special (because of their large size and delicious flesh) had become scarce. Among these were the *kapo-kapo* and *bangkalanay*.

Still according to the elders, they often used to say that only lazy bones would starve in the island, referring to the abundant marine resources which the island used to have. The reef flat teemed with various edible shells readily available to anyone. However, this is no longer the case today.

The pressure brought to bear on the coastal environment has made the resource base seriously degraded. Though shell gathering continues to be a vital part of community life in Dewey, its sustainability can no longer be ascertained. There is an urgent need to protect and conserve this marine resource and the habitat that supports it.

SEAWEED GATHERING

Value and Importance

Like shells, seaweeds are gathered either for domestic food consumption or for sale at the local market. There are approximately 30 fishing families engaged in small-scale seaweed gathering in Dewey, while there are two regular seaweed buyers/ traders. This activity serves as an alternative source of income for fishing families who need to shift from direct fish capture during the months of November to April. It also provides a supplemental livelihood for others.

Seaweeds, particularly '*ar-arosep*' (*Caulerpa racemosa*, also locally known as the original seaweed), have long been a part of the people's diet. However, other varieties found in the barangay like the '*kulinatnat*, *kulot*, *popoklo* and *balulang*' did not have commercial value in the past. It was only until people from nearby municipalities came to harvest in Dewey waters did local fishers discover the commercial significance of these varieties.

At present, seaweeds are gleaned along the natural breakwaters directly fronting the barangay. There are also lush growth in the areas near Silaqui Island. Seaweed-gathering in these areas is not exclusively done by the people of Dewey since there are also gleaners from the nearby barangays of Binabalian and Lucero and from the towns of Bani and Alaminos.

As the peak of the seaweed season starts, many families engage in the gathering of seaweeds. There are around ten seaweed buyers in the island at this time. A month or two later, the number of gleaners and buyers begin to decrease while the price of the commodity begins to plunge.

Production

Seaweed-gathering seems a lot easier compared to capture fishing. However, closer observation reveals that the endeavor requires certain special skills from gleaners. Seaweeds are such fragile organisms that utmost care is needed to ensure it reaches the market in excellent state. Seaweed-gathering is not a simple act of uprooting the weeds. Unless one is a good swimmer or

diver it is quite difficult to harvest them. As one gatherer relates, one must know how to go along with the tempo of the waves, or one can stay underwater for the whole day without getting anything. Seaweed-gathering takes at least four hours to accomplish.

Generally, seaweed-gleaning is an activity engaged in by households. It is primarily either the wife or the husband who goes out to gather. The older children could accompany their parents while younger ones usually help in sorting and cleaning the harvest. In the afternoon or sometimes in the early dawn of the following day, the trader comes to count and collect the harvest (measurement is by a 17-liter can).

The trader determines the amount of seaweeds that the gatherers should harvest. The trader, on the other hand, depends on her contact buyer as to how much volume has to be delivered. Therefore, before the gatherers set out to the sea, they inquire as to how much should be gathered. The trader usually sets a maximum limit of four cans of seaweeds per gatherer. At the start of the peak season, however, there is no limit to the volume of harvest.

As the peak season starts, an average of seventy cans per trader are delivered from Dewey. This daily volume is sustained for a minimum of two months — from November to December. The price of the resource per can at this time reaches one hundred pesos per can, then drops to seventy pesos, then fifty pesos, until it reaches the minimum price of thirty pesos from the months of February to April. (It is in March that there is an abundance of the seaweed). From February until the last months of the season, demand for seaweeds plunges such that a trader would collect a maximum of thirty to forty cans of the resource.

Post Harvest Utilization and Marketing

The local traders deliver a minimum of one *kaing* (equivalent to three 17-liter cans) to the wholesalers, who in turn distribute these to the retailers. The local traders do not immediately get cash for their delivery. They are often paid by the wholesaler on the next delivery. (At the community level, the

local trader can either pay the gatherers at once or when they get paid by their buyers). If the trader buys the seaweeds (*ar-arosep*) at 100 per can, he or she sells at 150 to 170 to the wholesale buyer. If the local collector gets it at 30, he or she sells out at 50 per can.



Odds and ends (won't meet)

HOME-BASED ECONOMIC ACTIVITIES

In addition to capture fisheries, Dewey households are engaged in home-based activities such as shellcraft production, fish drying, and *bagnong*-making that provide them supplementary sources of income. It is interesting to note that all three are still dependent on marine resources.

SHELLCRAFT PRODUCTION

Value and Importance

Before Dewey residents took to the idea of fabricating sea shells into shellcraft products that are commercially valuable, they gathered shells only for food. However, fishers in neighboring communities — Goyoden, Binabalian and Lucero — have already been gleaning shells from Dewey shores to be sold to shellcraft makers in Alaminos.

The birth of the shellcraft industry in Dewey provided an additional source of income to the people. It vested economic significance to a resource which used to have only subsistence value. Shellcraft making has generated jobs previously unknown to the residents. The bulk of the residents are involved in the gleaning and assembling, the less intricate phases of the production process.

Most of those involved in this labor-intensive industry are women who have somehow integrated the work into their reproductive and household chores. Shellcraft making provided women another opportunity to contribute directly to the family income. Of course, this meant longer work-hours for them and giving up whatever little free time they had in favor of earning much-needed additional income.

Gleaners gather the raw materials (shells) from the sea using drag nets or *sayudsod*. After being sorted, the shells pass through

the preparatory process involving *pagbubulok*, *pagyakayak*, and *pagsasangag*. (Please refer to previous section for a more detailed discussion on *Shell Gleaning*.)

Apart from the gleaners, other major participants in the shellcraft industry are the product assemblers and the capitalists or entrepreneurs. The assemblers string the shells together to create specific designs. They may be "one-line" assemblers (i.e., they string shells into one-line strands) or finished product assemblers who come up with wall hangers, wood chimes and other decorative items. Assemblers either procure their raw materials directly from the gleaners or from the local entrepreneurs.

The capitalist have many roles in the industry. First, they act as traders, buying processed shells from gleaners and selling these to individual assemblers. Whenever a shellcraft maker runs out of capital, he could borrow raw materials from the capitalist. Under this arrangement, the former sells back finished shellcraft products to the capitalist with the latter deducting the cost of materials borrowed by the former. The entrepreneurs also market the products outside the community.

Until 1989, majority of households in the barangay were engaged in the industry. At around this time, export demands were quite stable and there were four buyers of shells and shellcraft products in the island who supplied souvenir shops in Bolinao and Manila.

During its peak period, shellcraft making occupied the community's waking hours. Because of the tremendous demand for the product, people had no more time to engage in leisure activities like bingo games and petty gambling. They preferred to work. Women, men and children were all actively involved in the industry. It had been so popular and profitable that it became an alternative source of income for the islanders. Husband fishers would no longer go out to fish if there were rush orders. During the rainy season, fishers did not risk life and limb to fish because they could earn substantially while at home. Gleaners continuously harvested shells and delivered them to assemblers or entrepreneurs. So profitable was the industry that it enabled a number of fisher-families to build concrete houses and send their children to school.

In 1990, however, there was a sharp decline in shellcraft production. Two of the local capitalists aborted their business. Only two continued. Gleaners in need of cash could still sell processed raw materials to the two buyers. However, prices are now determined by the latter, often to the disadvantage of the former.

At present, there are only a handful of women who still engage in shellcraft production. There are approximately less than ten families engaged in the industry on a full time basis. The rest are seasonal workers. Only few residents in Dewey consider shellcraft economically viable. In fact, one of the two capitalists has to seek assemblers from outside the barangay.

Production and Marketing

Shellcraft making is relatively easy. It requires simple skills, although designing requires a lot of creativity. The actions involved however, are repetitive, laborious, and time consuming.

The whole family is transformed into an assembly line connecting parts of the shell ornament. The father makes the ornament's frame or support out of chicken wire and small gauged wires. The male and female children glue the *palay palay* shells on the frame and assemble little shell flowers which are attached to the end of the one line assemblies. Assembling one line is called *pag-uubon* in Ilocano. The process of assembling the finished product is done by the adult women members of the family.

Little capital is required to start a shellcraft business. At first, deals are mainly verbal. Local buyers then contact gleaners to gather shells and process them into raw materials for assembling. But through time, previous trusts have been destroyed between the supplier and contract buyer. Suppliers were swindled or were not paid by the buyers, thereby jeopardizing the income of local assemblers.

A local assembler or *mag-uubon* who cannot finance the business can borrow raw materials from the local buyer or capitalist. This means that the former can assemble even without cash capital. All she needs is to approach the latter and ask for raw materials for a specific number of finished products. For

example, if an assembler wants to make thirty (30) pieces of an ornament (e.g., a big chandelier), the capital needed are:

For raw materials	
300 dozens of one line at PhP9.50/dozen	= PhP2,850.00
30 sq.m of nylon string at PhP40.00 per sq.m.	= 1,200.00
8 kilograms wire (P10.00 /kilo)	= 80.00
25 gantas of sigay at P25.00 / ganta	= 625.00
25 gantas of palay at P30.00 / ganta	= 750.00
	<hr/>
	PhP5,505.00
For labor	
pagbubotbot at PhP10.00 per ganta x 25 gantas (for sigay shells)	= PhP250.00
	<hr/>
Total:	PhP7,755.00

Most often, the assemblers themselves do the *pagbubotbot* instead of hiring the services of other people to save on labor cost.

One finished product of this design is priced at PhP160.00. The shell assembler profits PhP15.00 per piece. If it takes a family one month to finish the thirty designs, they derive an income of PhP450.00 for the month.

Finished products are sold to either of two local capitalists specially if they provided the home workers raw materials. The assemblers, unless they have used their own seed capital, do not have much of a choice where to sell their products. After meeting the quota and deadline set by the capitalists, the assemblers immediately deliver their product to the former. The capitalist inspects them for quality control. If the product does not meet the capitalist's standard, the assembler does them over lest the products get rejected without being paid for. The demand for shellcraft peaks during the months of November and December.

The assemblers demand payment for their labor upon delivery of the finished products. However, it is usual for the capital-

ist to ask them to come back for their pay. Only when the capitalists are able to collect from the contract buyers or exporters that the assemblers are paid their due.

Finished products are sold by the local capitalists to contact buyers from souvenir shops or exporters. The products are either retained in the town of Bolinao, or transported to Manila and other parts of the country.

Since seashells are available year round, its harvest or gathering occurs the whole year too. But the rainy season, from July to October, is the peak of shell harvesting for at this time, fishers are seldom able to fish in the deep sea. Hence, people look out for alternatives that may tide them over these difficult months referred to as *gawat* in Ilocano. During the dry months, people seldom engage in shellcraft except for those who have no alternative as this is when the *taglinak* (peak fishing season) occurs.

Problems and Opportunities

The shellcraft industry is at its decline as a home-based industry in Dewey. Former assemblers had quit engaging in the activity because of losses they have incurred. They spend too much labor and time for the activity yet it generates minimum income for the family. Engaging in the industry is no longer profitable for the small assemblers. Only the local capitalists actually amass the profit, being the ones who dictate prices of raw materials and the finished products.

People, especially women complain of severe eye strain and blurring of sight from stringing shells. They developed severe and sporadic muscle spasms from staying in one position over prolonged periods. Even women who had already quit from making shellcraft still suffer from physical ailments caused by straining themselves during the peak of the industry in Dewey.

Shellcraft making led to the depletion of several species of gastropods because of unregulated gathering of shells. Aside from the extinction of several species, the continuous utilization of gear which damage the seagrasses where shells thrive further threatens the status of shell stocks.

Unfortunately, drinking and gambling has slowly taken the place of shellcraft making among the residents since the decline

of the industry. According to one of the key respondents, "*kung gaano kadami noon ang mga taong nag-uubon, ganyan kadami ang mga nakikita nating nagsusugal ngayon*" (the number of people gambling today is comparable to the number of people stringing shells in the past).

THE FISH PASTE INDUSTRY

Value and Importance

Three barangays in Bolinao are known for fish paste making or *pagbabagoong*. These barangays are Lucero, Binabalian, and Dewey — all coastal barangays of Santiago Island.

Bagoong or fish paste is an Ilocano delicacy traditionally part of the local people's diet. As an industry, *pagbabagoong* has been in Dewey as far back as today's oldest producers can remember. How the industry began is still a puzzle for *bagoong makers*. Some say the industry was learned from neighboring communities. Others believe the industry is indigenous to Dewey owing to the abundance of small fish in the area. As a former *kagawad* of the barangay says, *bagoong*, along with the vegetables being produced in Bolinao, are the two major sources of income in the municipality.

Pagbabagoong is indeed a significant activity for the people of Dewey. The primary stakeholders of this industry are the approximately fifty subsistence fishers who use the *karukod* (dragnet) to gather fish fry, and the households engaged in *bagoong* making.

A dragnet is considered a nonselective fishing gear because of its fine mesh size. It also scrapes the bottom of the reef flat. There are 43 registered *karukod* in the barangay. However, there may be more actual users since the gear is borrowed or rented (sharing of catch) by some fishers.

Dragnet fishing is at its peak from August to October, though fishers engage in it year round. During the peak season, a *karukod* fisher harvests an average of one can (17 liters) per day. Fishers estimate that their aggregate catch of *padas* at this time amount to 300–400 cans. However, on lean months, one is lucky to take home about 2 liters within three hours of fishing.

Due to the seasonal nature of the resource, subsistence fishers engage in a variety of fishing and related activities the rest of the year. Among these are shell and seaweed gathering, crab trapping, and others.

Subsistence fishers have a steady market for fries in the *bagoong* producer. Bagoong makers welcome any amount of the raw material, which they process and store until they are ready to sell the finished product in bulk.

Bagoong Production

Bagoong is produced year round depending on the availability of the raw material. There are three kinds of *bagoong* made in Dewey: *sari-sari*, *tirong*, and *padas*. *Bagoong sari-sari* is made from various fish species such as *siganid*, *rugsu*, *gumian* and many others. The species used for the second kind, *tirong*, are the fusilier fries which are scarce in the municipal waters of Bolinao but abound in the Zambales waters. These appear in the same months as the *padas*. Only a few producers in Dewey can stock *tirong* because of the fry's limited supply. *Bagoong padas* is produced from *siganid* juveniles that are abundant during the months of April-May, and in August-September.

The basic ingredients of fish paste are salt and fry. A sack of salt costs around PhP160.00. The cost of fish fry varies according to species. At the minimum, around 2 liters of mixed fries cost ten pesos. Higher-priced *padas* is bought at PhP200-400 per can, depending on the kind — be it *barangen pusa*, *daregayo* or *pino*.

Bagoong production is a family enterprise involving both husband and wife. Though the process of mixing salt and fry is simple, it involves much muscle work. The large producers hire laborers to do the heavy task of hauling and mixing, especially when the products are prepared for delivery. Simple tools and equipment are needed — basins, clay jars or *burnay* for storage, plastic containers and cans. Producers also construct concrete sheds (locally called *camarin*) which serve as storage houses.

Now there are around six *bagoong* makers in the island. Informants say there used to be ten household producers. Only two of these are still actively involved in the industry.

Most bagoong makers sell their product in Alaminos. The biggest producer in Dewey has a stall in the Bani market. There are rare times when the produce is marketed outside Pangasinan.

Issues

In 1988 and 1990, two municipal ordinances affecting both dragnet fishers and bagoong makers were enacted. The first ordinance imposed a ban on the use of *karukod*. The second prescribed a closed season for harvesting *padas* — first in May but later moved to April. These ordinances threatened the livelihood of the small fishers and *bagoong* makers and failed to get the support of some barangay officials. The fishers refused to comply for lack of alternative sources of income. They continue to use dragnets on a limited scale for fear of being apprehended by authorities who patrol the municipal waters. The closed season was partially and halfheartedly implemented by the barangay officials, out of consideration for the people who will be displaced. To date, both measures remain to be “disobeyed” ordinances among the people of Dewey.

THE DRIED FISH INDUSTRY

In Dewey, fish drying is practiced both for domestic and commercial purposes. However, these activities are not widespread throughout the community. Commercial fish drying in particular is a seasonal economic activity undertaken by a small number of people.

The peak period for commercial fish drying coincides with the biannual migration into the reef flat of the rabbitfish (*barangen*) during its spawning season. The mass migration of the *barangen* is an important fishing season because of the large volume of catch expected annually during this period.

Almost all the *barangen* sold for commercial drying are caught through the *pasabing* or fish corral set up along the migration route. Though there are market outlets in and outside Bolinao for fresh *barangen*, the large volume of catch during this period pulls prices down and makes selling more

competitive among the fishers. Fish drying becomes the best alternative to prevent spoilage of *barangen* that cannot be sold at once.

Fish dryers utilize other fish species such as *rogso* (snapper) but the abundance of *barangen* during this period makes it the best choice. In addition, since *barangen* are caught during the spawning season, fish dryers have the added advantage of getting the fish's eggs or *bugi*, considered a delicacy by some people. Fish eggs commands a high price in the market. For fish dryers, it is through the sale of the *bugi* where most of their profit comes from. Although commercial fish drying directly benefits only around ten households in Dewey, it is still considered significant due to their dependence on fisheries.

Fish drying can be lucrative for those who have capital. At the moment, only three households are engaged in the activity on a regular and large scale basis. Large scale production refers to processing a minimum of 100 kilos of fresh fish to a maximum volume of approximately 500 kilos for one season. Because fish drying is seasonal, producers engage in other economic activities such as fish trading during the rest of the year. Since fish drying occurs only twice yearly it is often considered a supplementary source of income. Aside from the regular producers, the concession holder for the year also allocates a portion of his share for drying.

It is also common practice for households to prepare dried fish for family consumption. Often, the volume produced does not exceed ten kilos. For these households, fish drying is done to store food in anticipation of the rainy months. In case households need cash during this lean period, they sell the dried fish or exchange this for other valuable goods.

Residents say fish drying was practiced in Dewey as early as the 1950's. People remember having as many as ten households engaged in commercial fish drying then. They cite the decline in fish catch as one major reason why most large scale producers have stopped.

The annual capital input for fish drying depends on the volume of fish available. The average capital input for one season of commercial fish drying is between PhP10,000 - 15,000.

Since this is a seasonal activity, producers have enough time to save this amount. Average profit is between PhP3,000 - 5,000.

Fish drying can be a year round activity depending on the availability of fish and the weather condition. Its peak season, though, coincides with the annual migration of *barangen* from February to April.

Dried fish preparation is basically a family enterprise. All able members of the family, male or female, participate in the work. Whenever necessary, additional workers are hired to help in cleaning and slicing the fish in half. Often, additional hired hands are either relatives or neighbors of the family.

Commercial fish dryers perceive no immediate problems. They have a stable and reliable market capable of absorbing their supply. Although they complain of small profit, the additional income derived from the extraction of the *bugi* is enough incentive to continue. However, fish dryers themselves admit that through the years, the volume of fish catch continue to fluctuate. Still, they are not worried at all. According to them the volume of *barangen* is generally attributed to luck. Seemingly, the people have very little doubt that the peak season of *barangen* will always arrive. This observation can be somewhat disturbing considering the importance of the *bugi* in sustaining availability of the *barangen* stock.

8

Looking ahead

THINGS TO DO



State of fishery resources, habitat, and production

Resource Depletion. There is a general trend of decline of fishery resources in barangay Dewey. Fish used to be bartered for rice and vegetables that are otherwise unavailable in the island. Now it has increasingly been hard to catch enough for subsistence. The oral and written history of the place tells of a time when the local residents did not have to go far from shore nor fish for long hours to get enough for the day's meals and even managed to catch a little more to be traded for their other needs. That is not the case anymore.

Even the shells, sea cucumber, and other products that used to be so abundant have diminished in supply. Moreover, home industries utilizing these resources no longer generate profit commensurate to the work input. Those engaged in shellcraft, for example, observe that they derive very little profit from the activity, in spite of the strain such work entails. According to them, only the capitalists (buyers and sellers) and suppliers benefit from the industry.

The local fish drying industry, on the other hand, is threatened by two municipal ordinances prohibiting the use of *karukod* and prescribing a closed season for the catching of *padas*.

Overall, the pressure on the resources in Dewey is characterized by varying degrees of exploitation due to seasonality of species and innovations in fishing technology. Added to these is the increasing pressure of a rapidly growing population. Of its 2,000 residents, more than 70% is almost totally dependent on fishery.

Already, signs of overexploitation have led to the fluctuation of volume of catch of certain species such as *barangen* (the kind of fish used for fishpaste preparation) and the disappearance of certain species of fish, indicate excessive strain on the resource habitat.

Coral reef destruction. The Bolinao part of Lingayen gulf is a coralline area. The reef system is quite extensive "typical of true fringing reefs in the Central Indo-Pacific, i.e., those with a substantial structure typified by a separation into reef flat and reef slope areas by an intertidal reef crest. True fringing reefs tend to be large, covering tens or hundreds of square kilometers. Like many reefs in the Philippines and eastern Indonesia, the Bolinao reef system includes substantial beds of seagrass. The fisheries tend to target seagrass fish as well as coral-dwelling fish." [McManus et al. 1992]

The destruction of this habitat mostly by illegal fishing methods such as blastfishing and the use of toxic substances like sodium cyanide (NaCN), however, disrupted the regular migration and recruitment pattern of fish in the area and lead to the steady decline in yield.

Further research must be made on the initial findings that a large section of local fishers in Bolinao engage in blastfishing and other illegal fishing methods, contrary to usual claims that fishers from other municipalities are mainly responsible for such practices. Very few fishers, in fact, are willing to admit that they engage in illegal fishing.

Mangrove deforestation. The Northeastern portion of Dewey Island was covered by around 54 hectares of natural growth of various mangrove species some thirty years ago. This estuarine area provided habitat and breeding ground to various kinds of fish, crustaceans, and shellfishes. Local people used mangrove branches for firewood and as source of coloring agents for their nets. The site, however, was cleared and converted into a fishpond by private individuals from the town in the 1960s. Though there are residents who have initiated the cultivation of certain portions or patches of mangroves in the 1980s, they did this primarily to prevent erosion of the reclaimed coastline near their houses. In the latter part of the 1980s, there have been efforts by the Department of Environment and Natural Resources (DENR) at mangrove reforestation. This proved unsuccessful due to inadequate management.

There are current efforts on the part of some institutions and NGOs to monitor fish catch and harvest of other products in the municipality of Bolinao. Results of these studies should provide more insights on the prospects of effective management of the local resource base.

Resource management

The municipality has already initiated moves to limit access to the fishing grounds as early as the 1940's, perhaps not so much to ease the pressure on the resource base as to generate income for the local government. The regulations remain in effect up to now. These measures, established by virtue of municipal ordinances dividing certain fishing areas for private use, have increasingly altered the open access nature of the fisheries. But this has not been able to help curtail the growing competition among users as the increasing population pressure on the resource base continues to be a major factor affecting fisheries in Dewey.

The subdivided fishing grounds are called concessions. The payment for concession rights has been a major source of the town's income. This, however, has only benefited the so-called political and economic elite in Dewey such as the Purugganan, Cali, Cariño, and Lopez clans. Modifying such ordinances toward optimizing license and leasehold arrangements, however, may prove beneficial to more fishers in the barangay, and perhaps on a larger scale, the municipality. Channeling revenues from leasehold payments to support infrastructure such as pre- and post-harvest fishing facilities may prove economically beneficial to a larger section of the community.

From the perspective of community-based coastal resource management, leaseholds should not be monopolized by individuals nor by a few families. The community and/or a people's organization (e.g., of fishers) should be the leaseholders of productive fishing grounds. In this way, the community is given a chance to effectively manage and control, and hence optimize utilization of fishery resources. Certain provisions to that effect could be incorporated to local legislations in form of amendments.

Developing the market

Fish catch in Dewey is coursed mainly through two market channels. One is through the wives of the fishers who usually sell the daily catch within the barangay. Another is through fish traders who buy the fishers' catch regularly. There are two wholesale buyers who are from Dewey. Both of them are women and one has her own stall in the Bolinao town market while the other sells her catch in Camiling, Tarlac where she has relatives to help her in the trade.

There are other buyers from neighboring barangays who go out to sea to buy the catch of the fishers. There are times when fishers would sell to these buyers specially when they offer a good price. The women buyers, however, are able to ensure that fishers still sell their catch to them by extending loans to them or by establishing social ties with them like standing as sponsors at the wedding or baptism of the fishers' children. This arrangement is mutually beneficial to both the fishers, who avail of loans from the buyers during the gawat or lean season, and the buyers who, in turn, are assured of their regular supply of fish they can even buy at prices lower than the prevailing rates. In a way, this arrangement is exploitative, though not grossly unfair to the fishers. Small scale, community-based and managed storage facilities may be able to help develop a better market for the local harvest of fish, and hence free the fishers from such iniquitous relations.

Moreover, cooperatives may be able to help in the marketing of harvest, addressing the problem of lack of control by fishers over pricing mechanisms and other market structures.

The same is true with other products such as shellcraft, dried fish, and fishpaste. These home-based industries are characterized by the lack of control of the producers over market structures, and the lack of support such as cheap and efficient transport or carrier systems, banking and credit facilities, research and technology generation, and human resource development. Revenues generated from these activities by local government units (LGU) may be channelled to establish support mechanisms to help develop the market for these products. It will pave the way to the faster dissolution of structural infirmities in the local economy such as lack of control and access to

resources, commercial exploitation, and the exclusion of people from decision-making processes.

Socioeconomics of fisheries in Dewey

Resource rent allocations and distribution. Fishing outfits controlled by capitalists / operators have the option to market the catch, in which case the fishers have no choice but to sell to them their share. This means larger profit for the capitalists / operators since they have access to capital, cheap labor, and equipment, aside from the privilege to dictate the buying price of fish from the crew.

These relationships are institutionalized by a complex system of patronage based on kinship and affinity resulting from various forms of social ties. Poor fishers get help from well-off relatives through allotment of a parcel of land for homelots or soft loans to avail of fishing vessel and gear, which the fishers pay in installment. These render the small fishers economically indebted to their rich relatives or the *amo* (capitalist). These often extend to political debts which are paid during elections and other political exercises – a classic example of how economic power is translated into political power. A more extensive scrutiny of this network of relations should yield important insights into the social dynamics of the community, and probably open avenues for intervention.

Opportunities amid threats

Efforts to explore other sources of livelihood face difficulties posed by several factors such as the decline of the market for certain products such as shellcraft.

Another problem is the very limited land area available for agriculture. Residents can only utilize their backyards for planting during the rainy season. As it is, the community is entirely dependent on fishery and other related activities for their livelihood. Technical experts may help examine the prospects for mariculture such as clam farming, fish culture, and sea ranching.

Related to this is the proliferation of gambling, perceived by some community members as an effect of the loss of eco-

conomic opportunities such as the shellcraft industry which used to keep households very busy. Researchers should closely look into this phenomenon as this might give an impetus to a cycle of decline in the values system of the community and further destructive utilization of natural resources.

Despite the seemingly dim prospect for the community, however, the willingness to participate in development efforts on the part of most residents showed that there is much to hope for. Their cooperation throughout the conduct of the research indicates appreciation of their role in the development process.

They must have adequate organizational skills and experience as indicated by the existence of many different kinds of organizations in such a relatively small community. The inactivity of most of these organization, however, poses a challenge to subsequent investigations of the existing social dynamics. The experiences of these organizations should provide a wellspring of valuable lessons for organizing work, aside from helping establish leadership and organizing patterns in the community.

Further studies should look into community initiatives regarding resource management in the past and present. Particularly important are mechanisms adopted by the community as part of efforts toward resource conservation and management. These are solid grounds upon which to build C-B CRM programs appropriate for the barangay. At the same time, awareness of and close coordination with similar efforts toward resource management in adjacent communities are important components of the program to be formulated.

Anthropological studies concerning the sets of values, traditional practices, and the world view of the people are crucial to developing a more wholistic picture of the community. This will help researchers understand the dynamics governing existing relations and patterns in Dewey. With C-B CRM in perspective, research should also be able to determine the legal and institutional factors influencing the formation of such patterns and relations. Legal and institutional research should be able to help determine pressure points in the process of transferring control and management of resources and habitats to the community.

Meanwhile, the constant threat of diminishing resources poised against the constantly changing features of the community should always be considered in the pursuit of in-depth studies. The effects of environmental change on human activities and vice versa should be given careful attention and appreciated with respect to the specific characteristic of the locality.

Capability-building for resource management

Based on the initial finding of the PRA, one area of work that needs immediate attention in Dewey is capability-building for resource management. Capability-building must be able address training needs for resource managers in basic management skills, resource inventory, accounting and stock assessment, organizational management, para-legal work, basic economics, and deepening of understanding of ecological concepts.

Policy-advocacy work on both local and national level. Capability building efforts must be supplemented by policy advocacy work focused in the local level. Efforts by the community at formulating policy platforms should be supported in order to set the perspectives and framework for future actions. At the same time, this must be viewed as an integrated biophysical and socioeconomic system, while being part of a bigger physical and social environment. Their experience may be unique, yet not uncommon. The country is one big community being robbed of the right over its own resources, and the situation has been providing fewer and fewer opportunities and choices for its people.

Resource conservation and rehabilitation should be considered in the next phase of the project in Dewey. Future programs might have to include the construction of artificial reefs and the designation of marine sanctuaries in the area to allow for recovery and protection of the resource habitat.

Meanwhile, feasibility studies of possible alternative livelihood can be made to help open opportunities and broaden the options for community members who may have been forced to resort to destructive resource extraction practices.

Community development efforts in Dewey need not start from scratch. The island-dwellers have so much to learn from and start with, given the available resources and life-long experience in fishing. Struggling for survival alone under difficult conditions is enough to initiate them into the dynamics of change governing their environment. They must have, in the process, learned to appreciate and respect the unwritten laws of nature and society. They deserve the chance to realize their role in the conservation, protection, and management of their own resources and of their own lives.

The C-B CRM research project utilizes two complementary approaches, participatory rapid appraisal (PRA) and participatory action research (PAR).

The project's central concern is to foster capability building at the community level by identifying and training local action research partners (LARPS), providing venues for training and education in co-operatives, environmental awareness, technology, etc., and networking or linking the communities with local government units (LGUs), NGOs, research and technological institutes, financial institutions, etc. In-depth studies are done on three major areas of concern in C-B CRM: cultural, marketing and technology, and legal-institutional.



Participatory Action Research for Community-Based
Coastal Resources Management (PAR C-B CRM)