Section 1
THE GALLERY

About The Gallery

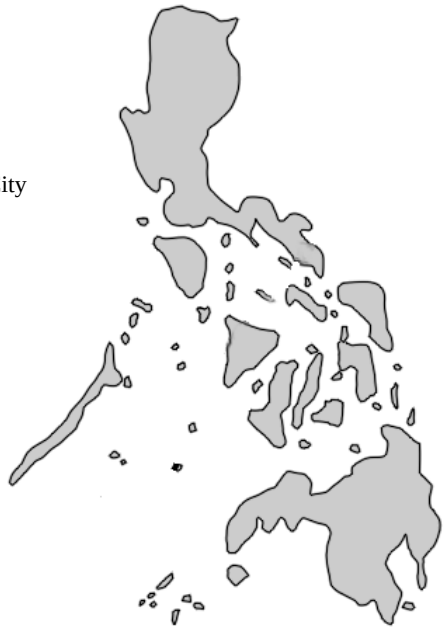
Our Seas, Our Life is a traveling exhibit showcasing the wonders of the ocean and its vital role to human life. It aims to increase the public's appreciation of the magnificence and importance of this huge but little understood body of water that humans have depended on for thousands of years. It also intends to deliver this increasingly urgent message: mysterious, immense and apparently bottomless, the ocean is in fact a finite resource that is being rapidly depleted by more and more people using more and more efficient fishing gears. Seemingly ever-present and unyielding, it is in truth a highly fragile biological ecosystem influenced, affected and easily changed by a great number of factors occurring both within its immediate environs and thousands of miles above and around it.

In delivering this message, the organizers hope to move people to contribute to ongoing efforts, as well as initiate new action, that help ensure the sustainability of our seas.

Originally mounted by The Coastal Resource Management Project (CRMP) and the UNESCO-National Committee on Marine Sciences in observance of the Philippine Centennial and the United Nations International Year of the Ocean 1998, *Our Seas, Our Life* is now envisioned to continue through the turn of the millennium, traveling from coast to coast to bring its message and appeal for our ocean, and future.

1998 Travel:

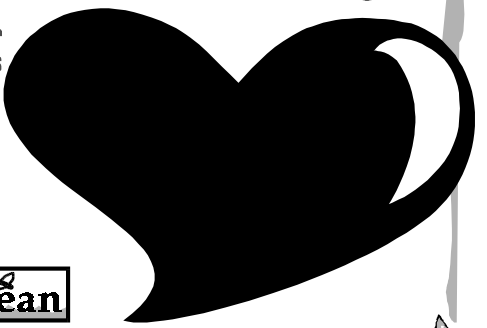
Cebu City
Manila
Dumaguete City
Davao City
General Santos City



invite you to

OUR SEAS, OUR LIFE.

An exhibit on our ocean resources and their importance to us.



I ♥ the Ocean

Section 1

A Quick Tour

The Gallery has three clusters: Cluster 1 is called **Ocean Walk** and consists of 10 information panels that form a show-and-tell exhibit of the many facets of ocean life and coastal habitats. Cluster 2, **Sea Wall,** consists of three 8-ft tall wall displays showcasing National Protected Seascapes (Olango Island Wildlife Sanctuary, Tubbataha National Reef Park, and Turtle Islands Heritage Protected Area), Philippine Ocean Depth Map, and the dugong, a protected marine mammal. Cluster 3, **Under The Sea**, shows a collection of marine specimens on loan to this exhibit from Silliman University's Marine Laboratory and Biology Museum, National Museum, and the Department of Environment and Natural Resources' Protected Areas and Wildlife Bureau (DENR-PAWB).

This Guidebook gives you only a description of the different features of each cluster and not the layout of the Gallery itself, which changes from venue to venue. There are Exhibit Guides assigned at each cluster. Do not hesitate to ask for assistance if you encounter difficulty in locating any of the displays described in this Guidebook.

CLUSTER 1. **Ocean Walk**

What to see: Information stand consisting of 10 panels with backlit and mounted photos.

What to bring: An open mind; pen and paper (optional); these words by Olive Schreiner – "Of all the things that I have ever seen, only the sea is like a human being; the sky is not, nor the earth. But the sea is always moving, always – something deep in itself is stirring it. It never rests; it is always wanting, wanting, wanting. It hurries on; then it creeps back slowly, without having reached, moaning. It is always asking a question, and it never gets the answer."

1. *Our Seas, Our Life: An exhibit about ocean resources and their importance to us.* Wondering what this is all about? This panel tells you about the exhibit, its purpose and the organizations that help make it happen. There are many reasons why we should care about the conditions of our seas... the food we eat, the air we breathe, a climate that allows human life to exist. Yet the oceans' immense influence on our daily lives occurs so silently, so unassumingly, that we have forgotten how important it is to our survival. The backlit photo of the silhouette of a coral web fan serves more than an aesthetic purpose: it is an illustration of one of the many microcosms of the life-supporting role of our seas. The coral web fan, or *Gorgonia* as it is referred to in the scientific world, traps and collects plankton from the water, supplying food not only to itself but also to the many other life forms that inhabit the sea. It is not a reef-building coral, but it grows up to several feet wide, big enough to support and provide habitat to shrimp, crabs, featherstars, snails and other bottom-dwelling organisms. *(see S2-1 of this Guide for more on the life-supporting role of our seas)*

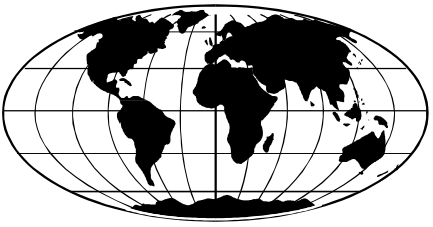
What it says:
This exhibit is part of the I Love the Ocean Movement of The Coastal Resource Management Project (Philippines) in observance of the United Nations International Year of the Ocean (IYO) 1998 in partnership with the National Committee on Marine Sciences, the national focal point of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in the Philippines.

CRMP is an initiative of the Philippines implemented through the Department of Environment and Natural Resources (DENR) with support from the United States Agency for International Development (USAID) under the management of Tetra Tech EM, Inc.

CRMP is undertaken in partnership with the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), Department of Interior and Local Government (DILG), coastal communities, local government units, business sector, non-governmental organizations and academe. *(see S3-1 of this Guide for more on CRMP)*

2. *The Ocean Planet.* Welcome to the real Planet Earth. As this panel will tell you, "Earth" is a misnomer, because the planet we live in is in fact more ocean than land.

What it says:
Planet Earth is a unique planet as it has more water than any other planet in our solar system. From space, the Earth looks blue because the oceans cover 71% of the Earth's surface.



ONE OCEAN: The **four main oceans** – the Pacific, Atlantic, Indian, and Artic Oceans – are actually one great interconnected system, thus oceanographers often speak of one world ocean.

MAIN OCEANS AND SEAS

	Area (sq km)	Average Depth (m)	Deepest Part (m)
Pacific Ocean	165,721,150	4,200	10,860
Atlantic Ocean	81,660,100	3,920	8,385
Indian Ocean	73,444,600	3,962	7,450
Arctic Ocean	14,351,200	1,280	5,334
Mediterranean Sea	2,965,550	1,371	4,593
South China Sea	2,318,000	1,646	5,016
Bering Sea	2,274,000	507	4,090
Carribean Sea	1,942,500	2,560	7,239

The ocean is the key regulator of global climate. The huge mass of ocean water moderates local temperatures by absorbing heat in the summer and releasing heat in the winter.

The ocean's biological processes contribute significantly to this climate regulating function.

The word ocean comes from the Greek word *okeanos* meaning river. The early Greeks thought a river encircled the Earth. *(see S2-1a for more on The Ocean Planet)*

3. *Our Beautiful Seas.* The eight backlit photos on this panel give us but the smallest hint of the wondrous magnificence and splendor of our seas.

What it says:
The Philippine coastline stretches over 18,000 km. Coastal resources such as finfish and shellfish, and the habitats that nurture them – coral reefs, seagrass beds and mangrove forests – are among the most fundamental elements of the Philippine environment.

These habitats are estimated to host 1,400 species of fish and crustaceans, more than 900 species of seaweeds, at least 400 species of coral and an untold number of unknown species.

It is important to maintain high biodiversity to ensure the continued functioning of our coastal ecosystem. *(see S2-1b of this Guide for more on Our Beautiful Seas.)*

4. *Our Finite Seas.* Here we are grimly reminded of the finiteness and fragility of our oceans. A series of icons graphically illustrates the issue: a rapidly growing

population increasingly dependent on a diminishing resource. The text warns, "Coastal resources will not be able to provide enough food for the Philippines' growing population."

What it says:
The Food and Agriculture Organization (FAO) estimates that all 17 of the world's major fishing areas have either reached or exceeded their natural limits. In the Philippines, more than $400 million per year (P16 billion per year) is lost to overfishing of demersal and small pelagic fisheries.

Coastal (municipal) fishing in the Philippines accounts for 40% of the country's total fish catch. It contributes more than half of the animal protein we consume.

The continued practice of open access fishing has led to overexploitation. Fishery resources are being harvested beyond their maximum sustainable yield to feed a population that will double in 30 years. *(see S2-1c of this Guide for more on Our Finite Seas)*

5. *Our Endangered Coasts.*This panel shows facts, figures and pictures that reveal the sorry state of our coastal environment.

What it says:
The basis for sound and sustainable economic development is a healthy coastal environment. Poor planning coupled with rapid economic and population growth is destroying coastal habitats and polluting the water. Communities must work together to manage the coastal environment.

In the Philippines, the total area of mangrove forests has shrunk from 450,000 hectares in the 1900s to about 150,000 hectares today. This decrease is largely due to extensive development of fishponds in the 1970s and 1980s, which are now mostly unproductive and should be reconverted to mangrove forests.

Some of the biggest threats are over-fishing and destructive fishing methods; coastal development, logging and agriculture; sewage, fertilizer run-off and other forms of pollution; and poorly managed boating, diving and other recreational activities. *(see S2-1d of this Guide for more on Endangered Coasts)*

6. *Seagrass and Mangrove Ecosystems*. Our coastal zone is divided into "ecosystems," distinct biological systems formed by the interaction of a

community of organisms with its environment. We have three major coastal ecosystems: seagrass, mangrove and coral reef. This panel illustrates the importance of the seagrass and mangrove ecosystems.

What it says:
Seagrass beds are important to the coastal ecosystem. Some fish will come from the reef to use these areas as breeding and hunting grounds, others spend their whole lives in these areas. Extensive seagrass beds also serve as homes for shells and crabs. Fisherfolk also use these areas for shell-gathering, crabbing and fishing.

Mangrove forests are important to many marine species that rely on them for shelter and food.

The Philippines has a total of 97 plant species associated with mangroves; the major species are *bakawan*, *bungalon*, *apiapi*, *pototan* and *nipa*.

Fisheries associated with mangrove forests, much of it collected by the poorest of the poor, contribute an average of 0.67 ton per hectare per year to total fisheries.

In the Philippines, mangroves have been used for centuries by Filipinos for food, forage for animals, building materials, fuel source, folk medicine and various other purposes. *(see S2-1e and S2-1f for more on Seagrass and Mangrove Ecosystems*)

7. *Coral Reef Ecosystems.* This panel introduces you to the wonderful world of coral reefs, our underwater rainforests, one of our most priceless – and most highly threatened – natural treasures.

What it says:
Coral reefs are home to a dazzling array of marine life. The Philippines has about 27,000 sq km of coral reefs. In 1991, only 5% were considered to be in excellent condition.

Reefs provide habitat for thousands of marine organisms. Today, 10% of the world's reefs are seriously degraded and a much greater percentage is threatened, particularly in areas adjacent to human populations.

Sedimentation, storms, destructive fishing, pollution and shoreline development are the most common factors significantly affecting coral reefs. *(see S2-1g for more on Coral Reef Ecosystems*)

8. *Promoting Leadership For Sustainable Coastal Resource Management.* So what can we do to keep the beauty and bounty of our seas and at the same time make life better for our fishers and their families? This panel tells us about "coastal resource management."

   What it says:
   Coastal resource management is the process of planning, implementing and monitoring beneficial and sustainable uses of coastal resources through participation, collective action and sound decision-making.

   The Coastal Resource Management Project (Philippines) seeks to foster leadership for sustainable coastal resource management among all sectors of society including coastal communities, local government units, national government agencies, business sector, non-governmental organizations and academe. It serves as a catalyst for changing unsustainable uses of coastal resources.

   The Department of Environment and Natural Resources is spearheading the protection and management of coastal habitats through The Coastal Resource Management Project and the Coastal Environment Program. *(see S2-1h for more on Promoting Leadership For Sustainable Coastal Resource Management*)

9. *I Love The Ocean: A Movement For Sustainable Seas.* There is much that you and I can do to help in the effort to make our seas sustainable. This panel tells us about a growing movement in support of the ocean's cause.

   What it says:
   Some Ways To Show You Care:
   1. Stop littering our planet. Reduce, reuse, recycle.
   2. Find out how and where fish at your local market is caught before you buy.
   3. Don't take shells or other "souvenirs" from the beach.
   4. Pick up any rubbish you see and dispose properly.
   5. Avoid using water-polluting household chemicals.
   6. Report to authorities any illegal dumping or fishing activities you discover.
   7. Let your government know how you feel about issues affecting the marine environment.
   8. Show you care: Wear a blue heart in 1998. *(see S2-1i for more on I Love The Ocean: A Movement For Sustainable Seas*)

10. *Bring Back Our Future.* We end this picture panel show with an urgent call to action: Bring back our future!

What it says:

A Call For Leadership: Integrated coastal resource management needs effective leaders to help bring about a change of mind and heart among those who cause – and have the most to lose from – the destruction of our coastal resources: Every one of us.

5 Practices of Effective Leaders in Coastal Resource Management

1. **Challenge the process:** Search for answers to the open access problem, stop destructive practices.
2. **Inspire a shared vision:** Enlist all stakeholders to share a vision of sustainable use of coastal resources.
3. **Enable others to act:** Foster collaboration in planning and implementing coastal resource management.
4. **Model the way:** Set an example by taking action in coastal resource management.
5. **Encourage the heart:** Recognize the hard work and commitment of others and spread the successes to other coastal communities.

Adapted from Kouzes and Posner 1995

Coastal Alert! "Oceans are under increasing stress from pollution, overfishing and degradation. It affects everything from the climate to coral reefs." – *Agenda 21, Chapter 17*

For Future's Sake: "The goal of integrated coastal management is to improve the quality of human communities which depend on coastal resources while maintaining the biological diversity and productivity of coastal ecosystems." – *United Nations Joint Group of Experts on the Scientific Aspects of the Marine Environment (GESAMP), March 1996.*

Section 1

CLUSTER 2. **Sea Wall**
What to see: Information wall panels with color photos of National Protected Seascapes and the dugong printed against a sea-blue background.
What to write home about: Great treasures of the sea; 10,000-meter deep Philippine Trench, and dugongs and other endangered large marine animals.

"*And what is the sea?*" asked Will.
"*The sea!*" cried the miller. "*Lord help us all, it is the greatest thing God made! That is where all the water in the world runs down into a great salt lake. There it lies, as flat as my hand and as innocent-like as a child; but they do say when the wind blows it gets up into water-mountains, bigger than any of ours, and swallows down great ships bigger than our mill, and makes such a roaring that you can hear it miles away upon the land. There are great fish in it five times bigger than a bull, and one old serpent as long as our river and as old as all the world, with whiskers like a man, and a crown of silver on her head.*"

– Robert Louis Stevenson

What it says:
National Protected Seascapes. Protected Seascapes as defined under the National Integrated Protected Area System Law, Republic Act 7586, are those coastal and marine areas set aside by reason of their unique physical and biological significance, managed to enhance biological diversity, and protected against destructive human exploitation.

Areas designated as Protected Seascapes are managed by specific, multisectoral planning bodies called the Protected Area Management Boards composed of representatives from the Department of Environment and Natural Resources, local government units, nongovernment organizations, indigenous cultural communities, people's organizations, and other government agencies. There are twelve Protected Seascapes covering over 860,000 hectares.

Several marine areas of the Philippines carry with them special regional and world-wide status. These include Olango Island Wildlife Sanctuary (a Ramsar site or Wetland of International Importance Especially as Waterfowl Habitat), Tubbataha Reef National Marine Park (World Heritage Site), and Turtle Islands Heritage Protected Area (World's First Transfrontier Protected Area for Sea Turtles).

1. *Take the East Asian Migratory Flyway to Olango Island Wildlife Sanctuary.* The Olango Island Wildlife Sanctuary along the southern shore of Olango Island, 10 kilometers off the east coast of Mactan, Cebu, was declared a protected area by virtue of Executive Order 903 on May 14, 1992. The Sanctuary has a total of 920 hectares of mudflats, mangrove and seagrass beds.

Olango Island supports the largest concentration of migratory birds found so far in the Philippines – about 60% of the 77 species of migratory birds that use the East Asian Migratory Flyway have been spotted here.

The birds use Olango as a major refueling station and wintering ground. The rich supply of marine resources, including fish and invertebrates, in the area enables the birds to replenish their fat reserves for nonstop flights that may cover 3,000 - 15,000 kilometers. Mangrove trees are used by the birds for roosting, and by fish as breeding and nursery grounds.

Birds & Seascape Tour. The Olango Birds and Seascape Tour is a special group tour (6-10 people) conceived by the Coastal Resource Management Project as a way to develop the ecotourism potential of Olango and encourage residents to give up their destructive fishing practices, which have already severely damaged the area's coastal resources.

3. *A World Heritage Site: Tubbataha Reef National Marine Park.* Tubbataha is the largest coral reef, first national and marine park, and first natural World Heritage site in the Philippines. Tubbataha Reef and surrounding waters cover 33,200 hectares, including two coral atolls. They are located in Sulu Sea, about 150 kilometers southeast of Puerto Princesa City in Palawan. Tubbataha was declared a National Marine Park by virtue of Presidential Proclamation No. 306 issued on August 1, 1988. On December 11, 1993, the United Nations Educational, Scientific and Cultural Organization (UNESCO) designated the reef as a World Heritage Site.

   A priceless Philippine jewel. Healthy and diverse reefs such as Tubbataha produce 25-35 tons of fishery products per square km per year. Indeed, Tubbataha supports some of the most diverse, if not the most diverse, marine life in the world: more than 300 coral species, 379 fish species, and large marine life such as manta rays, sea turtles, sharks, tuna, dolphins, and jackfish.

   A wellspring of life for the world. Tubbataha's biodiversity contributes to long-term maintenance of genetic diversity in this part of the world. Planktonic larvae from spawning marine animals are very prolific in Tubbataha and serve as a primary source of recruitment of coral reefs surrounding the Sulu Sea. If managed sustainably with complete maintenance of the reef habitat, the ecological, economic, and heritage benefits of Tubbataha Reef to the Philippines and the world could be very significant.

4. *Turtle Islands: The First Transfrontier Protected Area for Sea Turtles.* The Turtle Islands Group of the Philippines and Sabah, Malaysia is located at the southwestern tip of the Philippines and 40 kilometers north of Sendakan, Sabah, Malaysia. It is composed of nine islands, six belonging to the Philippines and the rest to Malaysia.

Two nations, one cause. In a bilateral agreement, the Philippines and Malaysia established the Turtle Islands Heritage Protected Area, the first transfrontier protected area for marine turtles in the world. Management responsibility is shared by the two countries, making possible the conservation of habitats and sea turtles over the large geographic range which they cover.

The Turtle Islands Heritage Protected Area, a 1997 J. Paul Getty Wildlife Conservation Prize awardee, harbors the major breeding population of the green turtle (*Chelonia mydas*) in the Asian region. There are only 10 known major green turtle breeding populations in the world. All species of marine turtles are classified as endangered.

A growing global movement. Mass harvesting of turtle eggs has been the major cause of local extinction because sea turtles return to the beach where they were born to lay eggs. Marine turtle conservation in the Philippines is part of a worldwide activity involving the coordination and cooperation of foreign conservation agencies and organizations to regulate illegal commercial traffic of turtle products. *(see S2-2a for more on National Protected Seascapes)*

Ocean Depths

The Philippines lies between 5 degrees and 20 degrees North latitude and 116 degrees and 130 degrees East longitude. With few exceptions, coral reefs are located in the band of 30 degrees latitude north and south of the equator.

As much as 90 percent of coral reef formation in the Philippines occurs at depths less than 20 meters. Primary production from coral reef ecosystems is high ranging from 1,800 to 4,200 grams of carbon per square meter per year, rivaling that of tropical rainforests and at least 10 times higher than primary production in the open ocean.

Seventy-five percent of fish production in the Philippines comes from waters less than 200 meters deep. Annual fish production from aquaculture and municipal fisheries accounts for approximately 1.9 million metric tons of fish and more than two-thirds of the catch.

The Philippine Trench is 10,000 meters deep, one of the deepest parts of the ocean, and deeper than Mount Everest is high.

Dugongs Forever!

1. *The Little Mermaid.* The Dugong or sea cow is a large marine vertebrate found in the Philippines. It belongs to a group of animals known as Sirenians because, in ancient times, sailors who saw sea cows mistook them for mermaids or "sirenia."

   The nearest relative of the Dugong was the Steller's sea cow which was discovered in the Bering Sea in 1741. However, less than 30 years after its discovery, the Steller's sea cow became extinct because of large-scale hunting.

2. *Dugong Basics.* Dugongs are mammals and have to surface from the water in order to breathe air. Adults have grayish-bronze hide and weigh 400 kg.

   Dugongs swim at slow speeds, about 5km per hour, making them easy targets for fishermen in motorized bancas who hound them with nets, spears and dynamite.

   Adults become sexually mature when they are at least nine years old and females give birth to calves only once every 3 to 7 years. Thirteen months after mating, a single calf is born. Population growth is so slow that even without exploitation, in ideal conditions, the Dugong population can only grow as much as 5 percent per year.

3. *Sweet Sea Cow Seeks Safe Sea Pastures.* Dugongs are the only remaining herbivorous sea mammals in the world feeding on seagrasses in warm tropical and subtropical seas. They spend most of their time feeding and consume up to 25kg of seagrass per day.

   Seagrass beds harbor a rich assemblage of marine organisms that all contribute to the important role of seagrasses in the marine ecosystem.

   Seagrass beds support at least:

   172 species of fish
   46 species of invertebrate
   51 species of seaweeds
   45 species of algal epiphytes
   1 species of sea turtle
   1 species of Dugong

   Dugongs were once found abundantly throughout the Philippines. Now the numbers are low and distribution is limited to the coastal areas of Palawan, Southern Mindanao, Quezon-Isabela, and the Sulu Archipelago.

   This rapid decline in the population of Dugongs in the Philippines is due to loss of seagrass habitat and intentional and incidental catches of this slow-reproducing marine mammal.

   In 1982, the International Union for Conservation of Nature and Natural Resources (IUCN) classified Dugongs as vulnerable to extinction. The Department of Environment and Natural Resources issued Administrative Order No. 55 in 1991 to protect Dugongs from continued exploitation.

5. *Say No to Extinction.* Will the Dugong become extinct like the Steller's sea cow? Large marine animals, such as Dugong, whales and dolphins, sea turtles, manta rays, and whale sharks throughout the Philippines are extremely vulnerable to extinction. The habitats that support them are being destroyed. Sanctuaries for Dugongs are being proposed under the National Integrated Protected Area System at Green Island Bay and Taytay Bay, Palawan. Dugongs, along with other large marine animals including mammals and the largest known species of fish, the whale shark, are being captured and exploited by man at rates that cannot be sustained. Will you allow the extinction of these large marine animals? *(see S2-2c for more on dugongs and other large marine animals)*

Section 1

CLUSTER 3. **Under the Sea**
What to see: Real (but not live) specimens of marine animals from the collection of Silliman University's Marine Laboratory and Biology Museum, National Museum, and DENR-PAWB.
What to do: Read info board placed alongside each specimen. DON'T touch or handle specimens (some of them are very delicate and may break!). Take nothing with you but this one keepsake —

Sweet Mystery of the Sea

There is one knows not what sweet mystery about this sea,
whose gently awful stirrings seem to speak of some hidden soul beneath…
Over these sea pastures, wide-rolling watery prairies and Potters' Fields
of all four continents, the waves should rise and fall,
and ebb and fall unceasingly; for here,
millions of mixed shades and shadows, drowned dreams,
somnambulisms, reveries; all that we call lives and souls
lie dreaming, still; tossing like slumberers in their beds;
the ever-rolling waves
but made so by their restlessness.

—Herman Melville

GIANT CLAMS

There are nine species of clams in the world, seven of which are found in the Philippines. These are: *Tridacna gigas; Tridacna derasa; Tridacna tevoroa; Hippopus porcellanus; Hippopus hippopus; Tridacna maxima; Tridacna crocea;* and *Tridacna squamosa*.

Giant clams particularly the larger species, have proved to be very vulnerable to over-exploitation. They are collected in large numbers not only for food but also for their shells which are used for birdbaths, washbasins in hotels and restaurants and for other decorative purposes. Such extensive harvesting could cause local extinction, and giant clam populations may not recover without re-introductions. Recent research suggests that it is feasible to culture giant clams.

MELON- HEADED WHALE
Scientific Name: *Peponocephala electra*

The Melon-Headed Whales are sometimes confused with the Pygmy Killer Whales but there are subtle differences between the two species. The Melon-Headed Whales are highly gregarious and are more likely to be seen in large pods than the

Pygmy Killer Whales. They have pointed, melon-shaped head and snouts, often white lips, 21-25 teeth and slimmer, torpedo-shaped and dark colored body with tall falcate fin and long, sharply pointed flippers. They reach at least 2.6 m. (females) and 2.7 m. (males) in length. They are fast swimmers, making low shallow leaps out of the water, creating a lot of spray as they surface.

BRYDE'S WHALE
Scientific Name: *Balaenoptera edeni*

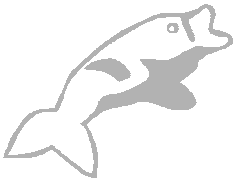
Bryde's Whales are found in tropical and warm temperate waters around the world. In the Philippines, sightings have been recorded off Siquijor island, Pamilacan and Lila in Bohol, Sagay in Camiguin and El Nido in Palawan. The Bryde's Whale's head has a series of three prominent ridges from the area of the blowholes to the snout; its body is colored dark gray dorsally and has a lighter color ventrally, occasionally dotted with small, oval white scars. A dark band runs across stomach. Bryde's whales can grow up to 48 ft. Females are generally larger than males.

Bryde's Whales ussually occur singly or in small groups. They are often confused with Sei whales as well as with Minke whales. But unlike the Sei who are shallow feeding, Bryde's whales are deeper divers. When feeding they typically make sudden changes in direction, both underwater and at the surface; their swimming style often gives the impression of a large dolphin rather than a whale.

ARMORED SEA ROBINS
Family: *Peristediinae*
Scientific Name: *Peristedion*

Armored sea robins differ from their common relatives by the presence of heavy plates bearing spines which cover their entire body. The snout has two lateral bony projections used to comb through the sea bottom in search of food which consists of crustaceans and molluscs. They are found in deep waters and are sedentary or slow moving. Like all other sea robins, *Peristedions* produce sound by vibrating their air bladder inside their body cavity.

This strange looking fish is considered a deep water form. It is often taken from depths below 1,000 feet.



PORCUPINE FISH
Scientific Name: *Diodon sp*
Common Name: *Diodontidae*

The "Porcupine Fish" or "Spiny Puffer Fish" can inflate itself with air or water and when it is inflated, its body spines stand erect, more than enough to deter predators. Its jaws form strong beaks used for crushing sea urchins, mollusks, and crabs. This fish lives frequently in shallow waters around coral formations. They are slow swimmers and exhibit interesting movements of the pectoral fins.

PUFFERS OR BALLOON FISH
Family: *Tetraodontidae*

"Puffers" or "Balloon fishes" are chiefly tropical fishes. They are among the most poisonous of marine animals. Their toxin is lethal and concentrated for the most part in the ovaries and testes, the liver and the intestines. Lesser amounts are found in the skin. The body musculature is fully free of poison.

These fishes have the ability to inflate their stomachs to enormous sizes by gulping down water into a ventral opening of the stomach when frightened or annoyed. Deflation occurs by expelling the water.

GREEN TURTLE
Scientific Name: *Chelonia mydas*
Local Name: pawikan (in most Pilipino dialects), talisayon, mangdarait (Bicol)

The Green Turtle is the most widely distributed marine turtle species in the Philippines. It feeds on seaweeds and seagrass. Different life stages occupy different habitats which may be thousands of kilometers apart. Green turtles come ashore to lay their eggs in the sand during the breeding season and may travel great distances to return to the beaches where they themselves hatched. They are capable of sustained high speed migration of over 30 km per day for several weeks from their feeding grounds to their breeding sites.

HAWKSBILL TURTLE
Scientific Name: *Eretmochelys imbricata*
Local Name: pawikan (in most Pilipino dialects); karahan (Bicol); sisikan mapun (Tausug); kinarahan (Samar)

This hawksbill turtle was collected off the waters of Bohol in the early 1970's. Hawksbills live in clear waters of mainland and island shelves. Studies of migration have revealed short as well as long distance movements between the feeding and nesting beach and the nearest feeding ground. In the Philippines, El Nido, Palawan,

and Lagunoy Gulf in the Bicol Region have been confirmed as developmental habitats for hawksbills. Hawksbills prefer isolated islands to lay their eggs, usually at night. They are generally solitary nesters, and are faithful to a particular nesting site.

LEATHERBACK TURTLE
Scientific Name: *Dermochelys coriacea*
Local Name: *Galangan*

This specimen was caught by fishermen off the waters of Amlan, Negros Oriental in 1972. Its live weight was about 300 - 350 kilos. Also known as the *truck turtle, harp turtle* and *luth*, this species is called leatherback on account of the leathery hide covering its shell. The shell is unusual in that it is composed of a mosaic of small bones. These turtles only leave the deep waters to lay eggs (90 to 150 eggs per "clutch") on sandy shores. After laying, the female covers her eggs with sand and then returns to the waters.