

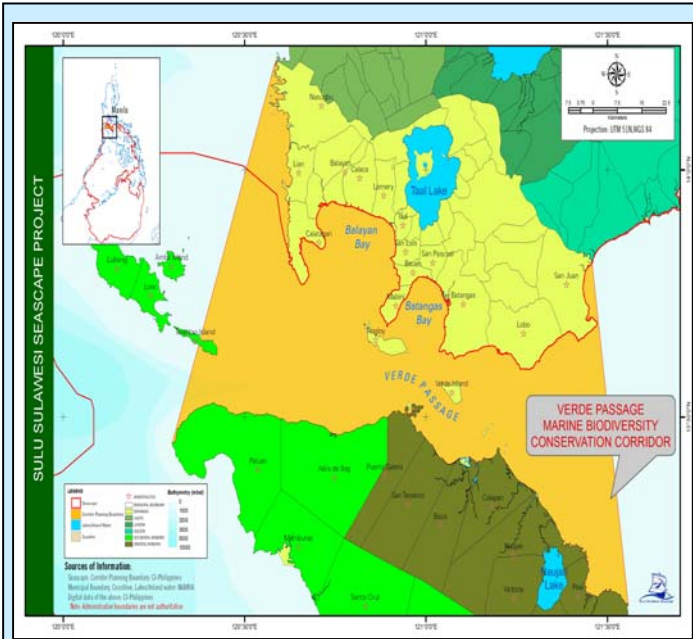
The VERDE PASSAGE MARINE BIODIVERSITY CONSERVATION CORRIDOR consisted of highly diverse marine habitats that must be properly managed and protected.

A threatened biodiversity center...

Major threats to the corridor are unsustainable fishing practices such as dynamite fishing, cyanide fishing for aquarium species, overfishing, habitat degradation, encroachment of commercial fishers in municipal waters, and unregulated coastal development (such as the conversion of mangrove habitats into aquaculture ponds, housing developments, and the building of resorts and golf courses). There is also curtailed access to private coastal areas, depriving some people of access to resources.

Another threat is posed by offshore pollution, such as the dumping of solid wastes and wastewater by ships, and inshore pollution from domestic, agricultural, and industrial waste.

Many of these threats exist because of weak enforcement of environmental regulations, weak governance and a weak prosecution system. RA 7160, also known as the Local Government Code, has given the local government units the mandate for environmental governance at the municipal and city level. Yet, there is inadequate capacity and resources to implement environmental policies, much less promote coastal and marine resource management practices.



GLOBAL IMPORTANCE

The Verde Passage Marine Biodiversity Conservation Corridor (MBCC) covers an area of 494,700 hectares in the middle of the Mindoro–Calavite–Tablas Triangle, and is bounded on the north by the province of Batangas, on the south by Oriental Mindoro, on the west by Lubang Island, Occidental Mindoro, and the Luzon Sea, and on the east by Tayabas Bay, Quezon and the waters off Marinduque. The corridor is the center of the Indo-Malay-Philippines Archipelago (IMPA), a region that has long been considered the area of highest marine biodiversity, with the greatest number of tropical shallow water habitats on earth, including coral reefs.


As the “center of the center of marine shorefish diversity”, as revealed by a study by Dr. Kent Carpenter and Victor Springer, Verde Passage has a high concentration of species per unit area and indicates that a number of unique communities in the area support this multitude of species. There are, however, also considerable dangers, as these communities are under grave threat due to habitat degradation and poorly planned coastal resources development.



Harlequin shrimps feeding on a starfish (photo © CI, Sterling Zumbrunn).



Barrel sponge amidst an explosion of fairy basslets (anthias) underneath the waters of Anilao, Mabini, Batangas in the Verde Passage Corridor (photo © Juergen Freund).



CONSERVATION VISION
Conservation International’s mission is to conserve the Earth’s living heritage — our global biodiversity — and to demonstrate that human societies are able to live harmoniously with nature.

The MPA solution...

An important rallying point for marine biodiversity conservation and resource management is the establishment of marine protected areas (MPAs), which prevent habitat degradation while enhancing fisheries management to restore fisheries stocks. In the Philippines, the MPA movement started in 1974, and in a span of 23 years, close to 700 MPAs have been established. The Philippine Fisheries Code of 1998 allocated at least 15% of municipal waters as “no-take-zones”. Despite this number, most are considered “paper parks.” Some are established with no biophysical basis, technical description or even physical delineation, while others are too small to be ecologically significant.



There is a marked difference in the health of corals and fishes inside (left) and outside (right) an MPA in Pulong Bato, Verde Island Batangas (photo courtesy of UPMSI).

In the Verde Passage MBCC, many MPAs function primarily as dive sites. MPAs were points of contention between tourism/recreational groups and local communities, who felt excluded from their own fishing grounds because of MPA declarations. With the entry of non-government organizations working with local government units, capacity-building for coastal resource management was initiated and gradually, grassroots participation in MPA establishment was realized.



A memorandum of understanding to establish a province-wide network of MPAs in Batangas was signed by the Provincial Government of Batangas, CI and WWF last December 2006 (photo © CI, Ricky Biyo).

For an MPA network to be effectively managed, MPAs must be continually assessed and improved, simultaneous with capacity strengthening of key stakeholder groups. Designing and establishing a network of MPAs require consultations and trainings to generate support from various stakeholders, particularly the local and provincial government representatives. During a three-day seminar-workshop conducted in December 2006, the possibility of establishing a province-wide network of MPAs in Batangas was discussed and a tripartite Memorandum of Understanding (MOU) was signed among CI, WWF, and the Provincial Government of Batangas.

Working together for conservation objectives...



In collaboration with the Sulu-Sulawesi Seascape (SSS) Project partners and local stakeholders, CI is investing in a corridor-wide and site-specific conservation strategy. Under the Walton Family Foundation grant, the alliance will target the following objectives in the Verde Passage MBCC by 2008:

- The improved management effectiveness of existing MPAs
- The establishment of new MPAs
- The design of an appropriate MPA network

To achieve these objectives, CI and its allies will assess the corridor in terms of bio-physical conditions, threats, the capacity of local stakeholders

for species and habitat conservation, enforcement, integrated coastal management, and existing economic, ecotourism and industry policies affecting MPAs and corridors.

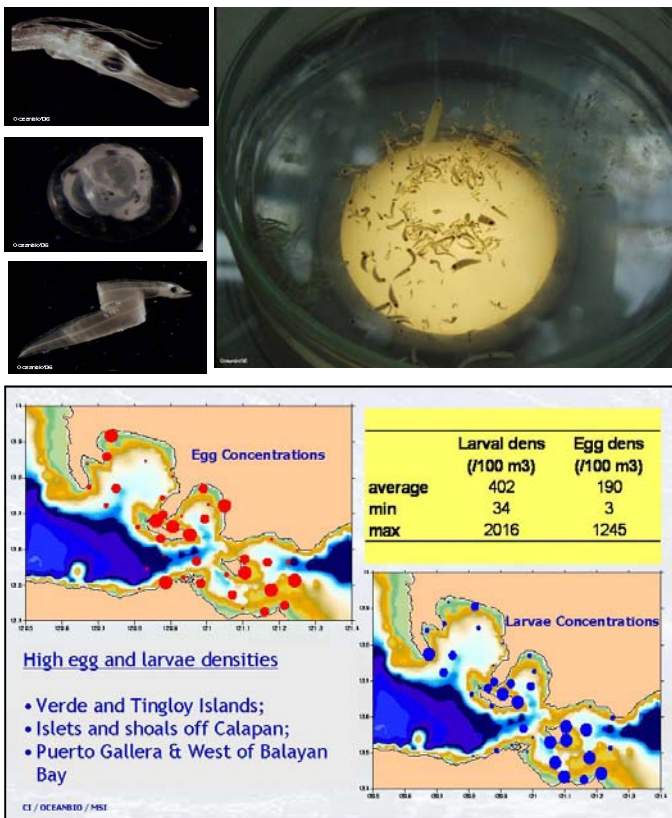
CI has linked up with at least 14 key partners through external grant agreements or Memoranda of Agreement (MOA) to establish a conservation science network and conduct threatened species research. This is complemented by building of local capacity for resource management and an enabling environment for conservation, and identify sustainable conservation financing options.

Sources and sinks...

CI, the University of the Philippines in the Visayas Foundation, Inc. (UPVFI), the University of the Philippines Diliman Marine Science Institute (UPMSI), and De La Salle University through the Marine Environment and Resources Foundation, Inc. (MERF) have come together to study marine communities for a better understanding of ecosystem health, ecological processes behind biodiversity distribution in the corridor, and to determine impacts from various disturbances.

Existing MPAs currently averages about five hectares each and 1,100 hectares total, representing only around 1/6 of 1% of the total accumulated size of the municipal waters of Batangas province. These MPAs must be expanded to cover at least 20 hectares each. MPAs must be established as reproductive reserves that can serve multiple roles. New marine sanctuaries can be added so that at least 10% of strategically located areas will be no-take zones.

UPVFI and UPMSI studied the models of water circulation in relation to the distribution and dispersal of fish eggs and larvae. This generated data on the spawning areas (sources) and settlement sites (sinks) in the corridor for the months of January, April and August, and was the basis for the sampling sites in the corridor. Initial sampling done in 2006 showed high densities of fish eggs and larvae around a number of sites in the corridor, namely: Verde Island, Tingloy, the islets and shoals of Calapan, Puerto Galera, and west of Balayan Bay. These sites are thus identified as most suitable to be declared MPAs. Additional samplings will be conducted in 2007 to validate results as well as identify other significant sites for MPA establishment.



Top: Pictures of sampled larvae (photo courtesy of W. Campos, UPVFI; Bottom: A number of areas within the Verde Passage are suitable sites for MPA establishment given the high egg and larvae densities in the corridor (data from UPVFI and UPMSI).

Marine sentinel species...



Fraser's dolphins in the waters of Verde Passage (photo © TMRC, L. Dolar).

The presence of charismatic mega-vertebrates such as marine mammals, seabirds, and sea turtles, the proverbial “canaries in the mineshaft” reflect the quality and health of marine ecosystems. CI is working with the Tropical Marine Research for Conservation (TMRC), the Protected Area and Wildlife Bureau (PAWB) through the Pawikan Conservation Project (PCP) and the Department of Aquaculture - Bureau of Fisheries and Aquatic Resources (BFAR)– National Fisheries Research and Development Institute (NFRDI), to conduct threatened species studies focusing on marine mammals, sea-birds, and sea turtles and the threats to these populations from various sources, particularly from interactions with fisheries.

Marine mammal survey in 2006, confirmed the sightings of five cetaceans, namely, Risso's dolphin (*Grampus griseus*), spinner dolphin (*Stenella longirostris*), pantropical spotted dolphin (*Stenella attenuata*), Fraser's dolphin (*Lagenodelphis hosei*), common bottlenose dolphin (*Tursiops truncatus*), and one stranding recovery of a dwarf sperm whale (*Kogia sima*). Sightings were high around Verde Island. Anecdotal evidence records eight other species of cetaceans occurring in the area. Mortalities in the populations are reported from strandings, direct hunting and by-catch fisheries, the latter being the most prevalent.

Seabird surveys, conducted in conjunction with the marine mammal survey, recorded five strictly pelagic seabirds, two of which are of global significance: the critically endangered brown booby (*Sula leucogaster*) and the black-naped tern (*Sterna sumatrana*), threatened in Southeast Asia. Game hunting for other birds has been reported in Verde Island. Important bird habitats are also disturbed: mangrove forests in Pagapas Bay are giving way to intensive aquaculture development.

Reports of marine turtle sightings and nestings in the western side of Batangas province confirms the presence of Olive

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Hawksbill turtle (photo from wikipedia.com)

Marine sentinel species... from page 3

Ridley turtle (*Lepidochelys olivacea*), the green turtle (*Chelonia mydas*), and the critically endangered Hawksbill turtle (*Eretmochelys imbricata*). Suitable nesting sites were identified in Batangas City, Calatagan, Lian, Barangay Natipuan and Punta Fuego in Nasugbu. Covert collection and trade of turtle eggs and the consumption of turtle meat also pose major threats, particularly in Nasugbu. Marine debris results in a number of strandings and deaths by ingestion.

Threats to these species from fisheries is currently being assessed. CI is implementing the Marine Threatened Species-Fisheries Interaction Research to quantify by-catch in municipal and commercial fisheries and identify actions to mitigate its impact. Results of the study will also contribute to the regional assessment of the species using the IUCN Red List Criteria and Categories.

Fished to the brink...

Large commercially valuable fishes are increasingly replaced by smaller ones. Top predator species are increasingly replaced by plankton feeding ones. This is a phenomenon referred to as overfishing, the biggest single threat to marine ecosystems today. It often results from increased fisheries operations in an ecologically depleted environment.

Signs of overfishing has been observed in the Verde Passage MBCC. Initial assessment by MERF in Verde Island and Mabini confirms growth overfishing in fish communities associated in reef benthic communities. This is exacerbated by encroachment of commercial fisheries in municipal waters and illegal and destructive fishing practices. To counter overfishing, illegal and destructive fishing must be stopped, MPA sizes and "halos of enforcement" increased, and other fisheries management concerns such as gear and seasonal regulation and access rights management integrated with current practices.

Overfishing can also result from unsustainable extractive practices such as the aquarium or ornamental fish trade where the vast majority of exports come from the wild. The use of cyanide, the slow reproductive rates of extracted resources, and the largely unregulated trade are detrimental to the reef ecosystem and sustainable fisheries. Aquarium fishing, however, is the main livelihood for residents of Barangay San Andres in Verde Island. CI, in collaboration with First Philippine Conservation Inc. (FPCI), identified San Andres as a pilot site for the development of an economically sustainable, ecologically responsible and science-based management program for the ornamental fish trade. CI is partnering with Reef Check and the Marine Aquarium Council (MAC) to establish sustainable fishing levels of target species and enhance local capacities for ecologically sound collection practices.

Protecting the protectors...

CI is working with WWF-Philippines, the local government of Tingloy, *Tanggol Kalikasan*, and the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) to strengthen local capacities for MPA enforcement and coastal resource management, and to help improve the management and effectiveness of MPAs on the Batangas side of the Verde Passage MBCC.

A province-wide marine law enforcement (MLE) capacity needs assessment was conducted targeting existing Bantay Dagat teams in six towns that had previously formed themselves into a network: Mabini, Tingloy, San Luis, Balayan, Calatagan, and Nasugbu in Balayan bay. A Bantay Dagat team, expected to be at the forefront of marine law enforcement, is essentially composed of volunteers mobilized by the Fisheries Office of the LGU. These teams, however, lack regular support from the LGUs. CI is working on a long-term strategy for the sustainability of enforcement activities to benefit not only Tingloy but the Batangas province and the corridor. The enforcement strategy will address the organizational, legal, financial and technical sustainability of the Bantay Dagat teams.

By engaging local experts, CI is also studying alternative sources of revenue through new tourism products and packages for local communities in the corridor. A suite of economic instruments are also being identified that can support conservation work within MPAs and their surrounding environs. By 2008, CI and its partners will see the improved management effectiveness of existing MPAs, made possible through enforcement support in select municipalities of the Verde Passage MBCC. In addition, new MPAs will be established and an appropriate MPA network designed. Local stakeholders must be empowered to manage these networks and enforce policies on their own. By 2012, the vision is an ecologically functional and formal MPA network, with enough sustainable mechanisms to support itself. Only then can life in the Center of the Center continue to thrive.

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