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# Marine Protected Areas

## Tools for fishery management and biodiversity conservation in the Philippines

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**Principle:** Marine coral reef protected areas, conceived and managed with local participation, conserve biodiversity and sustain local fisheries and tourism.

**Experience:** Establishment and management of Sumilon and Apo Island marine protected areas in the Central Philippines, with contrasting impacts on marine biodiversity.

**Most important lesson learned:** The potential of protected areas is realized only when local communities participate in establishment and management.

**Best practice:** Apo Island Marine Reserve, Philippines, a global model.

### Rationale for protected areas

Coastal dwellers have traditionally depended on coral reefs and associated shallow-water ecosystems for their fish protein. Coral reef fishers in the Philippines have used a variety of traditional fishing gears, including fish traps, hook and line, set gill nets, and spears. With the exception of fish traps, these gears are generally not destructive to the coral reef environment. However, other methods cause great damage, including blast fishing, poisons and *muro-ami*.

Philippine capture fisheries as a whole had declined by the late 1970s. Trawl grounds showed signs of depletion as early as 1949. The fisheries of reefs and other shallow-water marine environments have been on the decline since the late 1970s.

Sumilon Marine Reserve and the Apo Island Marine Reserve were established to protect biodiversity and also to allow the build-up of fish abundance and biomass in order to export fish to the areas outside of the reserves .

### Sumilon Marine Reserve

The Sumilon Marine Reserve was protected and managed by the Silliman Marine Laboratory from April 1974 to 1984. In 1980, new mayors not known for any commitment to marine conservation were elected in Santander and Oslob towns. In 1984, Silliman University asked the Bureau of Fisheries and Aquatic Resources to assume legal responsibility for the reserve. The next three years saw heavy fishing of the reserve and the non-reserve by local fishermen, devastating the large fish biomass built up during the 10 years of protection. Not only was

the fish standing stock wiped out, but the high cover of live coral in the reserve was also reduced to rubble. The other marine species that constituted the high biodiversity of the reserve disappeared, and Sumilon reserve ceased to be attractive to (dive) tourists. The succeeding years have been characterized by unstable management. Fishing in the reserve was observed in 1995, 1997, 1998, and 1999-2001. Overall, the management objectives of Sumilon Island have only been partly achieved during its 26-year history and the benefits of protection have been eliminated. However, Sumilon provided some of the best early examples of build-up of fish abundance and fish biomass and increase of fish yield to local fishers following the establishment of the no-take marine reserve.

## Apo Island Reserve

The Marine Management Committee of the Apo Island community managed Apo Island marine reserve from the early 1980s to 1994. Beginning in 1994, the Protected Area Management Board under the Department of Environment and Natural Resources took over management. The PAMB is composed of representatives from national, provincial, municipal and local levels.

The reserve is strictly a no-take reserve and fishing is restricted to the neighboring non-reserve. When asked about the effects of the sanctuary on their fish catch, most fishermen responded positively, claiming that their catch doubled because of the presence of the fish sanctuary. In the 1990s, two resorts with dive shops were built to serve the diving needs of tourists. Income from tourism appears substantial for a small island with just 106 ha of coral reef.

Apo Island is a classic example of a highly successful community-based coral reef fishery resource project. This success is due to the collaborative partnership among a non-government organization, an organized local community, and local government units. Apo Marine Reserve has emerged as the model for marine resource management for both the country and the rest of the world

## Lessons learned

Marine reserves appear to be the most viable fishery management tool for developing nations because of their simplicity and the relative ease with which they can be established. They are likely to be most effective if local government units and local communities are fully involved in their management. Several human generations are required to ensure the attainment of the carrying capacity of these reserves, underscoring the usefulness of community-based management approaches.

Politics has a role in the management and protection of marine resources, and political issues must be faced early in the initiation of projects. Apo Island exemplifies full participation of local communities and local government units, along with academia and non-government agencies. The Apo community has become a model learning site for the communities on

nearby islands in the Bohol (Mindanao) Sea. The existence of several hundred marine reserves subsequently established by local government units, non-government organizations and local communities, some of which are apparently working even though they have not been scientifically monitored, attests to the success of the community-based approaches in coastal resource management.

Marine reserves at Sumilon and Apo export adult fish biomass to adjacent areas after a varying period of protection. The abundance, biomass and species richness of fishes increased when the marine reserves were protected, but these biological attributes decreased when protection was lifted. The biomass of predatory target fish was still rising exponentially after 9-18 years of protection, implying that the carrying capacity of the reserves takes decades to level off and that protection must be long-term.

The Philippine Congress, recognizing the value of marine reserves and the role of communities in fisheries conservation, has included marine reserves and community participation in recent legislation, including the Agriculture and Fisheries Modernization Act of 1997 and the Philippine Fisheries Code of 1998.

