



Sumilon Island is picturesque. The eastern side has a lagoon, and beyond the white beach are the fishing grounds. In the distance is the southern tip of Cebu Island.

**S**umilon Island is the site of a tiny National Marine Fish Sanctuary in the central Philippines. The reserve is only 750 meters long on one side of the island; it consists of a 100-m wide fringing reef and sharp drop-off down to a depth of 30 m. Until 1984, a watchman lived on the island—its only inhabitant. His function was to monitor fishing activity and to help enforce regulations concerning the reserve side of the island. In November 1984 the watchman's life was threatened. He was obliged to leave and fishermen returned with traps, hooks and lines, gill nets and even muro-ami (a damaging drive net technique; see Newsletter, Jan. 1985, p. 12).

Sumilon marine fish sanctuary became a reserve in 1974 when Silliman University in nearby Dumaguete and the municipality in Cebu which controlled Sumilon Island agreed to set up a marine reserve on the island for research purposes (see Newsletter, Oct. 1979, p. 10). It was proclaimed a National Marine Fish Sanctuary in 1980 by the Philippine Bureau of Fisheries and Aquatic Resources. It remains protected under national law.

An extensive survey by researchers from Silliman University in 1983-1984 (see Newsletter, Oct. 1984, p. 9) revealed that the abundance of fish in the Sumilon Sanctuary was much higher than in neighboring reefs where routine fishing was taking place.

Fishermen working the non-reserve part of the Sumilon reefs believed their catches improved after the reserve came into effect. In fact, fishermen were obtaining extraordinary yields on the non-reserve part of the island. Over a six-year period of observation, fish yields there were about 20 tonnes/km<sup>2</sup>/year—the highest reported average yield of any coral reef in the world.

## End of a Marine Reserve: Sumilon Revisited

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### Recent Survey

In December 1985, just over a year since the resumption of fishing activities in the Sanctuary, another underwater survey of its resources was made by Dr. Garry Russ, visiting scientist from the Australian Institute of Marine Science, Townsville, Australia.

The reef was found to have sustained severe damage. Coral cover was determined to have been reduced by close to 50%. A strong typhoon had hit the general area in September 1984 and this was probably responsible for part of the damage, although there was clear evidence of damage by traps, explosives and muro-ami fishing.

The fish fauna had decreased dramatically. The standing crop of groupers was reduced by 40%; their abundance was down by 45%, while that of other carnivores (lutjanids and lethrinids) was down by 85%. The abundance of butterflyfish (chaetodontids), which seem to be good indicators of coral diversity and abundance, was reduced by 80%.

Silliman researchers are now gathering data on fishermen's yields since "closure" of the Sanctuary.

### New Reserves

The usefulness of maintaining such sanctuaries did not go unnoticed in other municipalities. While Sumilon has been depleted, three new reserves declared by municipal ordinances in 1981 are now actively controlled by villagers. These

are: Carbin Reef off northern Negros, and Pamilacan Island and Balicasag Island off Bohol. Carbin Reef is a project of the mayor of that area, while the two Bohol reef reserves were instigated by the local villagers themselves. Silliman University helped draft the ordinances which are enthusiastically enforced. Another marine reserve around Apo Island near Dumaguete also remains operational. (For more information on Philippine marine parks, see Newsletter, July 1981, p. 17)

### The Future

The Sumilon National Marine Fish Sanctuary has been a unique project, offering guidelines for coral reef fisheries throughout the tropics. During its 12-year history a wealth of information has been gathered on the resources and on the socioeconomic effects of marine reserves on fishermen.

The project continues with a new round of catch and effort data to be gathered. The fishermen themselves may voluntarily quit the Sanctuary and information on the subsequent recovery of the area would then provide a clearer understanding of the relationship between fisheries and the coral reefs.

Meanwhile Silliman University's marine researchers are pursuing a variety of other projects designed to increase yields of marine resources (see Newsletter, Apr. 1983, p. 14). Just offshore from the marine laboratory is the oldest artificial reef in the country. This is regularly monitored and serves as a model for similar experiments elsewhere. Recently the University began research with ICLARM's International Giant Clam Mariculture Project; researchers are presently growing thousands of juvenile tridacnids in a variety of situations to determine the best techniques of restocking reefs throughout the Philippines that have become depleted of giant clams. ●



Dr. Angel Alcala, in charge of the Silliman University Marine Laboratory projects and a leader in marine park development.