

**NORTH SULAWESI COMMUNITIES TAKE ACTION TO PROTECT THEIR
CORAL REEFS: Successful Partnerships Created to Rid Bentenan-Tumbak Reefs
of a COTs Outbreak**

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Introduction

Over 250 people from North Sulawesi joined forces On February 25, 1998 to undertake a Crown-of-Thorns (*Acanthaster planci*) cleanup operation on Bentenan-Tumbak coral reefs which were experiencing a Crown-of-Thorns (COTs) infestation. The cleanup was a partnership between the village communities, local government, university faculty and students, local dive and resort operators, and NGO's which came together to address a pressing coral reef management issue. Volunteer divers and snorkelers removed 766 COTs from three reef locations experiencing the most severe infestations.

While the clean-up was a success at galvanizing support from many individuals and organizations to protect the reefs of Bentenan and Tumbak, the job is not yet complete. Additional cleanups are being planned with the community to clear reef areas which could not be fully cleansed of CoTs during the initial cleanup operation. Proyek Pesisir is also planning to train community members of Bentenan-Tumbak to monitor their coral reefs with a special emphasis on observing COTs populations. Through community monitoring, if COTs populations ever reach infestation levels again, the Bentenan-Tumbak community can take action to keep COTs populations under control. While Proyek Pesisir is working with the local communities to develop a long-term coastal management plan for the area, the cleanup is an excellent example of how communities can forge partnerships with public and private sectors. It also demonstrates how early action can be taken to address a pressing management concern which cannot or need not wait until long-term plans are completed.

Background on COTs outbreaks and interventions

COTs outbreaks are still a poorly understood phenomenon. COTs are naturally occurring animals on coral reefs. However, at times the number of COTs exceeds the capacity of the coral reef ecosystem. An efficient predator, COTs can consume 5-13 m² of living coral a year. While COTs outbreaks do occur naturally, some scientists have suggested that human activities, such as eutrophication or overfishing of COTs predators, increase the severity and frequency of infestations. One COTs infestation in the Togian Islands of Central Sulawesi devoured 80% of living coral on a single reef in less than one year.

Intervention programs for COTs outbreaks have taken place in Japan, Australia, Malaysia and Indonesia. Responsible and safe interventions have temporarily returned COTs populations to normal levels. For any intervention program, quick responses are critical in order to reduce the infestation's effects on a reef.

Why a COTs Cleanup on Bentenan-Tumbak coral reefs?

During an environmental baseline survey of the coral reef areas around Bentenan-Tumbak in June 1997, several reef areas were noted as having large populations of COTs. A Proyek Pesisir team in October noted a potential outbreak close to Bentenan Island - an increase in numbers from June surveys. A detailed follow-up survey by two Proyek Pesisir workers was conducted in December to assess the situation. The number of COTs was found to exceed the normal level and had increased rapidly in just six months.

The Proyek Pesisir office consulted with specialists at UNSRAT (Universitas Sam Ratulangi) Fakultas Perikanan dan Ilmu Kelautan and also with a specialist at Australia's Great Barrier Reef Marine Protection Authority, Udo Engelhardt. After receiving advice from the specialists, Proyek Pesisir consulted with the community and recommended a COTs cleanup. The people of Bentenan and Tumbak agreed and dates were set for late February, 1998.

The Bentenan-Tumbak COTs cleanup

The day before the cleanup a team of volunteer research divers from IACRS (Indonesian Association of Coral Reef Scientists) re-surveyed the three sites and

collected pre-cleanup population data. Over 120 people from Manado traveled three hours by bus to Bentenan-Tumbak. The Manado volunteers consisted of faculty and students from the Faculty of Fisheries and Marine Science at UNSRAT (Universitas Sam Ratulangi), research diver associations (IACRS and ASPISIA, Asosiasi Penyelam Ilmiah Indonesia), local dive operators (Tasik Ria Dive Resort, Blue Banter Dive Center, Thallassa Dive Center, and Indo-Pacific Divers) and representatives from a local NGO, Kelola. In Manado, the tremendous response to the open invitation was so great that Proyek Pesisir had to turn people away, as the spaces for volunteers were quickly filled. The communities of Bentenan-Tumbak opened their homes and provided accommodations for half of the non-village volunteers. While the remainder were housed at a local beach resort (Bentenan Beach Resort).

On Wednesday February 25th, the day of the cleanup, over 150 people from the villages of Bentenan and Tumbak joined with 127 volunteers that came from Manado. The Bentenan-Tumbak communities provided nine boats, baskets, fishing gear and boat crews. Manado participants provided manpower, dive and snorkel gear. The removal and spearing of COTs was performed by all parties, both the villagers of Bentenan and Tumbak, and the volunteers from Manado.

The participants targeted three areas near the villages of Bentenan and Tumbak for their COTs cleanup: Bentenan Island, Sompini Bay and Punten Island. After returning to the center of the cleanup operations - Bentenan Beach Resort - the COTs were tallied, measured, weighed and spines collected for further research.

After the COTs data collection, all the participants gathered for lunch and a program to acknowledge the hard work of all of the participants, all accompanied by a 30-piece village band. Christovel Rotinsulu, the field extension officer from Proyek Pesisir, presided over the ceremony. Alex Wowor (Wakil Ketua Bappeda Tingkat I Sulut) and Drs. Decky Mamahit (Sekratus Wilayah Camat Belang), A. J. Lowongan (Kepala Desa of Bentenan) and Johnnes Tulungen (Proyek Pesisir North Sulawesi Field Manager) all spoke about the issue relevant to all the volunteers: protecting North Sulawesi's coastal resources. Prizes were awarded to the teams that found the most, least and the biggest COTs. At the end of the cleanup, 766 COTs were removed from the reefs

of Bentenan and Tumbak and buried onshore. Bapak Alex Wowor interred the first basket of COTs.

Although the cleanup was a success in that many COTs were removed from Bentenan-Tumbak reefs, the numbers of COTs collected on the reefs exceeded expectations from the pre-cleanup survey. This disturbing news indicates that follow-up cleanups are necessary to bring the COTs populations to a normal level. The Manado dive operators offered to provide gear and volunteer divers for future cleanups. UNSRAT students enthusiastically responded to the possibility of future cleanups. Most importantly, the Bentenan-Tumbak community was galvanized by the outpouring of support and recognition of their efforts to protect their coral reefs.

Follow-up

Proyek Pesisir plans to train the villages of Bentenan-Tumbak in community-based coral reef monitoring using the manta tow method with an emphasis on controlling COTs populations. In the future, Bentenan-Tumbak coral reef managers will observe changes in reef conditions and COTs populations; and to determine if COTs population numbers reach infestation levels again. The new alliances forged with the local government, university and dive operators will enable the Bentenan-Tumbak communities to intervene and deter any further coral reef damage from COTs outbreaks. It is hoped that these efforts in North Sulawesi might inspire other communities and dive groups to undertake similar operations in other areas in Indonesia facing COTs infestations.

List of potential figures/photos.

1. Map of Bentenan-Tumbak with three target areas, numbers collected and calculated densities.
2. Underwater shot of a diver removing a COTs.
3. Beach shot with baskets of COTs being measured and the community.