Reef Check Monitoring and COTs Control in Palu Bay
Central Sulawesi, Indonesia: Earth Day 2007 Activity Report
By: Yayasan Palu Hijau (YPH) and STPL-Palu (LP3M & MAPALA)
Supported by Yayasan Reef Check Indonesia (YRCI)

I. Background
Since 2001, Reef Check members in Central Sulawesi have observed the coral reefs in Palu Bay, including at the location called Kadongo by local people. On the first visit in 2001, the Kadongo fringing coral reef was in good condition, and the underwater scenery was attractive, enlivened by many colourful reef fish including commercially valuable species such as Sweetlips and Snappers. The location is also blessed with seagrass beds, and a single dugong has been seen at times, he or she even rubbed up against one of the team on one occasion, causing quite a fright at first! However in 2002, a COTs (Acanthaster plancii) outbreak caused extensive damage.

In 2003, the recruitment and growth of new corals was visible, however some of the branching corals which had been killed in the shallower parts of the reef (1.5-4m) had broken up and become rubble, most of which was deposited at depths of 6-12m.

Observations made at Kadongo in late 2006, during a SCUBA diving and coral reef survey training programme supported by the Program Mitra Bahari (Sea Partnership Programme), showed that a severe COTs outbreak was once again in progress at Kadongo. This prompted the team from local NGO Yayasan Palu Hijau (YPH) and the Fisheries and Marine Institute for Higher Education (STPL-Palu) to recommend a COTs control operation as part of the training report, and to actively seek support (equipment and funds) to undertake this activity as soon as possible.

In April 2007, a proposal for Earth Day activities including the COTs control combined with Reef Check data collection and the collection of signatures to the International Declaration of Reef Rights was accepted for small grant funding by Yayasan Reef Check Indonesia (YRCI), and at the end of the month the necessary SCUBA equipment also became available.

II. Survey and COTs Control Activities
Due to delays in the availability of equipment and funds followed by extreme adverse weather, the field activities originally planned to take place on 29th April could not be undertaken until 13th May 2007. It was also decided to undertake the activities as a joint celebration of both Earth Day (Hari Bumi) and Environment Day (Hari Lingkungan).

The team from local NGO Yayasan Palu Hijau (YPH) and the local Fisheries and Marine Institute of Higher Education STPL-Palu (specifically the LP3M as the research and outreach organisation within the STPL comprising lecturers and other staff, and the MAPALA student nature lovers group) included: Ir. Samliok Ndobe, M.Si. (Head of the STPL) and Abigail Moore, M.Sc. (Marine Consultant at YPH) as the Reef Check Team Leader and Team Scientist; divers Muslihudin, Fachrudin Hassan, Normawati; snorkellers Al Ismi, Fadhli
As the team only has two SCUBA sets, activities began with data collection along the shallow (2-4m) transect, especially the fish survey, so that observations were not affected by the activities of the snorkel team which undertook the shallow water COTs control. Data collection on the medium (8-10m) transect started once data collection activities on the 3m transect were completed, swapping tanks and team members.

The COTs control team went into action as soon as fish and invertebrate data had been collected, and managed to collect over 50 COTs. Collection came to a halt when the Palu Bay sea breeze kicked in, not long after lunch, causing waves and surface current unconducive to snorkelling activities. This wind which can be quite strong is a typical feature of Palu Bay, blowing down the Bay from the Makassar Straits to Palu City and valley behind, and limits many water-borne activities to the mornings and evenings/overnight. Traditional fishers used this to their advantage, going out by paddle, usually before dawn, and returning under sail with the wind behind them.

Once the survey data was collected, COTs control began at the deeper depths, continuing as long as the SCUBA tanks allowed, and also resulted in over 50 COTs being collected. One group of 15 COTs was found surrounding a single massive coral outcrop about 30cm diameter! However most were found feeding on the mushroom corals which have proliferated since the previous COTs attack almost eliminated branching corals and severely reduced massive, foliose and other coral forms. Indeed, only fire coral and blue coral seem to be unpalatable (so far anyway) to these ravenous predators.

Around 2pm all in-water activities had ceased and the COTs which had already begun to "melt" were buried in a pit which had been dug earlier above the highest high water line, watched with curiosity by some local children to whom we explained what we were doing and why.

In addition to the hard work, all the participants enjoyed a delicious picnic lunch prepared by the "catering section", and enjoyed a short rest beneath the coconut palms – fighting off the goats who also wanted a share! We were careful to use as few non-recyclable items as possible and to leave no inedible rubbish behind us. There was still time to take final photographs with the activity banner before the return transport arrived and we left Kadongo with a feeling of satisfaction – tired but happy!

The work was not over, for the SCUBA and snorkel gear had to be cleaned and hung up at the STPL before returning home for a well-earned rest. Data entry was carried out at YPH and the STPL, involving the dive team members.

Because we were not able to remove all the COTs seen, especially those below the depths attainable by the snorkelling team, we hope to continue COTs control at Kadongo soon, hopefully in June, once the STPL end of semester exams which began on 14th May are over.

III. Collection of Signatures on the International Declaration of Reef Rights

The International Declaration of Reef Rights was translated into Bahasa Indonesia. The process of awareness raising and collection of signatures is still ongoing and will be sent to YRCI and Reef Check International at latest one week after Environment Day.
IV. Reef Check Data

This site has been monitored on several occasions, and the changes observed are shown in Figure 1 (substrate data) and Figure 2 (indicator species, those not observed on any occasion are not included).

Figure 1: Kadongo Substrate Monitoring Data

Figure 2: Kadongo Indicator Species Monitoring Data
V. Visual Record

A short visual record of the activities is given in Figures 3 and 4.

Figure 3: Visual Record – 13th May 2007
3m Transect – Moorish Idols etc

Survey completed!

Results from 10m – COTS & Data

Collecting COTs by snorkel

COT burial

Lunch beneath the coconut palms

Farewell Photo - "Tired but Happy"!

Packing – Ready for the next time!

Figure 4: Visual Record – 13th May 2007