

At work under the water with the jackhammer

**This project was initiated in August 2003 at the Coral Reef Alliance Workshop (CORAL), held in Bali and attended by Bali Dive Operators. It aimed to install appropriate moorings in the most essential locations around Bali with the cooperation and support of the commercial dive companies and local communities. The majority of the moorings were to be placed during the period 3 to 18 July 2004.**

The moorings project was supported by the Bali Government Tourism Office, the Coral Reef Alliance and the PADI Project AWARE Foundation and managed by Helen Newman, a marine biologist currently living in Bali. Members of the wider diving community were invited to: "Come along and be involved in real marine conservation in Bali, Indonesia", hence my involvement together with several other divers from all over the world. I was the only Australian, with others flying in from Seychelles, Germany, Netherlands, America, Brunei, Singapore and the UK. Local dive operators in each area assisted by indicating the most popular dive sites and some also provided underwater assistance. Most supportive on our trip were Gekko Divers at Padangbai, Stingray divers at Amed, Nengah Putu at Tulamben, Spice Dive in Lovina and Reefseen Aquatics in Pemuteran.

The project was proposed because the use of anchors from commercial and recreational boats around Bali was causing considerable damage to the coral reefs and this damage was slowly reducing the economic value inherent in what was healthy, undamaged reef. Boat anchors and

associated chains can damage the reef by crushing and killing the corals, the sponges and other bottom living animals and new coral does not settle. Fewer living corals means less habitat and food for fish and less bio-diversity which in turn means fewer fish to breed and eat and fewer and less variety of fish for tourists/divers to see. Damaged coral and rubble areas also provide opportunities for fast growing algae to take the place of corals and if these reefs and back reefs are destroyed they no longer protect beaches from erosion - the reef experiences a continuous decline. This decline affects many areas of industry, not just tourists, and scuba divers will not come back to, or recommend, visiting reefs that have been badly damaged. Protecting against anchor damage requires minimal investment but returns significant benefits in increased revenues from satisfied tourists, ongoing employment, a sustainable food source and in addition ensures that the reef survives for future generations of users. Mooring buoys have not been very successfully installed in the past due to the poor quality of the moorings, lack of community participation and also theft.

The aim of this project was to install permanent, environmentally friendly 'Manta Ray' moorings and hence protect reefs from anchor damage by day boats and visiting yachts. These moorings are hammered into sand patches or rocks using a hydraulic jackhammer, cause minimal damage to the environment and hopefully provide a secure anchorage for many years. Custom made heavy duty buoys were attached to these moorings to avoid the normal problems of disturbance by visiting boats that habitually collect anything useful!

Installation of a mooring was completed in several stages. After purchase of materials (done prior to our arrival), the mooring was set up on the charter vessel *MV Empress*. About 2.5 metres of chain was fitted to a manta ray plate. To this a two centimetre diameter galvanised steel cable was attached (length approximately 1.5 times the water depth) and intermediate floats were added. Finally the buoy was attached, together with a mooring rope. All shackles were welded to prevent theft.

Next came the underwater part. The buoy was lowered into the water at the appropriate site, followed by the

## BALI MOORING BUOY PROJECT 2004

DIVERS FROM GERMANY, NETHERLANDS, AMERICA, BRUNEI, SEYCHELLES, AUSTRALIA, SINGAPORE AND THE UK TEAM UP WITH LOCAL DIVE OPERATORS

REPORT BY ALAN STOREN



A typical mooring buoy, project organiser Helen Newman and Iwan from WWF, the Menjangan National Parks staff and *MV Empress* in the background

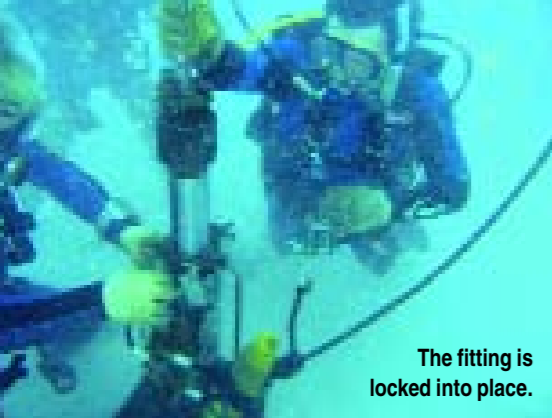


A typical mooring buoy being prepared

jackhammer and other equipment. We divers then went down to 'jackhammer' the chain and 'manta' into the sand/coral rubble/rock. When the manta fitting had been hammered to the a depth of nearly three metres and the end of the chain had reached sand level, a hydraulic jack was connected to lift and lock the 'manta' in place - a simple but effective method of securing the mooring. Finally the construction equipment was raised to the surface using liftbags and, after a dive around the area, we were on to the next site. The whole process took 30 to 50 minutes. Depth ranged from about six metres to about 24 metres with an average of about 15 metres.

Moorings buoys were placed in all the best diving locations around Bali including- Nusa Dua, Sanur, Nusa Penida, Nusa Lembongan, Padang Bai, Candi Dasa, Mimpang, Amed, Tulamben, Lovina Beach, Pemuteran and Menjangan.

The work done by Helen Newman was outstanding as she sought sponsorship of the individual buoys, arranged publicity,



The fitting is locked into place.



Vidar Skoglie, skipper of the MV Empress



The MV Empress

arranged for the purchase of the equipment, organised the divers from around the world, liaised with the local operators and also assisted in the installation of many moorings. In all, some 66 moorings were sponsored by companies from many countries.

The project would not have been so successful without the tremendous support of Vidar Skoglie, the captain of the MV *Empress*, his partner Alice and his two deckies from Sulawesi. Vidar became the welder, replacer of the motor used to operate the hydraulic devices, jack hammer fixer, cable splicer and just about everything else for the trip. MV *Empress* is registered in Fremantle, WA but operates mainly in the area from Singapore to Indonesia to Papua New Guinea. It had its own decompression chamber – a little daunting when one first gets on the boat – and its own lift on the back of the boat

which was fantastic when returning from a hard dive – you just swam into the lift area, gave a signal and were lifted onto the back of the boat. It was a working boat but very clean and comfortable. If ever you have the opportunity to dive from MV *Empress* it comes very highly recommended. The food was superb and there was plenty of it.

I must admit that Bali hadn't been on my list of 'must dive' places before I'd heard of this project. Having now dived in all these locations, it's a case of 'When can I get back'. Some great reef dives, a superb wreck dive at Tulamben - the US *Liberty* - which was more a reef dive than a wreck dive, and some spectacular big fish as well. If you're lucky you might see an orca or other whales, manta rays, mola mola (sunfish), sharks or some of the many other big fish that visit. If not, the variety of small fish, corals and small creatures is more than enough to put a smile on your face. A photographers' heaven!

If you're a diver and intend to visit Bali, make sure you allow a day or three to sample the wonderful diving.

