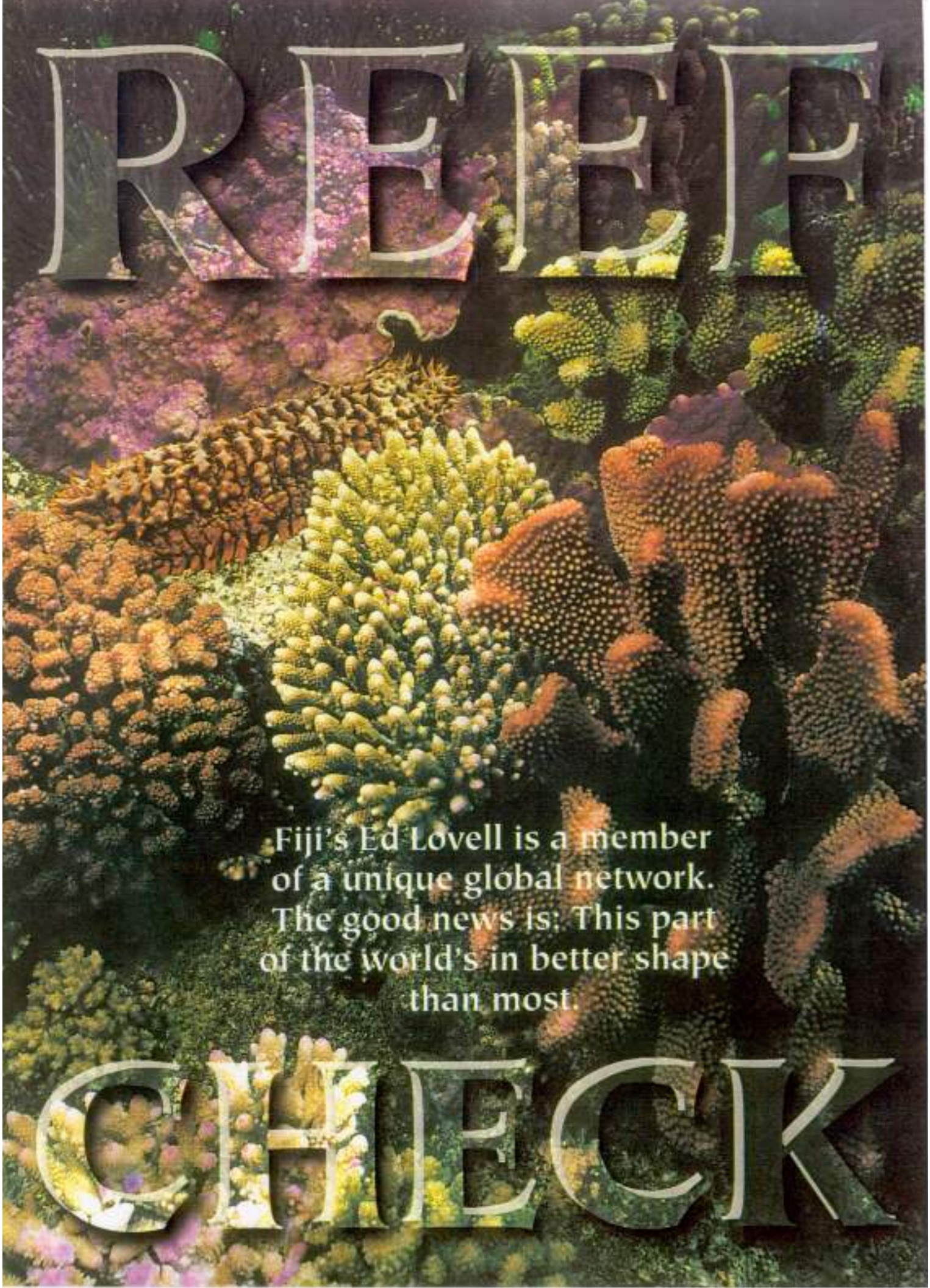
REEF
Fiji's Ed Lovell is a member of a unique global network. The good news is: This part of the world's in better shape than most.
CHECK

Great Barrier Reef, Australia

by Kim Gravelle

Nobody has to smile in front of the camera, but about 300 reefs, in 31 countries worldwide, are getting their picture taken every year.

It's part of a new international monitoring programme called Reef Check, and the global survey makes use of nearly 1000 volunteer sports divers and trained marine scientists, to see just what is happening to the world's coral reefs.

The answer is lots, and most of it isn't too good. But at least scientists now have an accurate measure of the bad (and occasionally, good) news.

Reefs are a natural and valuable resource, providing not only a food source for millions of people, but medicines, coastal protection from wave erosion, even the golden beaches so sought-after by tourists.

Until recently, there wasn't a way of assessing the impact humans and mother nature was having on reefs. But in 1996, a marine biologist named Gregor Hodgson, working out of the University of Hong Kong, designed a protocol to carry out what would be the first annual survey, with detailed instructions and check-sheets so that all the surveys would be using one set of methods. The instructions went out on the website along with an invitation for volunteers, and globally, the recreational divers came forward. Not only does the programme assess reefs, but it raises public awareness about their value, and establishes a global network of monitoring.

In Fiji, the man behind the action is marine biologist Ed Lovell, and Ed gets out all the check sheets and shows just what is meant by site descriptions, fish belt and invertebratae 'transects', (a nose-count, basically, on types of fish and sea creatures); substrate data on soft and hard corals, sponges, and that sort of thing. These data sheets want specifics on time of day, distance to the nearest river mouth and populated areas, and the type of damage, be it from anchors, cyclones, reef harvesting, industrial and sewage pollution.

"The indicator organisms," says Lovell, (fish, lobsters, prawns, algae) "help us to determine just how healthy a reef is." So far, the global survey has shown that few reefs, even in remote areas, are unaffected by man."

And by nature: the warmer waters pushed all over the mid-Pacific by El Nino, and cyclones, do their part in demolishing reefs as well.

The first few years of checks showed that the Caribbean, for instance, particularly the Florida Keys, Bermuda, Puerto Rico, are in bad shape. Why? Well, theories blame everything from Mississippi River effluent to agriculture chemicals, silt and sewage. Eighty percent of the reefs in the Indian Ocean are dead, and the reason there seems to be related to global warming. Water even a few degrees

Above: Healthy shallow-water reef, Fiji.
Below: Villagers in Fiji clearing coral debris. A new coral garden may emerge.

Levuka's once-colourful coral beds. Effluent from the cannery, piped into harbour waters, is carried back into the corals by the tides. Below: Coral harvesting, Bau Waters.

warmer than usual, and the algae life which is essential to reef buildup becomes too intensive or too little.

Fiji is looking pretty good, but a once-exotic reef just offshore from Levuka's fish cannery is now dead due to an algae buildup, and Australia's east coast (not far away, biologically) is suffering "major bleaching."

So is there any good news?

Yes, says Lovell. Fiji villagers are adding to their income by harvesting the reef. Yuck, may be the logical comment. But done correctly, with a little management, the reef regenerates fast. In fact, in a twice-yearly reproduction effort, the current-carried coral spawns occupy any empty space they can settle in: reefs can be harvested continually under the right conditions and still be luxuriant, an attraction for both fish and divers.

More and more, overseas aquariums feature not just fish, but live invertebrates - corals - and the crop can provide a much-needed income for cash-starved villagers. "Dig out the coral debris," says Lovell, "and you get better coral development." That's the bonus. Nice coral, lots of fish.

Reefs thrive - and die- due to natural conditions (storms, crown-of-thorn predators, sea temperature). And by harvesting the wrong way, with dynamite for instance. But done with guidance, the reef is a veritable garden.

That sub-surface garden relates directly to algae. Algae are essential to colony growth, providing not only the colour but a 'kidney function' to the skeletal coral. But the annual reef check determines if algae growth is too sparse, too severe, and what can be done about it.

Lovell has been studying coral reef ecology for the past ten years in Fiji; for eight years before that in Townsville's Institute of Marine Sciences.

When he heads out to the reef, camera in hand, even the fish are likely to say 'hurrah'.

Above: Ed Lovell
Below: Crown of Thorns starfish, a coral predator