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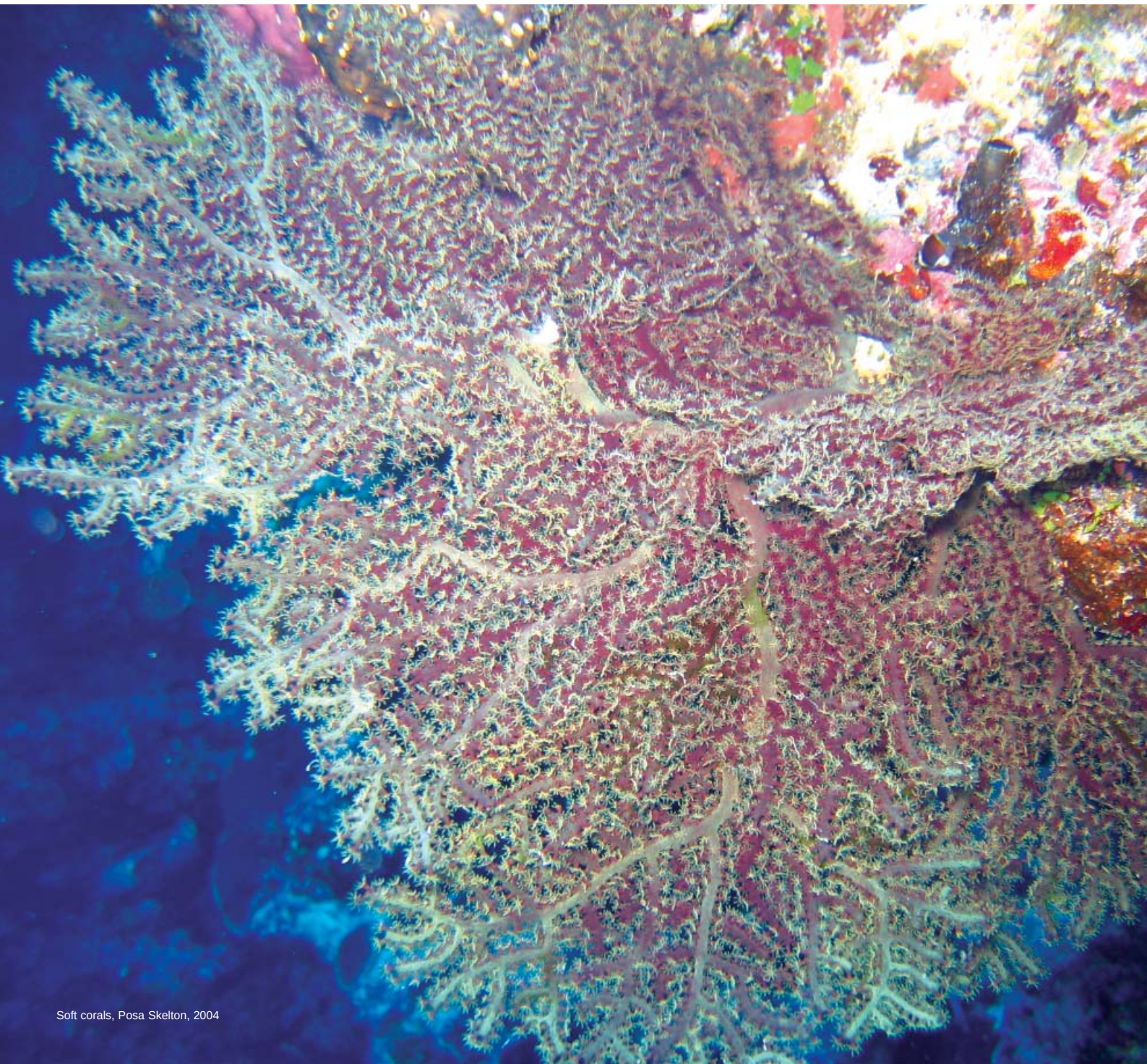
Fiji's Great Sea Reef

The hidden gem of the South Pacific

> “The Great Sea Reef is one of Fiji’s hidden gems. It is essential that we identify how to manage the reef system more effectively and support the people of Macuata to conserve their global marine heritage in the long term.”
>
> **Etika Rupeni, the WWF-Fiji country programme manager**

In December 2003, marine stakeholders and experts from around the South Pacific identified and agreed on key areas of biodiversity importance in more than 35 locations around the Fiji Islands Marine Ecoregion (FIME). Five of these locations were considered to be of global importance in terms of their biodiversity. As the third longest continuous barrier reef in the world and the most complex reef system in Fiji, the Great Sea Reef is one of these globally outstanding sites. Despite the sheer magnitude and biological, commercial and traditional importance of this site, until recently it has been largely unchartered. In December 2004, WWF, Wetlands International, the Wildlife Conservation Society, the University of the South Pacific Institute of Applied Science, local community members and international experts undertook the first systematic effort to document the marine biodiversity of this spectacular reef system. The findings of a 12-day survey revealed a staggering array of life.



Soft corals, Posa Skelton, 2004

Unravelling the hidden treasures of the Great Sea Reef

The Great Sea Reef, locally known as *Cakaulevu*, is located to the north of Vanua Levu and covers an estimated area of around 202,700 sq km. Together with Pascoe Reef, it is 200 km long, and provides important fishing grounds for 12 districts with a population of around 70,000 people.
In December 2004, the first systematic effort to document the marine biodiversity of the Great Sea Reef was undertaken by WWF, key partners and stakeholders, with local funding support from the Vodafone Foundation Fiji. The survey also assessed threats to the reef and helped to identify candidate sites for conservation action. A total of 23 sites were surveyed, including outer barrier reefs, back barrier reefs, channels, mangrove island fringing reefs, rocky island fringing reefs and submerged patch reefs.

Buli, Baravi Thaman, 2004

Of the total number of species recorded in Fiji, the Great Sea Reef has the highest per centages recorded, including:

55 % of the known coral reef fishes in Fiji (predicted value of up to 80%),

74% of the known coral species in Fiji,

40% of the known marine flora in Fiji, and

44% of Fiji's endemic reef fish species.

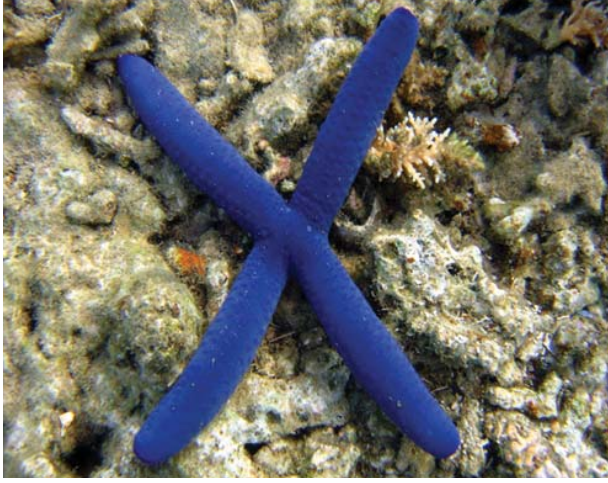
The diversity of marine life was found to be of global, regional, national and local importance. Preliminary results revealed unique mangrove island habitats, endemic fish species and some coral and fish species found outside their usual range.

Species

The survey team, both local and international scientists, also recorded 117 species of sponges, 31 species of coelenterate and 12 species of ascidians. In addition, several rare, endangered or newly recorded species to Fiji were identified :

- Twelve species listed on the IUCN red list of threatened species, including 10 species of fish, green turtle (*Chelonia mydas*) and spinner dolphin (*Stenella longirostris*).
- Populations of the locally extirpated and nationally endangered bumphead parrotfish (*Bolbometopom muricatum*),
- Three species of fish considered to be endemic to Fiji, including one new fish species (*Pomacentrus sp.*)

Reef survey team at work, Helen Sykes, 2004



Four armed starfish, Posa Skelton, 2004

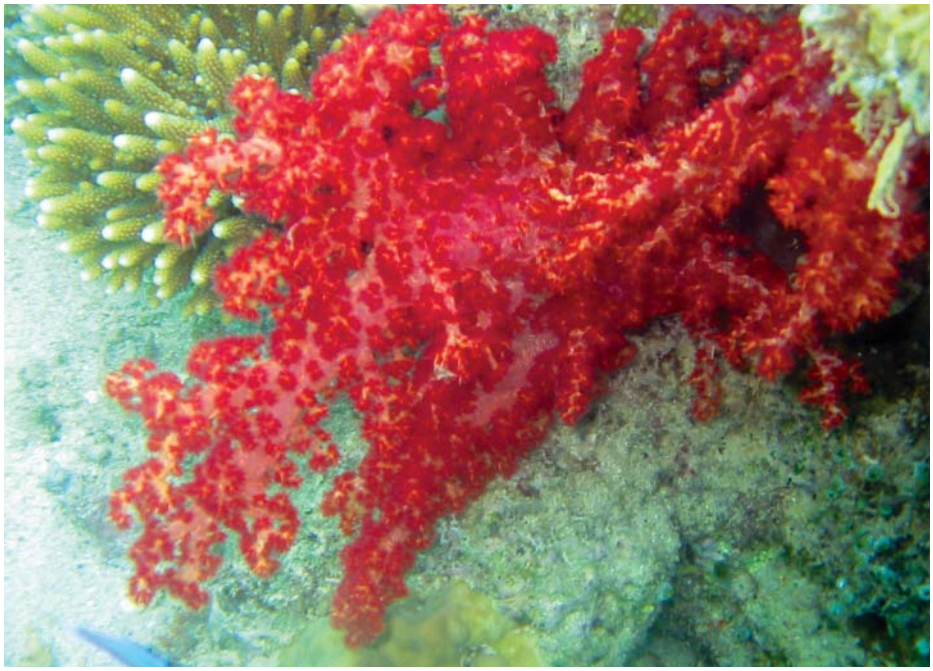
Nudibranch, Posa Skelton, 2004

and one possible new record (*Chromis opercularis*) previously known only within the range of the Indian Ocean.

- Sixteen species considered to be new additions to the flora of the Fiji archipelago, with two possible newly identified species, namely *Ceramium sp.* and *Crouania sp.*
- Forty-three new records of hard corals were documented for Fiji, with two new genera and three species found outside their expected geographic range.

Habitats

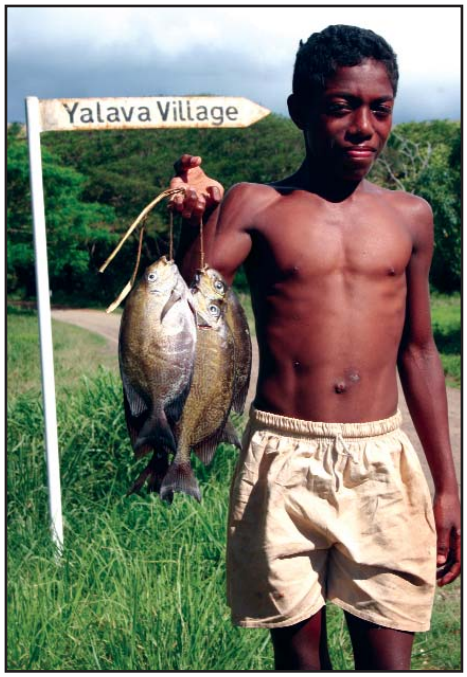
Significant diversity and abundance of marine biota were observed along the outer barrier reefs, channels, mangrove islands and fringing reefs. The further the site was from the shore, the greater the level of habitat intactness. This was directly related to an increase in distance from population centres, land-based siltation, pollution and extractive activities.
Unusual offshore mangrove island fringing reefs were found to be of high biodiversity and productivity. These highly dynamic, tidally influenced systems are "keystone habitats" of crucial importance to maintaining the ecological integrity of the entire coastline.



Soft coral, Ron Vave, 2004.

Key recommendations from the scientific survey (2004)

- Establish representative networks of protected areas across marine and terrestrial habitats.
- Assess and mitigate environmental impacts of land-based activities.
- Strengthen capacity within provinces to manage natural resources.
- Develop a specific programme of action for rare and endangered marine wildlife.
- Develop economic incentives that support conservation.
- Research and propose options for the designation of size limits and seasonal quotas for commercial fisheries.
- Research and propose options for the active enforcement of existing laws.
- Promote community-driven conservation planning and management.
- Establish long-term monitoring for watershed and reef health.
- Promote cross-disciplinary, multi-system and inter-agency planning and coordination.



Young fisherman, Yalava Village, Adi Nacola, 2005.

Labasa fish market, Adi Nacola, 2005.

Labasa sugar mill, Adi Nacola, 2005.

Threats to the Great Sea Reef

Despite the relative intactness of the Great Sea Reef (GSR) and the high levels of biodiversity, emerging pressures are threatening the health and integrity of the reef.

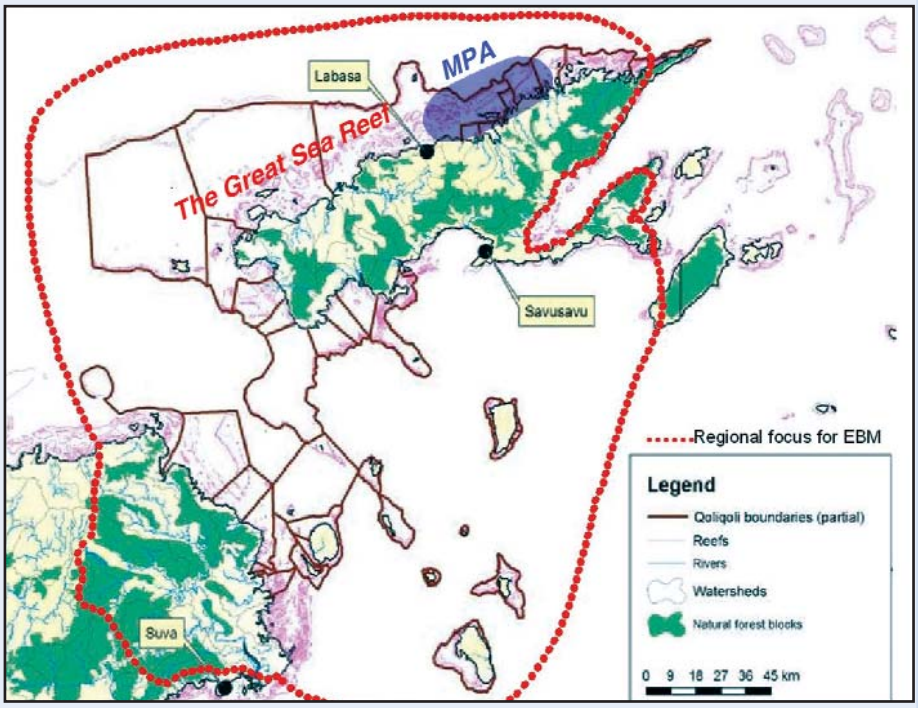
The GSR fringes coastal areas of many sugar cane and pine plantations, and the increasing urbanisation around the township of Labasa. Parts of the GSR are also fished commercially for live reef fish, beche-de-mer and trochus. The most damaged sites in terms of siltation, rubbish and high fishing pressures were observed around Labasa.

Commercially important fish were found in very low numbers and considered to be small in size.

Several threats have been identified by the survey team and communities:

- Over-fishing and poaching by illegal fishers.
- The use of small-mesh fishing nets (regulated three inch mesh size).
- Fish poisoning – an old fishing technique which uses the root of a coastal plant '*duva*' (derris plant).
- Use of hookah for beche-de-mer collection.
- Siltation of near-shore environment caused by erosion and upland activities, especially near Malau timber factory.
- Dredging of sand for construction purposes at Mali Passage.
- Development activities such as drainage of blast water by large vessels in Nadamu Passage.
- Untreated waste water from factories and Labasa town.

Weaving a tapestry of Waitui Tabu (marine protected areas) in Macuata



Potential Marine Protected Areas in Macuata

The Great Sea Reef fringes the entire coast of Macuata province, an area of 12 districts including the main town of Labasa. The people of Macuata province have traditional fishing rights over part of the Great Sea Reef and continue to depend heavily on the functioning and biological diversity of these systems for their subsistence and commercial livelihoods. But communities are increasingly raising concerns about their diminishing fish catches. Since hearing that the Great Sea Reef was of global importance in terms of its biodiversity, the Paramount Chief of Macuata province, Ratu Aisea Katonivere, and representatives of 37 villages within five provincial districts, have been working closely with WWF and Fiji Locally Managed Marine Areas network (FLMMA), to protect this unique marine environment. Through sharing the value of marine protected areas (MPAs) and other conservation tools with the people of Macuata, Ratu Aisea, the provincial council, and communities of Macuata now fully support the implementation of an MPA network in the traditional fishing grounds of *Qoliqoli Cokovata i Macuata* – Macuata, Mali, Sasa, Nabekavu and Dreketi. Communities from five districts and 37 villages are fully involved in this national consolidated effort to develop one of the first networks of MPAs for Fiji. This is an effort that delivers on the Fiji government's commitment to establish a network of MPAs in 30 per cent of Fiji's waters by 2020.

In January 2005, the Fijian government declared its intention to implement an MPA network in 30 per cent of Fiji's economic exclusion zone.

"The government of Fiji declares its commitment to initiating the consolidation of its national networks of marine protected areas, or 'Waitui Tabu', as the mainstay for national income, coastal livelihoods and traditional cultures, hand in hand with the provision of alternative sources of livelihood. This is to replace those sources of livelihood that may be lost because of complete protection of sections of marine areas."

(Fiji government declaration, Mauritius, 2005).

Local action for global conservation

The communities of Macuata have now implemented several major changes and are already seeing the benefits of the MPA network they are creating. Some species of fish, such as the endangered humphead wrasse (*Cheilinus undulates*) and large rabbit fish (*Siganidae sp.*) are returning to areas where they have not been seen for almost three years. Larger species of other fish are also being observed closer to the shore.

Currently, efforts are focused on the development and implementation of community-based management plans, specifically designed by community members to reduce the threats they have identified. Five MPAs and an MPA committee have now been established. Fishing exclusion zones have been marked and are enforced by the community themselves. In addition, the number of fishing licences has been reduced and the use of destructive fishing practices, such as the use of poison fishing and gill nets, has been banned.

> "The challenge is to ensure that we conserve some resources for our children and their children. We should take action now, and I am proud that we have been given the challenge to manage the third longest reef in the world"
>
> **Ratu Aisea Katonivere, Paramount Chief of Macuata province.**

The Great Sea Reef survey team, Baravi Thaman, 2004.

One of the most significant steps towards long-term conservation and sustainable resource management has been the agreement to set aside 10 per cent of the licence fee for conservation purposes. This licence fee has been increased accordingly to offset any loss of income. The commitment to conservation by Macuata communities, supported by provincial government, national government, NGOs and other interested stakeholders, will ensure that one of our greatest assets remains intact and continues to be an important part of the traditions, culture and livelihoods of the people of Fiji.

Summary of key community actions for threat reduction

- Totally ban on duva fish poisoning and use of hookahs.
- Conduct training of fisheries wardens to enhance the community's capacity to enforce regulations.
- Increase the community's awareness of resource use and planning.
- Lobby to reduce industrial waste influx into the reef complex.
- Develop alternative and sustainable income generating options to reduce the exploitation of marine resources.
- Establish MPAs at agreed sites.

Acknowledgements

WWF would particularly like to thank the Vodafone Foundation Fiji for providing financial support to carry out the Great Sea Reef survey and the communities of Macuata for their hospitality and support of the survey and for their ongoing commitment to implement the first network of marine protected areas in Fiji. WWF would also like to sincerely thank the following participating institutions and organisations for their involvement in the survey.

FRONT COVER: The Great Sea Reef, Ron Vave, 2004.

The full report is available on www.wwfpacific.org.fj

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