

**Key EBM Messages:**

Preservation of functional integrity of Fiji's eco-scapes through multiple stakeholder management.

- Successful EBM relies on cross sectoral planning and management
- Inland and lowland communities need to manage resources together
- EBM protects habitat for all stages of life
- Improving land and fishing practices helps protect natural resources
- Public health and livelihoods depend on environmental health

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## FIJI EBM PARTNERSHIP NEWSLETTER

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### Roadshow of Fiji's first 'ridge-to-reef' plan

Starting from the 3<sup>rd</sup> of September 2009 for two weeks, Wildlife Conservation Society-Fiji (WCS-Fiji) conducted a roadshow in Kubulau for Fiji's first ridge-to-reef management plan.

The roadshow of the ridge-to-reef plan was conducted to raise community awareness among the ten villages of the district. During the roadshow, the Kubulau communities were also made aware of the management rules for the protected areas and community actions that are listed in the plan.

Every village was given a ridge-to-reef management plan that was signed by the various Turaga ni Yavusas from Kubulau to show their support and endorsement towards protecting and managing their natural resources.

Management rules and community actions posters were also distributed to all villages and a copy was put up at each village community hall. "It is important for every member of the community to be aware of the management rules and actions. This will contribute to greater returns and better management of resources", said Ravulolo Vasukibau, chair of the protected area and resource management sub-committee.

In addition, in August the Kubulau Resource Management committee (KRMC) members gathered in Namalata to attend the implementation training conducted by WCS team. This training was designed to: confirm roles and membership of KRMC sub-committees; review management actions identified in the ridge-to-reef plan; allocate responsibility for the management actions to various KRMC sub-committees;



(top left) KRMC and Bose Vanua during the blessing ceremony held in July, (top right) community members during roadshow, (bottom right), (bottom left) KRMC participants during the implementation workshop held in August.

prioritize and develop start times for the actions; identify knowledge, skills, and resources needed to implement the actions.

Apart from this, internal and external communication within Kubulau, gazetted of marine protected areas, and compliance and monitoring were also discussed.

"We will seek endorsement of the sub-committees from the *Bose Vanua* and the first task after endorsement will be to schedule a meeting of the different sub-committees to set in place a structure for reporting" said Paulo kolikata, chairman of the KRMC.

## Building sustainable communities in Rotuma

The future is what inspires many to persevere in what they do and LājeRotuma initiative (LRI) is no different in its vision and goal to mobilize our Rotuman island community to better manage their natural resources.

For the past seven years, LājeRotuma a community-based environmental initiative has been assisting in building sustainable communities.

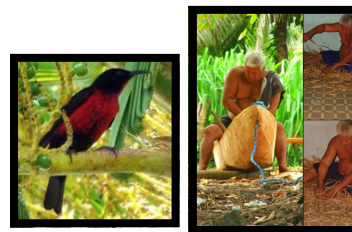
“Shifts in values and use of natural resources accelerates loss of Rotuman traditional knowledge and practices im-

portant to biodiversity conservation and sustainable development”, says Monifa Fiu, coordinator of LājeRotuma. Plans for infrastructure development and the exponential rate of resource utilization are imminent across Rotuma today.

Since its inception, LājeRotuma has been assisting with biological surveys of land and marine biodiversity to improve understanding of Rotuma's flora and fauna and address major threats to this unique island ecosystem. Rotuma was once covered in

tropical moist forest that has almost been entirely replaced by coconuts and shifting crops. Due to lack of streams and rivers, sedimentation does not threaten the reefs. However, small amounts of coastal erosion do occur following heavy rain events.

Major threats to Rotuma's ecosystems are extreme weather conditions and excessive use of herbicides. This has also been identified as a threat to groundwater (a source of drinking water) and potentially harmful to marine life if leached into the lagoon.



(top left) Rotuman Myzomela, (bottom left) LRI organized eco-campers conducting sea grass survey, (right) A Rotuman canoa carver and weaver (source [www.rotuma.net](http://www.rotuma.net)).

## Managing the environments in small island states course

‘Planning for Ecosystem-based Management (EBM): Managing the Environment in Small Island States’ course will be held from the 25 January to 5 February 2010 in Rarotonga, Cook Islands.

This course will focus on professional development and will build on the existing skills and experience of the participants, giving them confidence in carrying out their professional tasks. Learning will be based on a case study from Rarotonga, Cook Islands, focusing on the development and implementation of the Takitumu lagoon management plan.

The 7 themes covered in the course will include: introduction to EBM; EBM in practice; planning for EBM; tools and techniques of EBM; application of science to manage-

ment; governance framework; and the future of EBM.

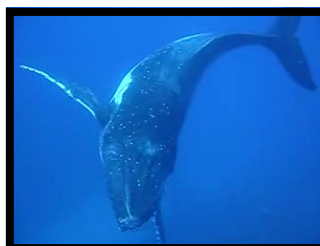
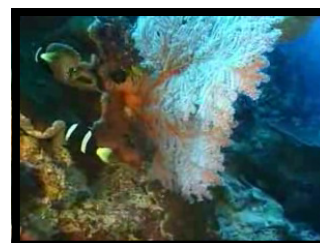
This course is aimed at updating participants' knowledge and skills on the latest techniques and approaches, which can be applied within coastal and marine ecosystems to mitigate and adapt to the impacts of human activity and environmental factors such as climate change.

This 12-day interactive course aims to provide decision-makers and practitioners with the tools and information to gain a better understanding of the elements required in the modern concept of EBM, and to make decisions and implement actions for integrated coastal management. The program is designed to explore the structures and processes that un-

derpin an EBM management approach to coastal issues.

Further enquiries regarding the course can be made to Melanie King on email [m.king4@uq.edu.au](mailto:m.king4@uq.edu.au). Please keep checking the following website for further updates and important participant information <http://www.gefcoral.org/Wherewe/work/Australasia/EcosystembasedManagement/tabid/4174/language/en-US/Default.aspx>

This course is proudly sponsored by the University of Queensland, Coral Reef Targeted Research (CRTR) program, and the Cook Islands Marine Resources Institutional Strengthening Project (CIMRIS).



Takitumu reef (top), whale in the lagoon (middle), and traditional Cook Islands dancers (below) ([www.royaltakitumu.com](http://www.royaltakitumu.com)).

## River Care: why we should be caring about our rivers

River Care is an educational programme involving teachers, students and communities in caring for water resources and the environment. Developed by Live & Learn Environmental Education, River Care is a positive response to growing environmental problems in Fiji and the Pacific. Secondary schools in Fiji register as River Care schools and get involved in water quality monitoring actions.

River Care Networks are formed with the purpose to: (1) share ideas to motivate others to take sustainable environmental actions; and (2) share success stories of River Care activities in their school or commu-

nity. The River Care Network also provides members with an opportunity to take action with their peers to address environmental problems and concerns.

It is important to take care of rivers because they support an enormous diversity of life by providing a range of habitats between the water and the land. River habitats include the river channels, riparian vegetation, the floodplains and estuaries and lakes. Maintenance of this diverse range of habitats and the animals and plants depending on them is of key importance for healthy rivers.

Rivers help maintain land to sea linkages through movement of important species, but also create pathways for the passage

of harmful substances such as sediments and nutrients. The habitats in between terrestrial and marine environments, such as coastal wetlands and riparian vegetation, can act as filters for sediments and pollutants. Therefore, it is important to maintain healthy rivers in Fiji.



Students of Marist Brothers High School participate in a water testing activity ([www.rivercarefiji.org](http://www.rivercarefiji.org)).

## Aquaculture diminishes native fish species in Fiji

Tilapia, *Oreochromis mossambicus*, was first introduced in Fiji in 1954 to provide animal protein for pig stocks and the possibility for human consumption. Between the late 1950s and early 1960s, *O. mossambicus* were released into natural waters (Sigatoka, Rewa and Navua rivers, and taken to Vanua Levu) to increase inland fisheries production.

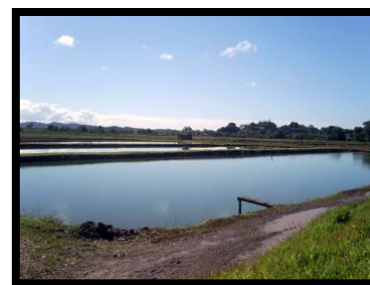
New research now is revealing that invasive fish species of tilapia and mosquitofish, *Gambusia affinis*, are associated with reduced numbers of native fish species in Fiji. This is the result of a six-year study in 20 catchments in Fiji.

This research, conducted by Wetlands International-Oceania and partners, shows the degree of establishment and the deleterious effects of invasive fishes in the Pacific island nation of Fiji. The study shows that a large portion of the country's catch-

ments (and all major catchments) are already invaded, primarily with tilapia and mosquitofish. For the 89 catchments with records – 85.4% had invasive fish and only 14.6% were invasive free. Secondly, the results show that native and endemic (exclusively native) fish fauna are rapidly lost where invasives are present, which in the context of small islands can be well on the road to extinction.

Mid-river sample sites in 20 catchments showed that total fish species dropped by 11 species when tilapia is present. No less than 5 out of 9 of the Fijian endemic species were missing from these assemblages. Several of the large native edible fishes (e.g. *Vo*) were also missing, showing that invasive fishes are also reducing traditional sources of food security. Mid-reach sites with invasive tilapia had 7 fewer

amphidromous species (fish whose larvae migrate to the sea and come back up river as juveniles). Meaning that that the fundamental processes of migration are also being disrupted by the presence of invasive fishes, reducing the faunal connectivity between oceans and freshwater. The mechanism of depletion of native biodiversity is likely through a combination of predation (Pacific Islands naturally have few mid-water predators) and reduction of water quality through sediment resuspension during nesting and foraging. For more information please check <http://oceania.wetlands.org/NEWS/tabid/469/articleType/ArticleView/articleId/1773/Default.aspx>



The invasive fish species of tilapia and mosquitofish coming from badly constructed fish farms are associated with reduced diversity of native fish species in Fiji.

**THE SUBMISSION  
DEADLINE OF  
ARTICLES FOR NEXT  
ISSUE IS DECEMBER  
11TH 2009**

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## **FIJI EBM PROJECT OVERVIEW**

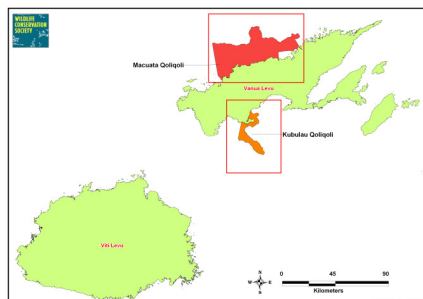
The Wildlife Conservation Society (WCS), in partnership with WWF and Wetlands International-Oceania (WI-O), are working directly with communities and government towards the vision of protecting the Vatu-i-Ra and Cakau Levu Reefs Seascape using Ecosystem-Based Management (EBM) principles and approaches.

Science-based marine protected areas (MPAs) have been demonstrated to protect exploited marine resources, may increase coral reef ecosystem resilience, and are considered an essential tool for the long-term management and conservation of high priority seascapes around the world. Recognizing the connectivity between terrestrial and marine systems has led to

a more holistic approach that also includes terrestrial processes and their potential impact on marine habitats. For example, sedimentation and nutrient enrichment have been found to be key threats to the health of nearshore marine ecosystems and therefore understanding the potential impacts of runoff from watersheds on the adjacent marine areas is vital.

Our research and advocacy as part of this EBM project is building an applied understanding of how terrestrial and marine systems are connected in terms of fauna and habitat quality, and what the implications are for conservation management in a tropical high island setting. The areas we are investigating include the aquatic fauna that

utilize "wet" ecosystem types during different life stages (living connections between the land and the sea), spatial patterns of perceptions of ecosystem change, community resource use, potential influence of terrestrial nutrients and run off on near shore environments, the effects of intensive harvesting of a traditional MPA on reef fish communities, fish community responses to management in Fiji, a low cost resource mapping approach for Pacific Islands, the connectivity of marine habitats, including understanding the movement ranges of adult reef fishes from MPAs, and priority conservation regions (Ecoscapes) for Fiji Islands to preserve ecosystem connectivity.



The Fiji Ecosystem Based Management (EBM) project has two focal sites, Macuata and Kubulau, on the island of Vanua Levu. This is the second largest island in Fiji (5,538 km<sup>2</sup>). Macuata is made up of four districts, including 37 villages with a population of approximately 10,000, while Kubulau is made up of one district, encompassing 10 villages and 1 settlement with a population of approximately 1,000. Macuata has a total *qoliqoli* (traditional fisheries management region) area of 1,349 km<sup>2</sup> out of which 112 km<sup>2</sup> is currently protected through a network of 25 marine protected areas (MPAs). Kubulau, with a total *qoliqoli* size of 260 km<sup>2</sup> has a network incorporating 20 MPAs (79 km<sup>2</sup>) and 1 proposed forest reserve (0.8 km<sup>2</sup>).



The Fiji Ecosystem-Based Management project is primarily funded by the David and Lucile Packard Foundation and the Gordon and Betty Moore Foundation, which started in 2004. It is led by WCS, with the partners WWF and WI-O.