



# EBM-FIJI NEWSLETTER

*“Healthy People, Processes and Systems define Fiji’s Ecosystem basement Management (EBM)”*

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## Science News

### SCIENCE NEWS

# Towards sustainable harvesting of tabu areas

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Rural communities in Fiji routinely open their tabu areas (locally managed fisheries closures, also known as marine protected areas or MPAs) to provide food for social functions or to raise money for school fees, church fees and provincial levies. As harvests become more intense and more frequent, evidence suggests that tabu areas cannot keep up and eventually become less productive and abundant than surrounding fished areas.

ing and after harvests will be used to evaluate the impacts of periodic harvesting (accounting for the size and management history of the tabu areas).

The Wildlife Conservation Society (WCS) is currently undertaking research on how much can be taken from tabu areas while still maintaining conservation benefits and longer-term food security. This research began in Kubulau District, Vanua Levu (2012), and continued on Koro Island in April, where the villages of Tuatua and Nakodu volunteered to let us use their tabu areas as study sites.

WCS hopes to apply this research to develop communication materials in support of community-led management, we will develop guidelines for communities so that tabu areas help meet their short-term needs as well as ensuring fish for the future.

The Tuatua tabu area had a history of harvesting on a quarterly basis and was relatively devoid of fish when compared with adjacent fished areas. In contrast, the Nakodu tabu, which had been strictly enforced as a “no-take zone” since its establishment in 2010, had significantly higher fish biomass and abundance than adjacent areas.



Both communities then undertook fish drives (*yavirau*), a traditional technique for harvesting. A gill net was spread in the lagoon at low tide and on the call of “yavi” people swam towards the net, driving fish towards their capture. Gills nets are highly non-selective and most fish within the vicinity are likely to be caught. A 3 hour yavirau resulted in only 191 fish caught in the Tuatua tabu, with almost all under 30 cm in length, while the same method and duration of harvest in the Nakodu tabu yielded over 1,500 fish.

Above: Communities and researchers engaged in various activities during periodic harvest surveys around Koro. Photo © Stacy Jupiter

WCS will be conducting further surveys around Ovalau soon and returning to all study sites at a later date to assess population recovery potential. Data from before, dur-

This work is kindly supported by the David and Lucile Packard Foundation.

### Key Messages:

- Successful 'ridge-to-reef' management depends on broad stakeholder input
- Inland and coastal communities need to manage their actions and resources together
- 'Ridge-to-reef' management protects habitat for all stages of life
- The success of protected areas for conservation and livelihoods relies on combining bottom-up community engagement with top-down planning
- Public health and livelihoods depend on environmental health
- Healthy ecosystems are the best defense against climate change impacts to livelihoods

## Sea Cucumbers in Lau: rarely seen but high in demand



Left: William Saladrau (Dept. of Fisheries) during sea cucumber surveys in Totoya with different type of sea cucumbers below. Photo © Stacy Jupiter



Following a request from the Lau Provincial Council Office, Dr. Stacy Jupiter (Director, WCS Fiji Program) and researchers from Fiji Department of Fisheries and Institute of Applied Science (IAS) at the University of the South

Pacific (USP) recently joined up with a team of international researchers from the Khaled bin Sultan Living Oceans Foundation on an expedition to the Lau group.

Remoteness and limited transport options make Lau an unusually challenging place to conduct repeated reef surveys and assess changes over time. Through the Living Oceans Foundation (thanks to Prince Khaled bin Sultan of the Kingdom of Saudi Arabia) the team gained use of a research vessel to revisit locations around Totoya, Matuku and Kabara that were previously surveyed in the 1990s and 2000s (by the University of Newcastle in England), as well visit new sites on Moala, Fulaga, Vanua vatu, Tuvuca, Cicia, Mago and Vanuabalavu islands. The aim was to assess the status of local sea cucumber populations as they become more valuable and are increasingly exploited as a source of income.

The survey team actually found more of the creatures drying on tin racks

in the villages than they recorded during underwater surveys. One rack had more than 700 individuals (dried sea cucumber known as beche-de-mer), of which over 60 were *Holothuria fuscogilva* (white teatfish) valued at over USD50 (FJD100) each to buyers supplying Asian markets.

This encouraged the team to investigate further. Talking to communities, mostly satisfied fishers, they were able to identify the main reasons as: (1) more money helps to meet household, church and school commitments and purchase luxury items, (2) highly talented free divers can easily locate and collect sea cucumbers at depths of 20-30m.

There is a general lack of knowledge about the population dynamics and impacts of over-exploitation, with a perception that they are just money sitting on the reef. In reality, sea cucumbers have an important ecosystem function to regulate the amount of nutrients in coral reef sediments, which likely keeps algal blooms under control.

As well as raising awareness, management measures are urgently required. Catch size limits and moving wild catch individuals into tabu areas could support reproductive capacity, enabling sea cucumber populations to recover. WCS and FLMMMA partners hope to trial and support different types of management approaches with communities to identify the best methods for sustainably managing this valuable resource. Expect more news on these strange and sought-after creatures as we seek to avoid their disappearance from our reefs. A full report on the outcomes of the trip can be downloaded from: [http://www.wcsfiji.org/Portals/82/Lau\\_BDM\\_2013\\_LoF\\_tripreport\\_FINAL\\_v2.pdf](http://www.wcsfiji.org/Portals/82/Lau_BDM_2013_LoF_tripreport_FINAL_v2.pdf)

## Fiji's first ever "State of Birds" report



A new report outlines the threats and considerations for bird populations and their importance to biodiversity conservation in Fiji. 'Fiji: State of Birds 2013' was made possible through efforts from Nature-Fiji/Mareqeti Viti, with assistance from BirdLife International, Department of Environment and local ornithologists.

Used worldwide as indicators for the state of ecosystems (pollution, habitat loss and climate

change), birds are also charismatic symbols that can inspire effective conservation.

Fiji is known to have 27 endemic bird species (only found in the Fiji Islands). Only one of these is a seabird - the critically endangered Fiji Petrel. The island of Kadavu in Fiji is thought to have the highest concentration of endemic bird species (by ground area) anywhere in the world.

The conservation of birds in Fiji requires support from landowners and the general population. This is enabled when there is an understanding of the environment, animal-environment interaction, and ability to participate in conservation management actions. The report highlights a relatively comprehensive knowledge-base as a key attribute for bird conservation in Fiji. It also highlights the need for a national monitoring system, a lack of resources to implement conservation actions and specific threats such as the loss of important mudflat habitats due to reclamation for shoreline developments.

This report is part of the growing series from BirdLife, providing insight and inspiration for conservation with a focus on birds.

Above: Cover page for the Fiji: State of Birds 2013.

For details on the report, please visit: <http://www.birdlife.org/community/2013/>

## In Press

### 1. Incorporating uncertainty associated with habitat data in marine reserve design

In collaboration with researchers and conservation planners from the University of Queensland, Dr. Stacy Jupiter (WCS-Fiji Director) assisted in research on how spatial conservation prioritization approaches cater for uncertainty in reef habitat mapping. The publication explored how habitat mapping error can be incorporated into conservation plans to design more robust marine protected area networks. For details, please visit <http://dx.doi.org/10.1016/j.biocon.2013.03.003>

## District management planning for Vuya and Dama



Above: Turaga ni Koro Navave, shares his thoughts at the vuya district management planning workshop. Photo © Sirkka Killmann

The WCS team recently completed management planning workshops in the districts of Vuya and Dama in Bua Province Vanua Levu. The week of intensive activities was the latest step to developing community-led management plans for the districts.

The workshops were the first of their kind in Vuya and Dama and followed on from recent awareness sessions in all the local villages. They were attended by a range of men (including chiefs and village headmen), women and young people from all villages, including Yadua Island, which is a sanctuary for the critically endangered Fiji crested iguana.

Input from the Provincial Administrator (Commissioner Northern's Office), Fiji Museum and the National Trust for Fiji enabled workshops to cover a spectrum of socio-cultural and economic issues within an ecosystem-based management approach. This created a holistic context with a focus on local sustainable development.

Participants explored data on the health of their rivers and customary fishing grounds before mapping local water sources, land uses and existing/proposed community protected areas.

They undertook conceptual modeling exercises to identify targets, threats and strategies for ecosystem-based management. Initial activities and local management rules were then proposed in relation to some strategies as people became enthused to take action.

The workshops were fantastically hosted and reflected the collective spirit that makes these communities strong. They were great social occasions, establishing friendships and reaffirming traditional relationships as well as cementing commitment and sharing knowledge.

Everyone left with a sense of purpose, having built awareness and consensus whilst mapping the way forward in challenging times.



Left: Participants representing every village in the district of Dama. Photo © Sirkka Killmann

## Road building gathers pace in Bua

Construction of the Nabouwalu to Dreketi highway is progressing quickly in the province of Bua on Vanua Levu. Whilst delivering workshops in June, the WCS team saw that extensive roadside clearing and leveling had been undertaken along the stretch between Nabouwalu and Dama, which was a hive of digging and landscaping activity.



Left: Ongoing work on the Nabouwalu to Dreketi highway in Bua Province. Photo © Sirkka Killmann

The project represents a major upgrade of the former road, creating a tar-sealed highway that will improve connectivity and access

to markets as a part of the Fijian government's Look North Policy that seeks to encourage economic development on Vanua Levu.

Speaking with the Provincial Administrator for Bua in the course of management planning workshops, local people acknowledged that their access to services will improve and sought to identify further opportunities for local development. They also highlighted gravel extraction from local creeks and rivers as a concern and highlighted the need for Environmental Impact Assessments to ensure against lasting damage to ecosystems.

Discussions highlighted the need to safeguard local drinking water. This was emphasised in the village of Wairiki, where the tap water was visibly discoloured by soil particles after a night of heavy rain. The village chief took workshop participants to their water source, a borehole around 20-30meters below a large sloping area cleared for the road, where he asked the foreman to investigate further.

As new opportunities and challenges arise, local communities quickly have to understand and address them in order to protect the ecosystems on which they rely.

## In Press

### 2. Mapping coral reef resilience indicators using field and remotely sensed data

Dr. Stacy Jupiter (WCS-Fiji Director), in association with researchers from Simon Fraser University and the University of Queensland, developed innovative ways of integrating ecosystem resilience into marine spatial conservation planning. Remote sensing derived information and field data were integrated to predictively map characteristics of reef communities and structure that may confer the ability to resist or recover from disturbance. For details, please visit <http://www.mdpi.com/2072-4292/5/3/1311>

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For more information,  
queries or to submit  
any future EBM articles  
please contact:

The Editor  
Fiji EBM Partnership  
Newsletter  
WCS Fiji Program  
11 Ma’afu Street  
Suva, Fiji

Phone: + 679 331 5174  
Fax: + 679 331 0178  
E-mail: [infofiji@wcs.org](mailto:infofiji@wcs.org)

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## Community Leaders

### Chief leads conservation efforts in Bua

In November 2012, the Tui Wairiki (chief of Wairiki village) Akuila Qio Turaganiqali took on the role of Coordinator for newly formed Bua Yaubula Management Support Team (BYMST). Based on principles of collaboration and a ‘Ridge to Reef’ approach, the BYMST aims to help raise awareness, build capacity and coordinate sustainable resource management across the province of Bua.



Above: Tui Wairiki taking a pre-workshop sevusevu (formal presentation of intentions and request for acceptance). Photo © Sirkka Killmann

Born in Wairiki village in the district of Vuya in Bua Province, Akuila spent most of his childhood in Suva where he attended school, Fiji Institute of Technology and the University of the South Pacific. Following a career in public service, working for the Department of Agriculture, Land Transport Authority, the Ministry of Health, Public Works Department and Fiji Military

Services, he and his wife Teresea resided in Suva until the death of his father (the former Tui Wairiki) in 2011. As is customary for the oldest child, he left his life in the city and returned to take the chiefly role in his village.

“I had visited regularly over the years, so I knew that things had changed in Wairiki since I was a boy.” remembers Akuila. “After I returned I got a better understanding of the challenges we face here. Our culture, traditions and natural resources are being eroded. Developments like the new road, woodchip mill and logging can help us by providing employment and income but we need to protect the environment we rely on for our daily needs. We also want our grandchildren to inherit a beautiful vanua.

Quickly recognizing the scale of these challenges, Akuila set about linking with other communities and partners to address them. “That is why I became active with BYMST.” he recalls “It provided a way of accessing knowledge, support and resources from NGOs while helping communities to plan and act together.” Since then he has also become the Northern Division representative for the Fiji Locally Managed Marine Area network (FLMMA). Very much active in each of these roles, Akuila is now a key focal point for communities, government officers and other stakeholders.

“It is an honor to play a role and I encourage everyone to contribute towards our shared goals.” he stated at a recent management planning workshop. “We need to work together if we are going to thrive as communities whilst meeting our responsibilities to each other and our future generations.”

## Upcoming events

1. 12th Pacific Science Inter-Congress - 8th -12th July, University of the South Pacific Laucala Campus
2. Periodic Harvest Workshop - 15th - 7th July, Leleluvia Island
3. Science to Action Workshop - 29th - 30th July, 5 Ma’afu street (IUCN conference room), Suva



### TELL US YOUR STORY

EBM-Fiji Newsletter is a gateway to conservation and management news from Fiji. We encourage you to share your conservation stories with us.

Contact: [infofiji@wcs.org](mailto:infofiji@wcs.org)

