

# RESILIENCE SOURCEBOOK

INSPIRED BY THE 2013 MILSTEIN SCIENCE SYMPOSIUM  
*UNDERSTANDING SOCIAL AND ECOLOGICAL RESILIENCE IN ISLAND SYSTEMS*  
*INFORMING POLICY AND SHARING LESSONS FOR MANAGEMENT*



CASE STUDIES OF SOCIAL-ECOLOGICAL  
RESILIENCE IN ISLAND SYSTEMS

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# SUSTAINABLE MANAGEMENT OF NEAR SHORE FISHERIES AND COASTAL ECOSYSTEMS THROUGH COMMUNITY ENGAGEMENT AND COLLABORATION

KUBULAU DISTRICT, VANUA LEVU, FIJI

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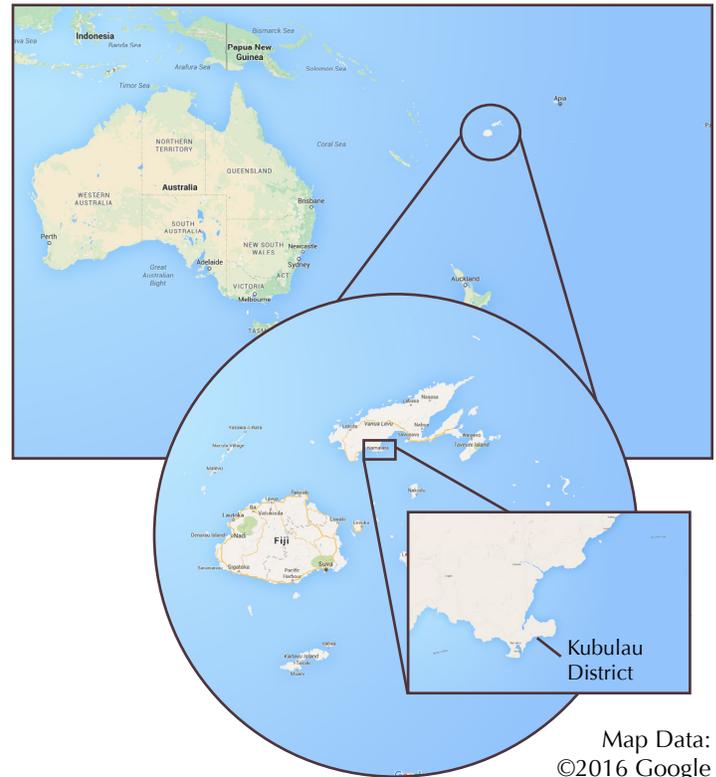
## THE SETTING

Kubulau District is an administrative unit of Bua Province, centered at 16° 51' S and 179° 0' E in southwest Vanua Levu. Approximately 1,000 citizens reside in Kubulau District. There are ten villages in the district (three inland, seven coastal), each of which averages 50–200 residents.

Residents depend mainly on fishing and farming for subsistence and derive income mainly from fishing, farming and copra harvesting. Clan members also receive payments for commercial land use activities, including native forest logging and plantation forestry.

Management of Fiji's near-shore fisheries and coastal ecosystems is guided by a dual legal and governance system. A centralized government system, adapted from western democracy, applies to all Fijian citizens, regardless of ethnicity or heritage (about 57% of Fiji's population is iTaukei, or native Fijian, and 37% is Indo-Fijian, with the balance a mix of ethnicities). A traditional iTaukei system of law and governance, deeply rooted in local customs, social hierarchy and participatory decision-making, is adhered to by indigenous Fijians. Under this system, the centralized government retains ownership of coastal areas and traditional fishing grounds, but recognizes iTaukei rights to access and use resources within their boundaries. This dual system of fisheries management is complex and creates ambiguities for management and enforcement.

In 1950s-60s, an iTaukei Commission surveyed and demarcated rights and claims to traditional fisheries (*qoliqoli*), describing local communities'



Map Data:  
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fishing rights access areas. The Kubulau community members manage a 261.6-square-kilometer traditional fisheries management area that extends to the outer edge of the coral reefs and includes a number of small islands. This area covers a complex reef system with fringing and barrier reefs, lagoons, and very deep waters off the outer reef edge.

## THE DISTURBANCE

In the early 1990s, the local communities became increasingly concerned about food security as a result of over-exploitation of marine resources. The Kubulau District chiefs (*Bose Vanua*) established a fisheries committee to intervene with protective measures, including a ban on consent to issue commercial fishing licenses to people from outside Kubulau. Although the *Bose Vanua* had no formal status under national law and no legal powers to adopt or enforce natural resource management measures, their traditional authority was widely respected in the district, and their efforts met with some initial success, though by 2003-2004 there was general consensus that fisheries stocks

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View of Natokalau Village and tabu area in Kubulau. Photo credit: Chris Roelfsema

were still declining and the chiefs sought external assistance with management. The Bua Provincial Office directed the *Bose Vanua* to consult with non-governmental organizations (NGOs) – including Wildlife Conservation Society (WCS), WWF South Pacific Program, Wetlands International (Oceania), and the Coral Reef Alliance – for support with broader ecosystem management.

#### THE RESPONSE

Traditional iTaukei fisheries management was focused on food security, rather than long-term conservation or resource scarcity. Following awareness presentations from NGO staff, community members recognized that ecosystem health and biodiversity are integral to community health, and village leaders began actively seeking a broader approach to resource management.

They formed the Kubulau Resource Management Committee (KRMC), comprised of representatives from each village, to develop an adaptive management plan for the Kubulau *qoliqoli* to integrate management of marine, freshwater, and terrestrial resources throughout the district. The KRMC played a central role in the management planning process, embracing collaboration with its NGO partners. The plan synthesized extensive scientific monitoring and socioeconomic research provided by the NGOs with local and traditional ecological knowledge.

In 2005, the *Bose Vanua* created a network of

protected areas to include three large no-take district marine reserves (Namena, Nasue and Namuri), 17 smaller periodically harvested fishing closures (village-managed tabu areas), and a proposed forest reserve on the mainland.

They further expanded the management plan in 2008 with a resolution to develop an integrated ‘ridge-to-reef’ approach for Kubulau that places community management rules alongside national legislation and policy. In July 2009 the *Bose Vanua* endorsed the completed management plan.

In 2012, they reconfigured the network of marine protected area with new boundaries to maximize resilience to climate change and new management rules to enhance management effectiveness. The enlarged MPA network included the three district no-take areas with added buffer zones and 21 village tabu areas. An additional 35 square kilometers was placed under management, increasing the total area of the MPA network to 120 kilometers, which is equivalent to 44% of the Kubulau fisheries management area.

#### THE RECOVERY

The area rebounded quickly, as demonstrated by perceptions of resource availability and underwater surveys, as protection measures helped reverse the fisheries depletion. As of 2014, the marine ecosystem remained relatively intact, and outer reef areas, in particular, supported high fish biomass and catch rates, though the entire



Kubulau youth with giant trevally. Photo credit: Wayne Moy

marine ecosystem was substantially impacted by the impacts of a category 5 tropical cyclone in February 2016. Community leaders responsible for the MPAs continue to face several enforcement and management challenges. Ongoing confusion over boundaries, declining respect for traditional laws, and poaching erode the effectiveness of the no-take areas. Lack of government support, including inadequate Fisheries Department resources for monitoring and enforcement, along with unwillingness to impose more meaningful fines, further strain local management.

In collaboration with their NGO partners, community leaders also need a better understanding of how to manage MPAs effectively to improve food security and community health. Sustainability priorities now include matching catches and tabu closures with species recovery rates, and targeting faster-growing species like parrotfish and surgeonfish, rather than slower-growing species like large grouper.

#### LESSONS LEARNED

- *Communication among decision makers and resource users is key.* In an informal management system, with little government monitoring and enforcement, consensus and clarity at the local level are essential to compliance.
- *Don't rely solely on representatives for broader scale communication.* When first working in Kubulau, WCS began with district-level workshops, relying on village representatives to define and communicate MPA boundaries. WCS



Namena Marine Reserve. Photo credit: Lill Haugen

quickly realized that the representatives did not convey this information effectively to villagers, creating confusion and misunderstandings. WCS worked with SeaWeb Asia-Pacific to train local community facilitators to be better communicators of information to inform resource management decisions. WCS is now working to develop similar programs in other parts of Fiji, starting at the village level to ensure increased participation and awareness.

- *Choose distinctive, recognizable features to serve as boundary markers.* Since enforcement largely falls on community members and resource users, management area boundaries must be clear and easily identifiable.
- *Take time to explain scientific principles behind proposed management interventions and place science in support of local management.* The Kubulau communities were eager to understand scientific methods. Recognizing the importance of community ownership of management decisions, WCS facilitated interpretation of the scientific data to let community members form their own opinions, instead of presenting *de facto* recommendations.

*As told to Georgina Cullman and Erin Willigan.*

#### LEAD ORGANIZATION

- Wildlife Conservation Society  
<http://www.wcsfiji.org>

#### PARTNER ORGANIZATIONS

- WWF South Pacific Programme  
<http://www.wwf-pacific.org>
- Wetlands International (Oceania)  
<https://www.wetlands.org>
- Coral Reef Alliance  
<http://coral.org>
- SeaWeb Asia-Pacific  
<http://www.seaweb.org/initiatives/asiapacific.php>

#### FUNDING SUMMARY

- David and Lucile Packard Foundation  
<https://www.packard.org>
- Gordon and Betty Moore Foundation

<https://www.moore.org>

- John D. and Catherine T. MacArthur Foundation

<https://www.macfound.org>

- NOAA Coral Reef Conservation Program  
<http://coralreef.noaa.gov>

#### **RESOURCES**

- Clarke, P, and SD Jupiter. 2010. Law, custom and community-based natural resource management in Kubulau District (Fiji). *Environmental Conservation* 37:98-106
- Weeks, R, and SD Jupiter. 2013. Adaptive comanagement of a marine protected area network in Fiji. *Conservation Biology* 27:1234-1244.

## THE MILSTEIN SCIENCE SYMPOSIUM

The collection of this case study and others like it results from the April 2013 Milstein Science Symposium, Understanding Ecological and Social Resilience in Island Systems: Informing Policy and Sharing Lessons for Management. Held at the American Museum of Natural History, the Milstein Science Symposium convened local resource managers, researchers, educators, island leaders, policy makers, and other leading conservation practitioners to examine characteristics, qualities, and processes that may foster resilience for coastal and marine systems as well as explore interactions, linkages, and feedback loops in complex social-ecological systems and what this means for management. The Milstein Science Symposium was organized in collaboration with The Nature Conservancy, the Gordon and Betty Moore Foundation, the National Science Foundation, The Christensen Fund, the Coral Reef Alliance (CORAL), the Scripps Institution of Oceanography at the University of California San Diego, the University of California Santa Barbara, the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States (UN-OHRLS), and the Wildlife Conservation Society.

**The 2013 Milstein Science Symposium was proudly sponsored by the Irma and Paul Milstein Family.**



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