

# Supporting community management of natural resources

Ged Acton, Wildlife Conservation Society Fiji

*Customary ownership, national laws, empowering communities  
and other challenges*



# Wildlife Conservation Society (WCS)



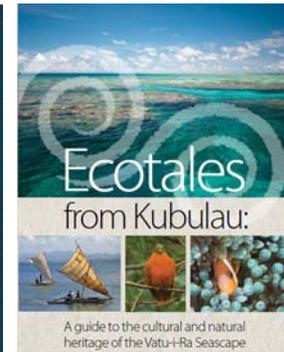
- Research
- Communication
- **Management Support**

Recognition and Support of ICCAs in Fiji  
*H. Govern, S. Jupiter & J. Comley, Oct 2012*

## PRINCIPLES AND PRACTICE OF ECOSYSTEM-BASED MANAGEMENT

A GUIDE FOR CONSERVATION PRACTITIONERS IN THE TROPICAL WESTERN PACIFIC

By Pepe Clarke and Stacy Jupiter



# Ecosystem-Based Management



- Inland and coastal communities work together
- Ridge to Reef
- Public health/livelihoods depend on environment
- Requires broad stakeholder input
- Healthy ecosystems as defence against climate change
- Bottom-up *and* top-down planning

# Adaptive Management



*A process where management decisions can be changed or adjusted based on additional biological, physical or socio-economic information*

Acknowledging the need to act now rather than wait for perfect information

Flexible to changing social, economic and environmental context

Incorporates new threats, opportunities and objectives

# Conservation in Fiji

## i-Taukei focus

Pre 1990s	<b>Protecting hunted species</b> <b>Conserving rivers and streams</b> <b>Managing growth of timber industry</b> <b>Regulating agricultural practices</b> <b>Providing for population growth</b>	<b>1 local Environmental NGO</b>
Early 1990s	Biodiversity conservation Managing logging Establishing protected areas	1 BINGO (2 <sup>nd</sup> opened in 1998) + 1 local NGO
2000 -	Project based work with communities Locally Managed Marine Areas (FLLMA network)	12 BINGOs + several local NGOs



# Indigenous and Community Conserved Areas

## Locally Managed Marine Areas (LMMAs)

*“Inshore waters governed by local residents and involving a collective understanding of, and commitment to, management interventions in response to threats to marine resources”*

- 150 LMMAs
- 50% *i qoliqoli*
- 10% territorial waters
- 400 communities
- FLLMA network

Marine Protected Areas (*tabu*) not gazetted

# Community-Based Management Context

## Customary management in Fiji/Oceania:

- Decisions about resource use and access made through traditional hierarchies
- Even though current fisheries legislation recognizes open access for subsistence use, local management works when respect for chiefly authority strong (Clarke & Jupiter 2010)
- Because most areas not legally gazetted, flexibility to adapt management to changing environmental and social conditions



Photos © Keith Ellenbogen

# Kubulau Adaptive Management : 2003 - 2005

1993 - Namena Marine Reserve informally established

2003 - Namena Marine Reserve dive tag system established (CORAL)



# Kubulau Adaptive Management : 2006 - 2009



Targeted household socioeconomic monitoring

Biological monitoring of Kubulau MPAs

Kubulau Community-Based Management Plan review workshop

Kubulau Community-Based Management Plan revised

Biological monitoring of Kubulau MPAs

Targeted household socioeconomic monitoring

Boundaries of Kiobo tabu area are adjusted by community

Ecosystem-Based Management planning workshop

Targeted household socioeconomic monitoring

Biological monitoring of Kubulau MPAs

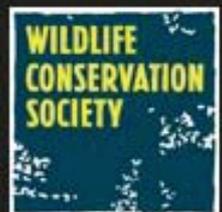
Consultation on the draft Ecosystem-Based Management ridge-to-reef plan

Kubulau Ecosystem-Based Management Plan endorsed by Bose Vanua

Management support training of the Kubulau Resource Management Committee

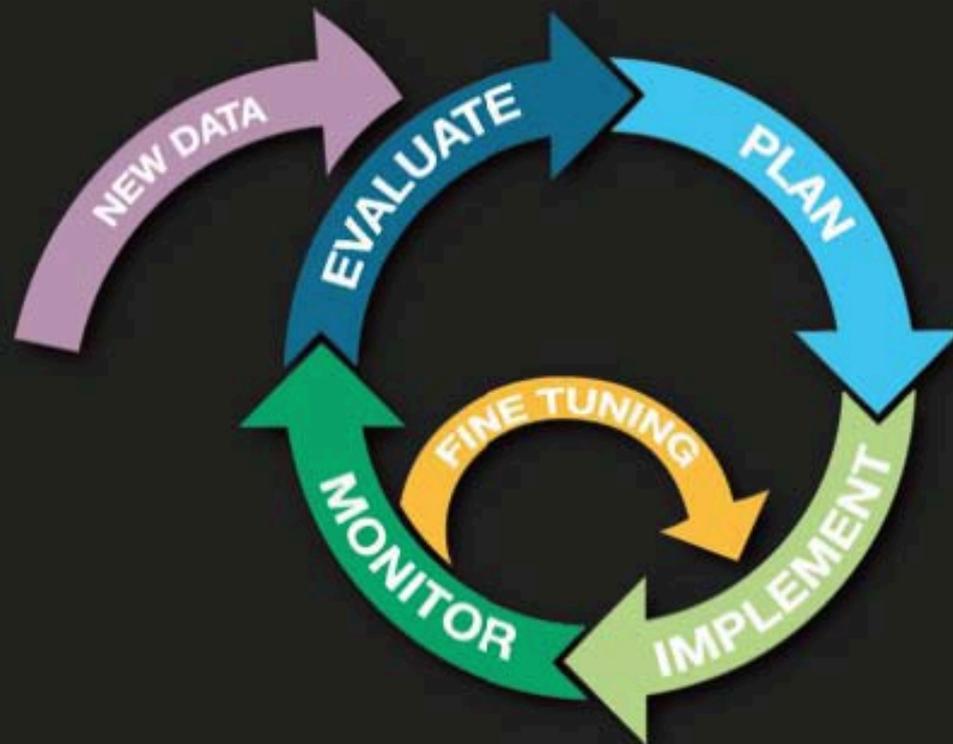
Village awareness campaign (roadshow) of the endorsed ridge-to-reef plan

Fish warden refresher training



# Kubulau Adaptive Management : 2010 ...

- \* Monitoring data analysed to determine effectiveness of existing MPAs & some tabu areas
- \* Incorporate resilience assessments into biological monitoring protocol
- Biological monitoring of the Namena Marine Reserve
- \* Millennium Reefs data acquired
  - Site level resilience indices developed from survey data
- \* Resilience data analysed with Marxan to identify conservation priority areas

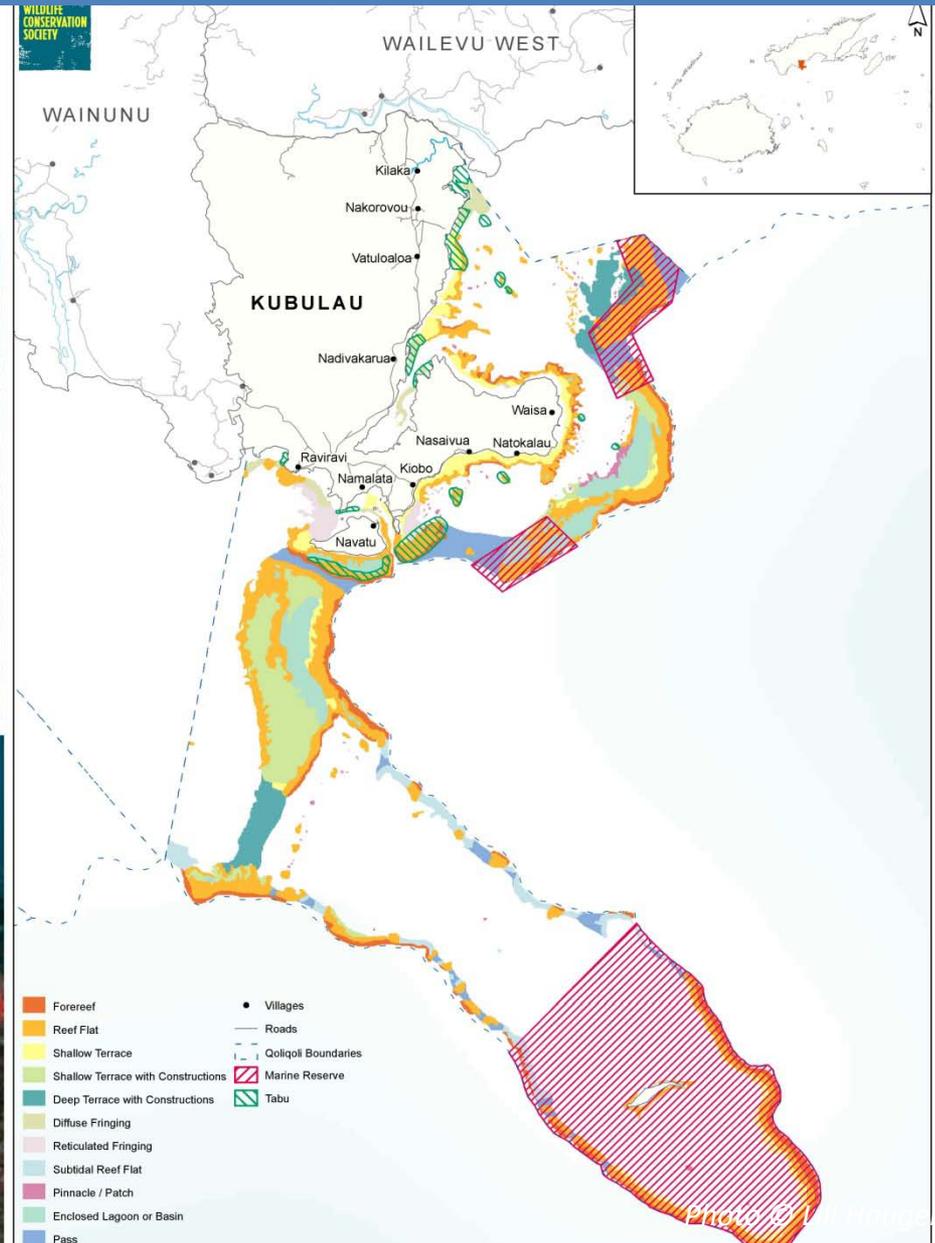


Motivations for new planning phase:

1. Need to improve management effectiveness
2. Desire to improve reef resilience to climate change

# Kubulau

## Kubulau District, Fiji



# Kubulau's Namena Marine Reserve

## Factors influencing MPA success:

Large size (> 60 km<sup>2</sup>)

Long duration of protection

Distance from fishing villages

Steep reef walls with high currents adjacent to deep waters  
= high productivity

Vigilant resort owners with staff trained as fish wardens



# Breakdown of Protection in 2010

## What happened:

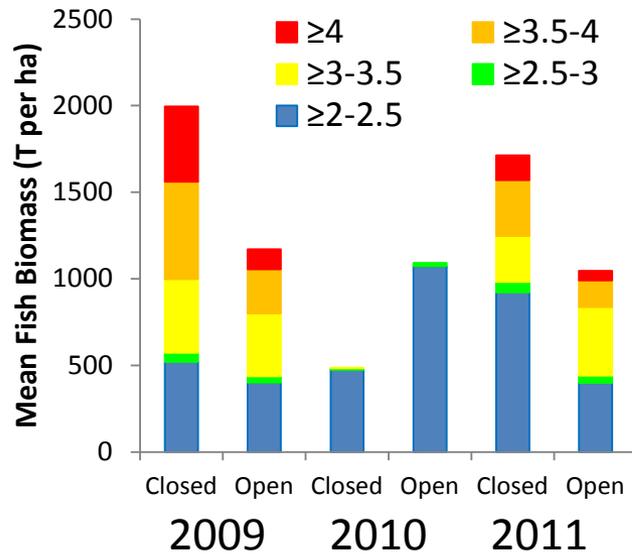
Clan felt not adequately compensated for loss of traditional fishing ground

Also unhappy about annual payments for conservation lease for island

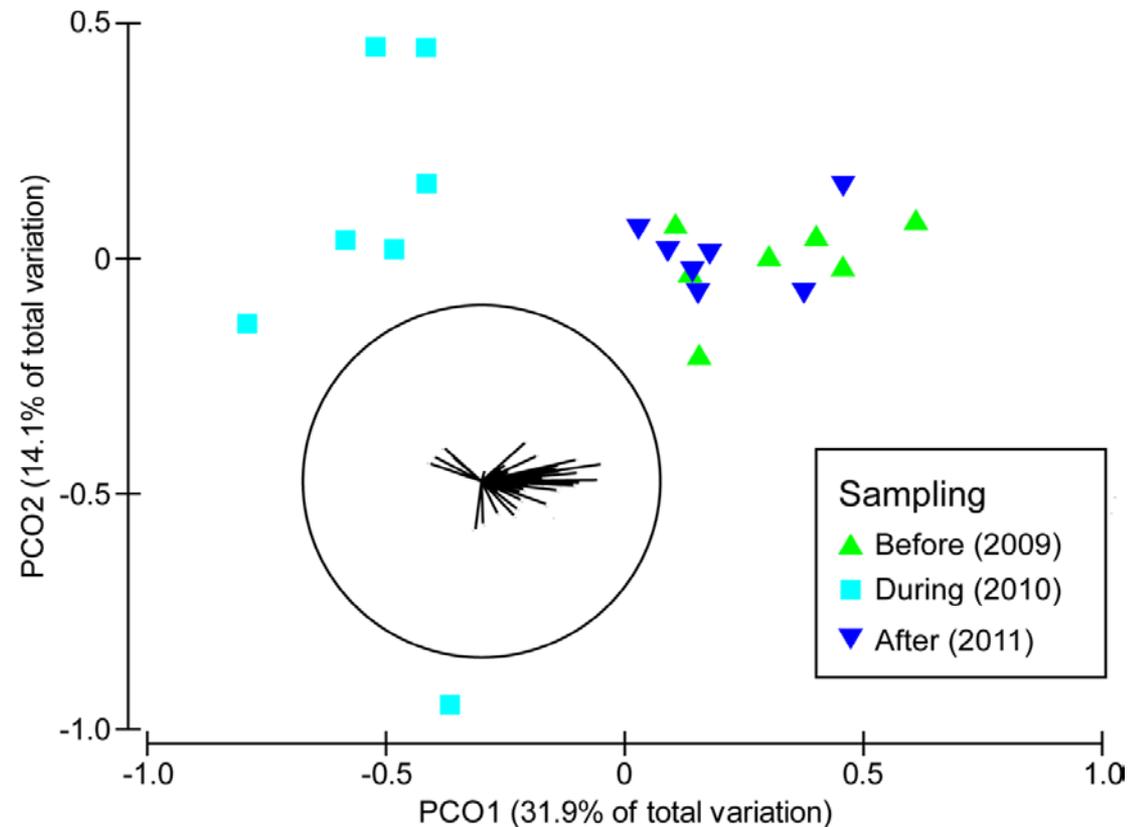
Clan members camped on island and fished for sale for several months



# Impacts of Fishing and Traditional Resolution



- Major change in 2010 due to substantial harvest for sale
- Before (2009) and After (2011) communities not significantly different from one another.



**Outcome:** Conflict resolution through strong traditional hierarchies; compensation payment reinstated; fish communities rapidly recovered

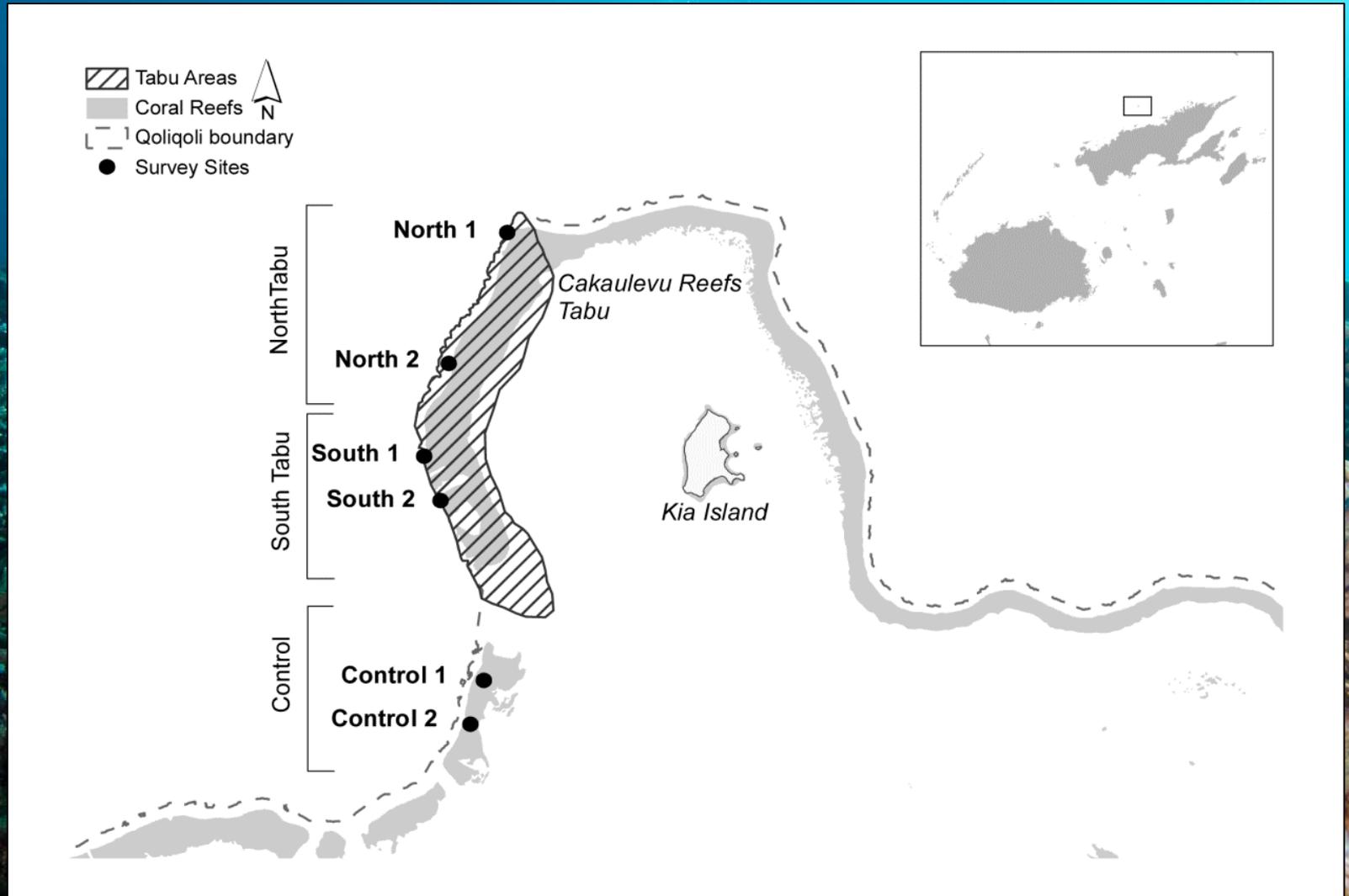


# Case Study II: Kia Island's Cakaulevu Tabu



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Initial surveys in 2008



# Case Study II: Kia Island's Cakaulevu Tabu

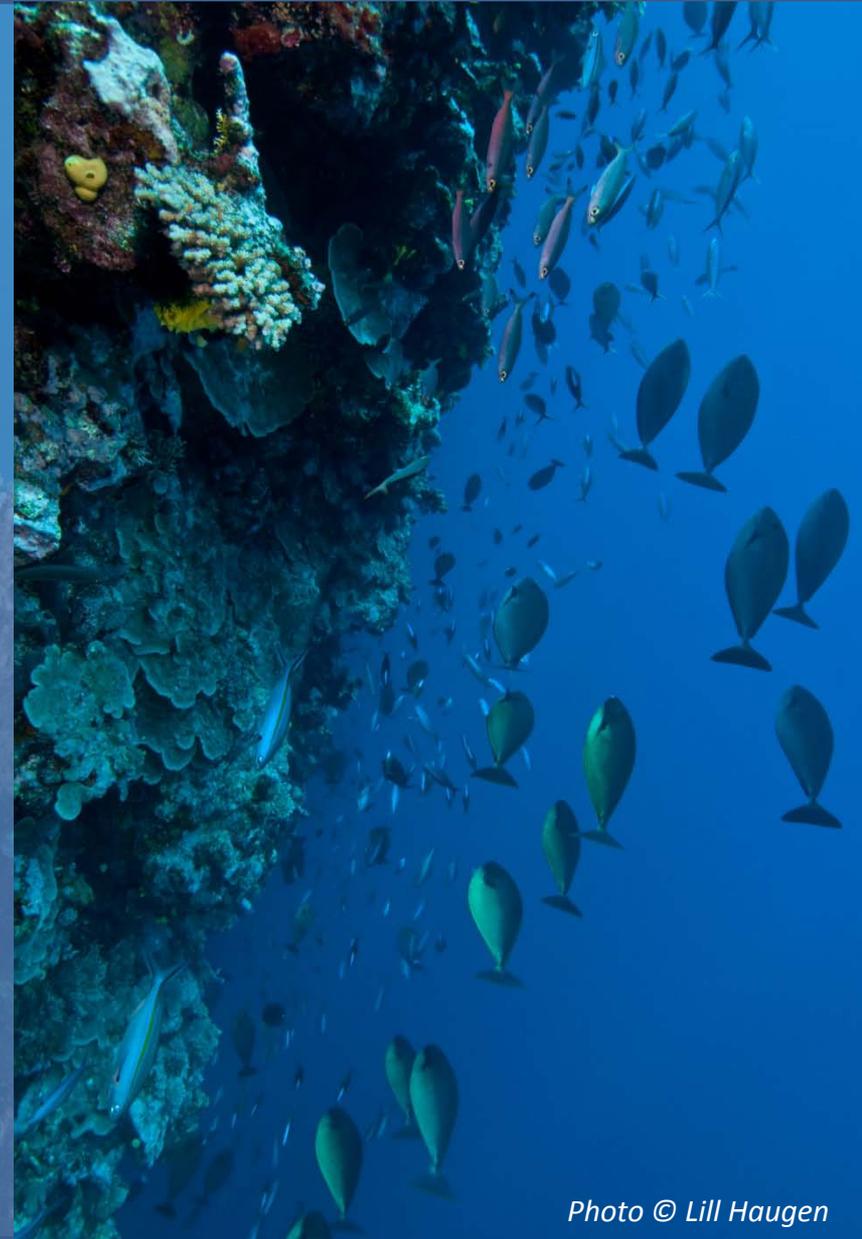
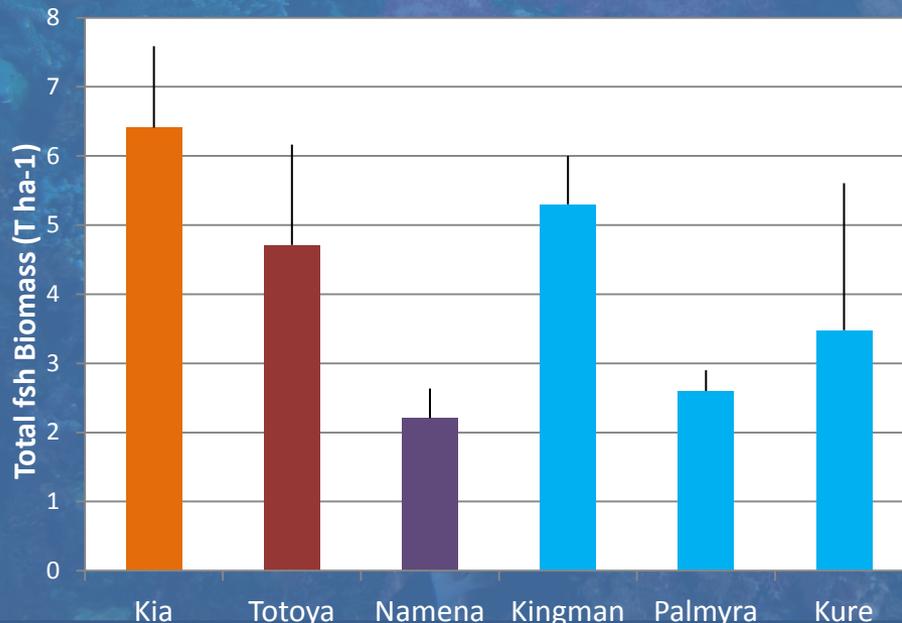
## Factors influencing MPA success:

Large size ( $> 15.5 \text{ km}^2$ )

Distance from markets

Low nearby population density

Steep reef walls, high currents + deep waters = high productivity



# MPA Opened and Intensively Fished in 2008

## What happened:

Fundraiser for school, church and provincial fees

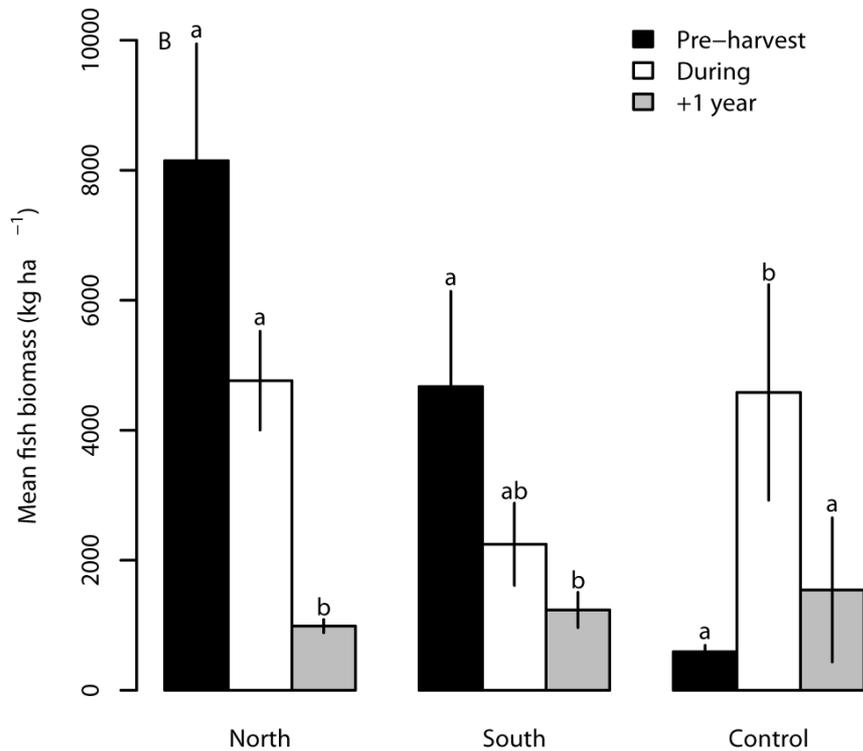
Established links with middlemen from seafood export companies

No clear mechanism to shut down harvest after target financial goal reached (on day 1)

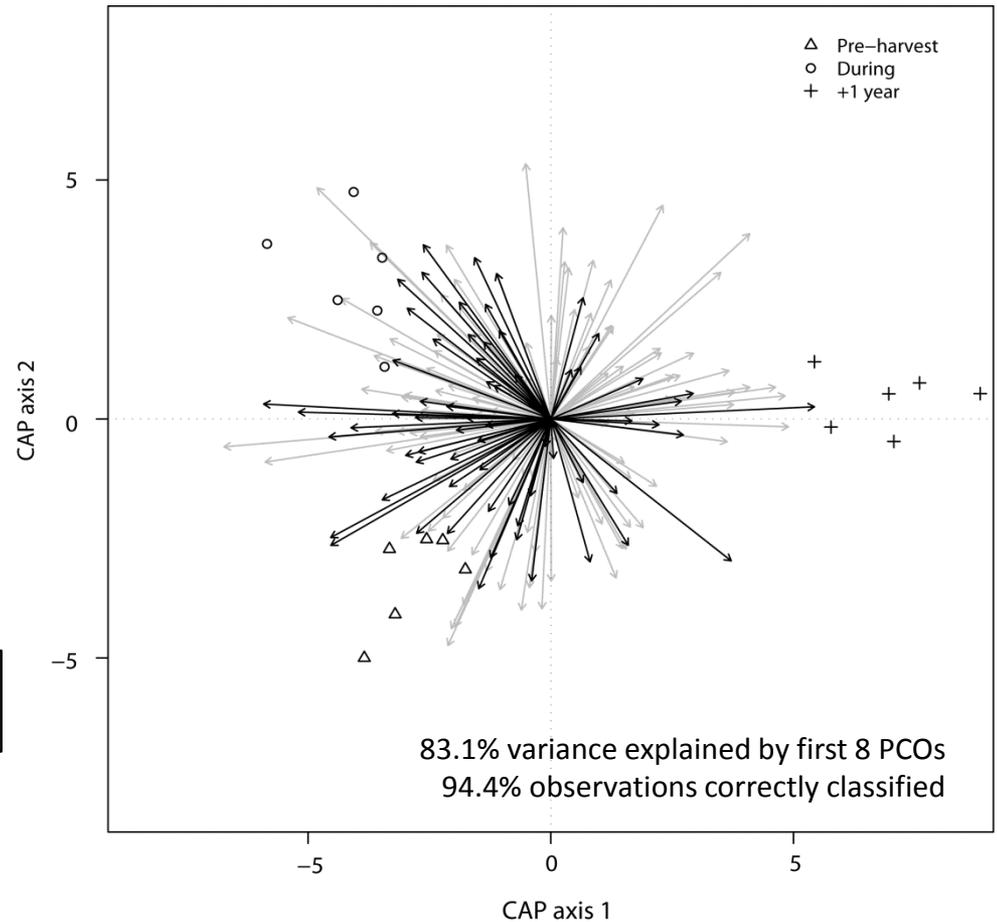
Fishing continued 24 h per day, 6 days per week, 5 weeks



# Impacts of 5 Week Harvest



Jupiter et al. (2012)



**Outcome:** Loss of large-bodied, primary target species (e.g. *Naso unicornis*, *Caranx melampygus*); increase in roving grazers (e.g. *Ctenochaetus striatus*, *Chlorurus sordidus*); although tabu re-instated, likely high non-compliance due to easy market access

# Summary of Factors Contributing to Outcomes

## Success

- **Productive:** steep walls and fast currents
- **Large size:** area greater than home ranges of moderately mobile reef fish
- **Remote:** Far from urban centers and markets
- **Chiefly respect:** willingness to obey customary rules and/or negotiate through traditional protocol

## Failure

- **Encroaching markets:** commercialization of resources
- **Ineffectual management plan:** lack of defined process and authority to shut down harvest once targets reached
- **Lack of awareness:** Poor understanding of impact of frequent or intense harvests and fish biology



For more information:

[www.wcsfiji.org](http://www.wcsfiji.org)

[sjupiter@wcs.org](mailto:sjupiter@wcs.org)

# What Next?: Guidelines for Sustainable Harvests



BACI surveys of 5 week intensive harvest of Kia tabu showed severe losses of fish biomass and no recovery by 1 year later

**CONCEPT:** Conduct surveys of harvests over different durations, frequencies and intensities to provide sound scientific guidelines on periodic openings

# Terrestrial and Freshwater ICCAs

Relatively neglected  
LLMA-type community approaches have not emerged

## Rivers

- Temporary bans on harvesting certain species
- Freshwater protected areas now emerging in tikina and Provincial plans
- Ban on riparian cutting (Jenkins and Jupiter, 2011)

## Forests

- Bouma *National Heritage Park*
- Waisali *Forest Reserve*
- Drawa Block
- Natewa Tunuloa Peninsula
- Kilaka Forest Park
- Sovi Basin (illustrative)

# Challenges

- Political and legal threats
- Institutional weaknesses
- External and environmental threats



## Are You Eating Small Fish?

Many of the reef fish caught in Fiji have not yet reached reproductive maturity. Without a healthy stock of reproductively-mature fish, future reef fish populations remain threatened.

Do you know the size that common fish begin to reproduce and can grow to reach?



Kabatia – Thumbprint emperor  
(*Lethrinus harak*)  
Mature ~21cm, Max ~45cm



Kabatia – Orangestripe emperor  
(*Lethrinus obsoletus*)  
Mature ~26cm, Max ~60cm



Kawago – Spangled emperor  
(*Lethrinus nebulosus*)  
Mature ~45cm, Max ~87cm



Kacika – Yellowlip emperor  
(*Lethrinus xanthurus*)  
Mature ~30cm, Max ~60cm



Guhula – Trumpet emperor  
(*Lethrinus miniatus*)  
Mature ~30cm, Max 90cm



Cabuju – Pacific yellowtail emperor  
(*Lethrinus atkinsoni*)  
Mature ~28cm, Max 50cm



Damu – Twospot red snapper  
(*Lutjanus bohar*)  
Mature ~27cm, Max ~80cm



Cabutu damu – Humpback snapper  
(*Lutjanus gibbus*)  
Mature ~25cm, Max ~50cm



Kwake – Blacktail snapper  
(*Lutjanus fulvus*)  
Mature ~18cm, Max ~40cm



Damu – Mangrove red snapper  
(*Lutjanus argentimaculatus*)  
Mature ~50cm, Max ~100cm



Kwake – Common bluestripe snapper  
(*Lutjanus kasmira*)  
Mature ~14cm, Max ~32cm

Most emperors mature as females, then become males later in life. Most snappers are separate sexes. Emperors & snappers can travel long distances to reproduce in spawning aggregations.

You can help maintain healthy fisheries by ensuring that no one takes or buys undersized fish that have not yet reproduced, and by protecting spawning aggregations.

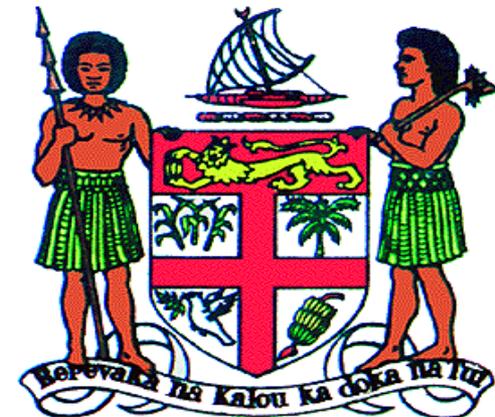


Fish images credited to SPC.

# Environmental Impact Assessment

- *Purpose*
- *For what developments is EIA required?*
- *EIA Process*
- *Opportunities to engage*
- *Environmental bond*

....and Social Impact Assessment?



# Income generation

Need to monitor the benefits of conservation  
Transparency essential for sustainability



*Making and investing money without doing harm*

# Income generation in Kubulau

- Stakeholders engaged in partnership to support conservation effort (dive operators engaged as well as communities, agencies, NGOs)
- Dive tag scheme developed and supported by all



# Code of Conduct



*Leave only your bubbles....*

## **NAMENA MARINE RESERVE RECREATIONAL USE GUIDELINES**

- 1) **Namena Marine Reserve Fee – All divers must pre-purchase a FJ\$25 dive tag before diving or snorkelling within the Namena MPA.**
- 2) **Fishing is totally prohibited within the Namena Marine Reserve.**
- 3) **Removing anything alive or dead from the Namena Marine Reserve is strictly prohibited.**
- 4) **Exert Personal control: Do not make any contact with the corals or other parts of the reef. Always be aware of where your fins are; have the knowledge and the skills to make sure you don't damage or disturb any coral reef, sand flats, grass beds, etc.**
- 5) **Gloves: the use of gloves is prohibited in the Namena Marine Reserve.**
- 6) **Turtles, their nests, and their eggs are totally protected in the Namena Marine Reserve. Do not touch or disturb turtles when diving; stay far enough away from them so your presence does not alter their behavior. Respect nesting turtles or turtle nests: Please do not anchor within 50**

# Effective management



	Strengths	Weakness
Internal	<ul style="list-style-type: none"> <li>• User Fee System</li> <li>• Decision Matrix</li> </ul>	<ul style="list-style-type: none"> <li>• Poaching</li> <li>• Weak Enforcement</li> <li>• Limited Economic Opportunities</li> <li>• Limited Tourism Industry Experience</li> </ul>
	Opportunities	Threats
External	<ul style="list-style-type: none"> <li>• Support from NGO's</li> <li>• Great Diving</li> <li>• Economic Development</li> </ul>	<ul style="list-style-type: none"> <li>• Poaching</li> <li>• Lack of NGO Collaboration</li> <li>• No Dive Operator Support</li> <li>• Limited NGO Presence</li> <li>• Local Dive Alternatives</li> </ul>

# Benefit sharing

- Kubulau Scholarship Fund (27 students sponsored in 2010)
- Management Fund
- Community Development Projects (provincial levy, church contributions, School support)

## DIVING PROJECT GENERATES INCOME FOR NEEDY STUDENTS

Diving expeditions in the waters off Kubulau district, Bua, is helping needy FNU students pay their way.

Kubulau student fund representative Paulo Bale said least 30 tertiary students from their village had been assisted each year through the income from their Marine Reserve project, which has one of the best diving sites in Fiji.

Mr Bale visited FNU Labasa Campus

last week and made arrangements to help six selected students this year.



The marine project income enables the fund to provide \$500 towards each tertiary student's tuition fee.

"The Kubulau scholarship fund is an example of the excellent way in which villages can generate income from projects and assist students in achieving their dreams and education aims," he said.



## Emosi Malo Were

Awarded a partial scholarship from funds earned through the Namena Marine Reserve user fee system, Emosi Malo Were, 21, is the first Kubulau scholarship student to graduate from college. Born in the village of Waisa, Emosi graduated from Corpus Christi Teacher's College in Suva at the end of November. "I can't express how thankful I am for the scholarship funds," says Emosi.



# Kubulau governance structure

## **Kubulau Resource Management Committee (KRMC)**

- Local leadership, awareness, enforcement, implementation
- Reporting to Bose Vanua
- 1 rep per village
- Capacity building
- Managing funds

## **Kubulau Business Development Committee (KBDC)**

- Suva based
- Establish new activities
- Identify improvements to revenue generating activity
- Improve & sustain revenue from Namena MPA
- Business planning and strategy support
- Work and liaise with NGOs operating in Kubulau



# Alternative livelihoods

**Kuta mat weaving**

**Virgin Coconut Oil**

Sponge farming

Honey/others

**Cooperative structure**

Transparency and benefit sharing

Links to markets



# Climate Change, Health and Ecosystems

## Flooding in Fiji

- Over 70% of Fiji's native forests are cleared
- Areas with the most clearing experiencing increasingly severe and frequent floods
- Jan 2009 flood resulted in USD\$150M damage; 8500 homeless
- Outbreaks of waterborne disease peaking 2 months following event
- Damage to freshwater, coastal and marine systems unknown, but likely severe impacts to resources on which Fijians heavily depend



### **NEED FOR NEW TOOLS:**

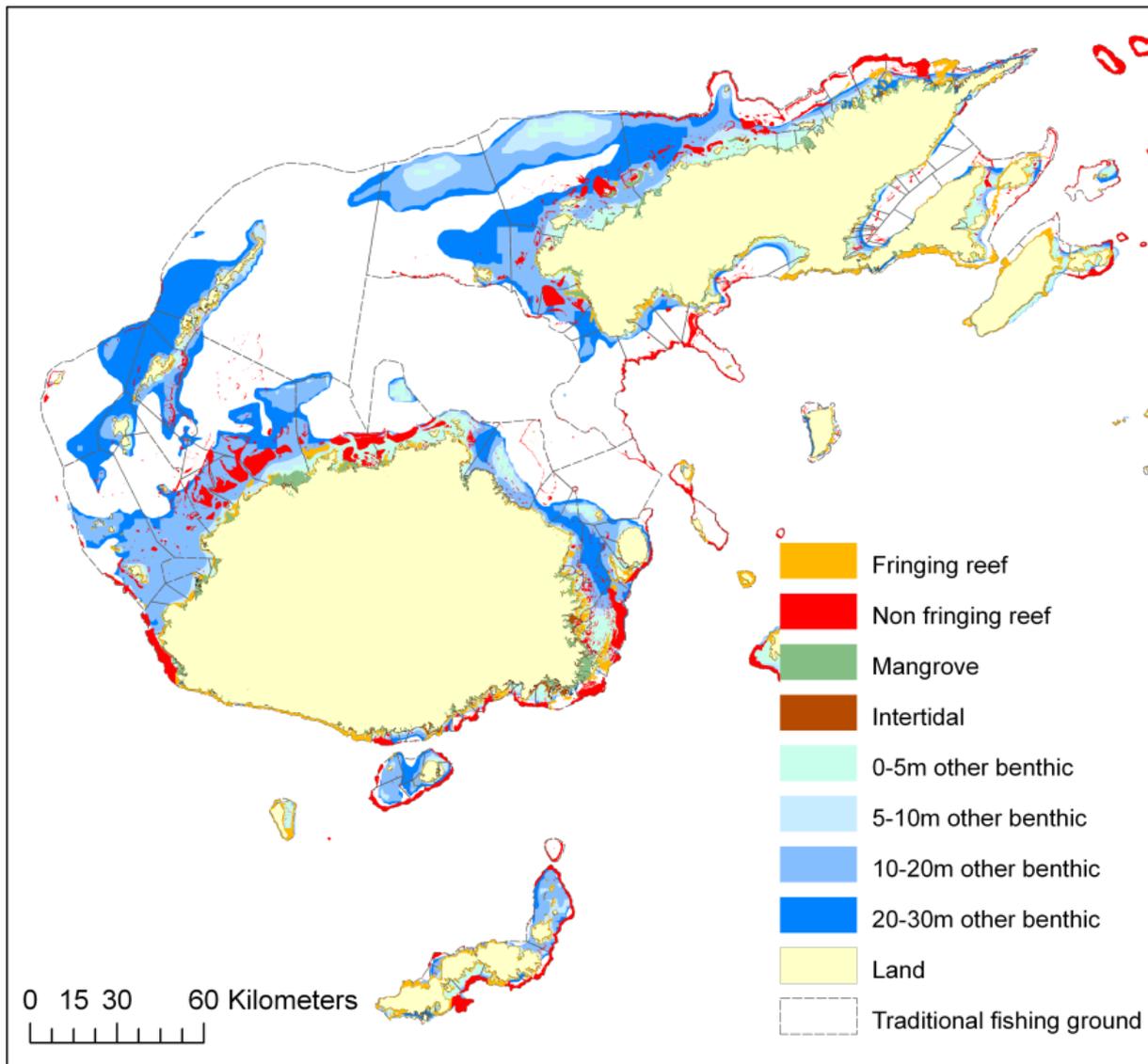
#### **Climate change imagery**

Polar bears and greenhouses don't make sense for the Pacific—we need locally relevant flagship species and analogies

**Fijian glossary of translated terms:** To be circulated through FLMMA network

**Brochures on best practices for reef resilience:** Highlighted with Fiji-relevant imagery

# Planning for Management At Larger Scales

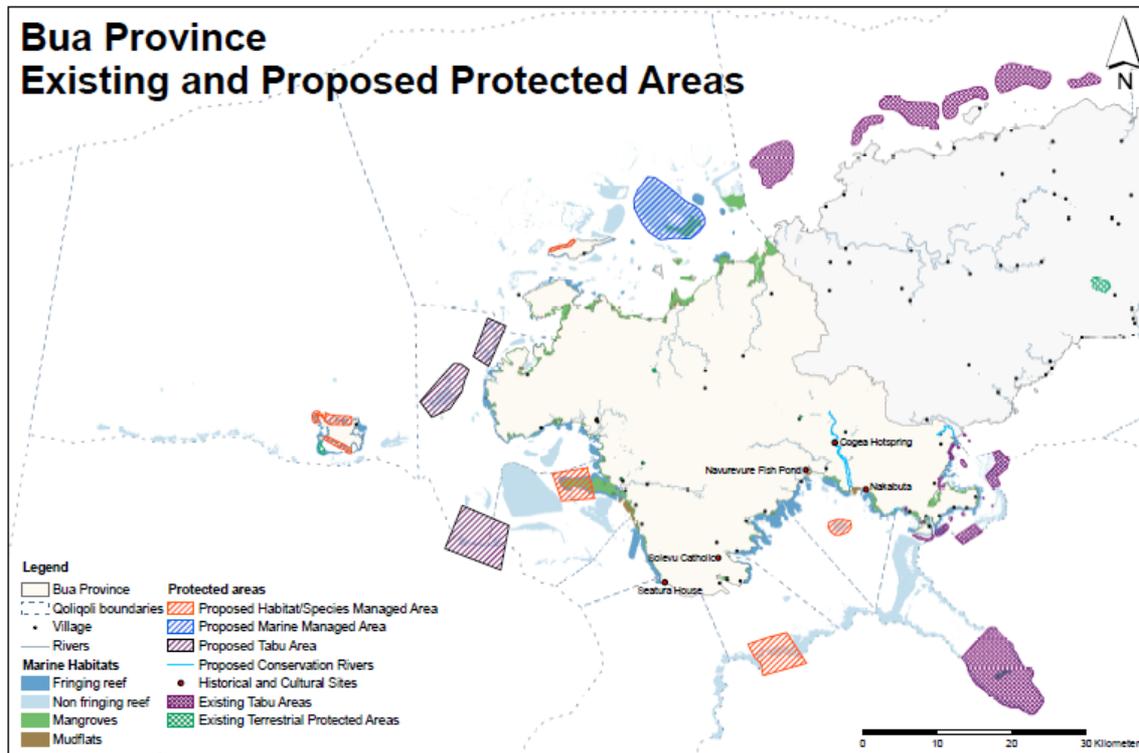


Targets for Protection:  
30%:

- Fringing Reefs
- Non-fringing Reefs
- Mangroves
- Intertidal Mudflats

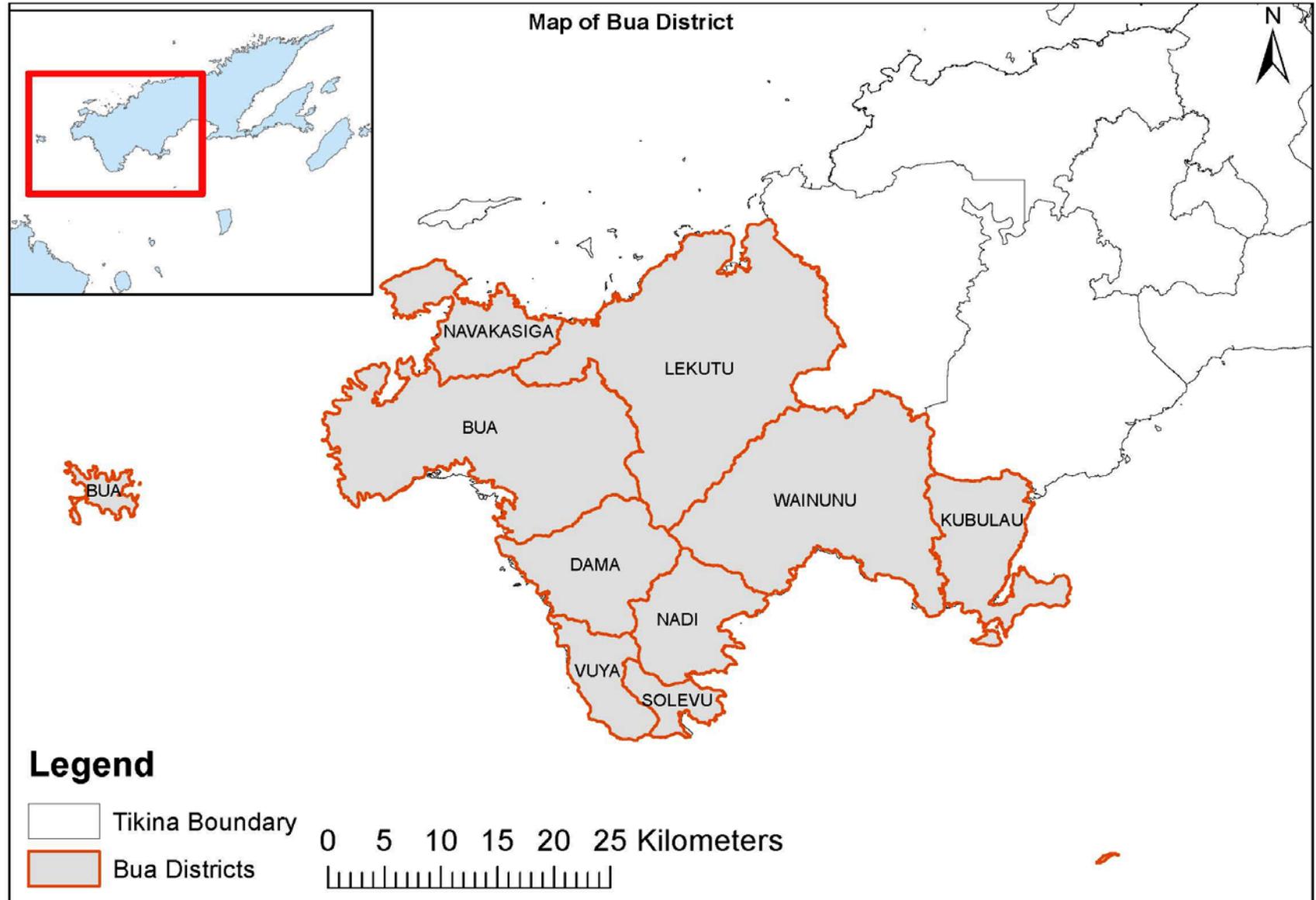
FLLMA is contributing well, but under 'business as usual', it will not achieve the 30% target by 2020

# Provincial scale planning



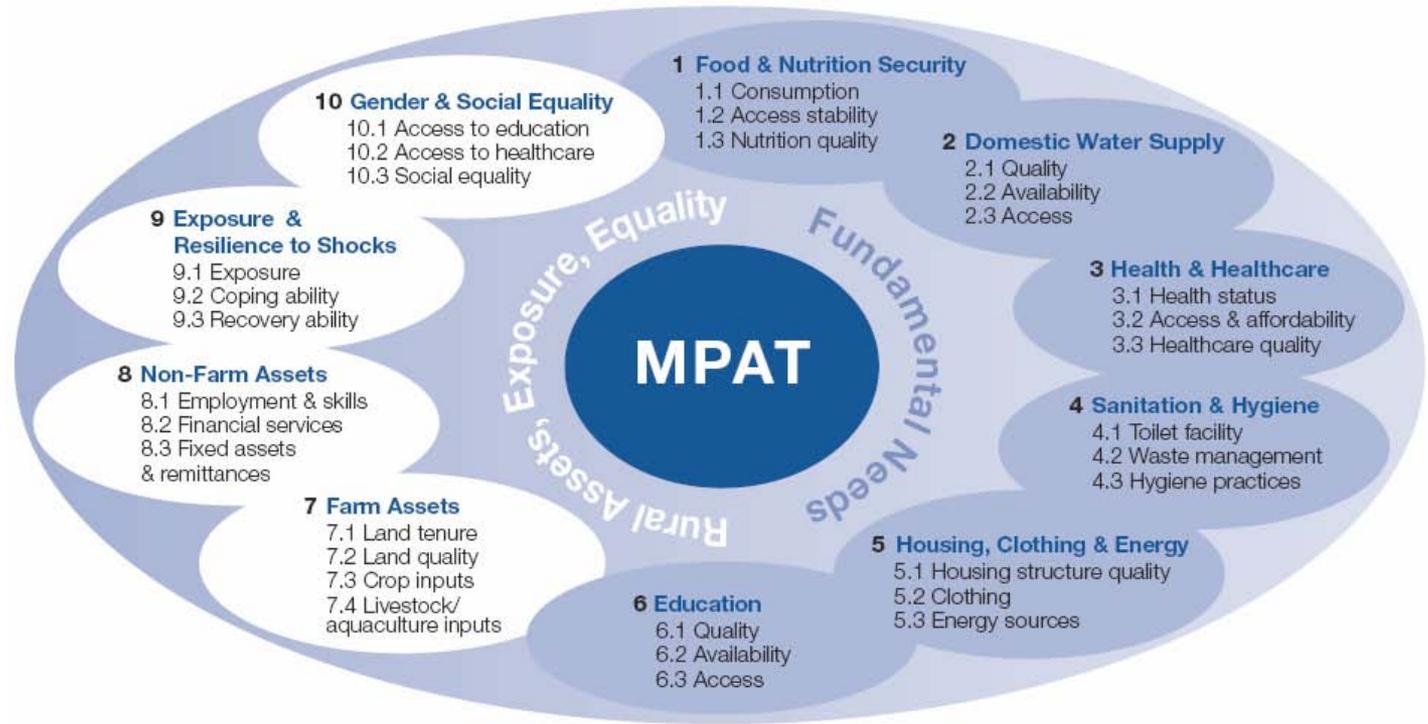
Provincial administrators from across Fiji identified priority areas for protection and management to “fill the gaps” (Jupiter et al. 2010)

# Bua Province

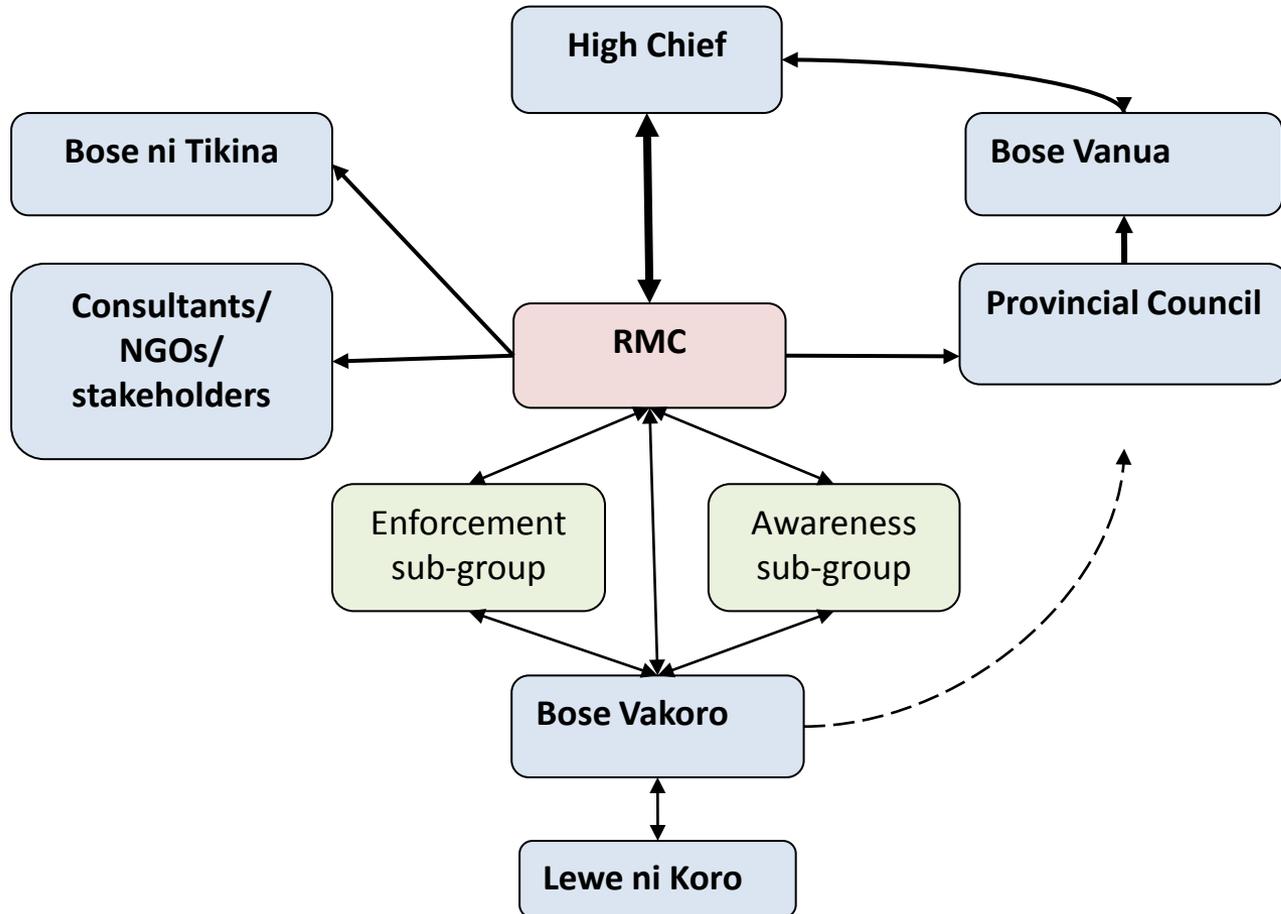


# Communities and stakeholders

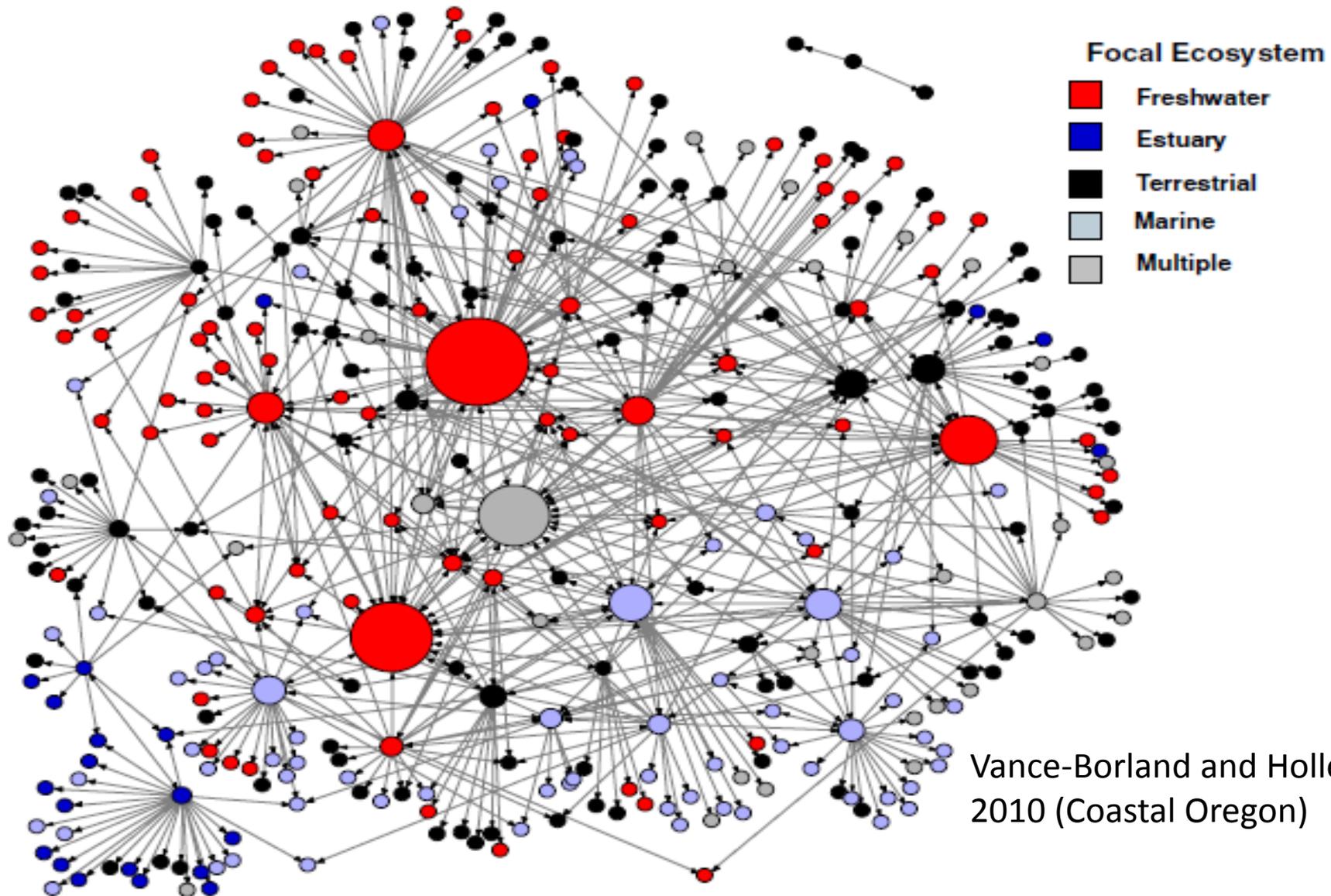
- Different agendas and perspectives
- Voluntary partnerships
- Decision making and action processes



# Governance structure



# Networks



# Learning Networks

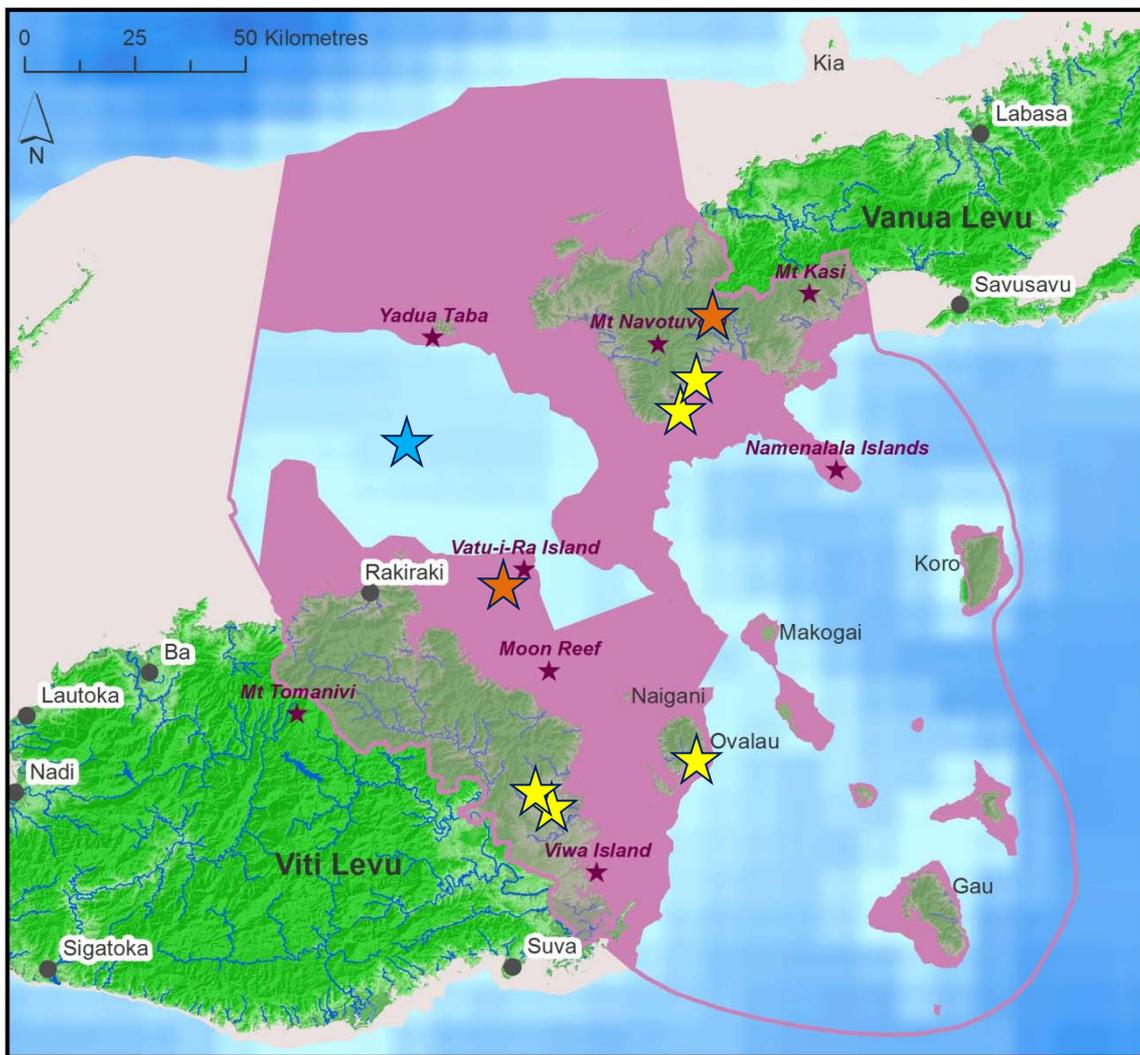


# Network Leadership

1. Help others become leaders
2. Bring in new voices
3. Connect across divides
4. Help people experiment
5. Learn from others  
(locally & across the world)



# What Next?: Expand Management Across Vatu-i-Ra Seascape



★ Community Request for Assistance

★ Proposals in to support ongoing terrestrial and cetacean work

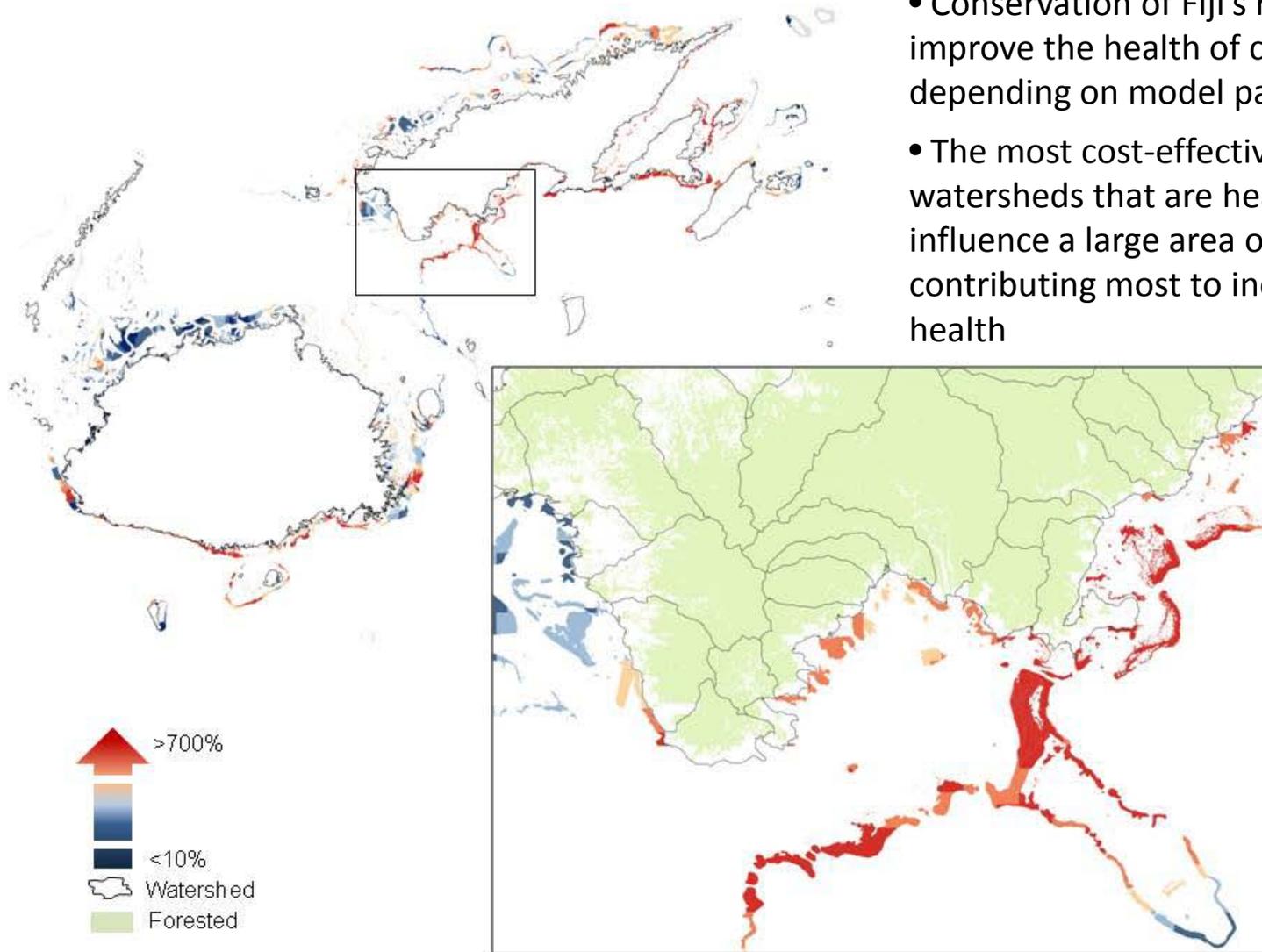
★ Opportunity for offshore no-take MPA

**CONCEPT: Integrate top-down and bottom up planning**

Build on Vatu-i-Ra Stakeholders workshop to help provinces build ICM plans.

Develop climate-ready EBM plans at district level

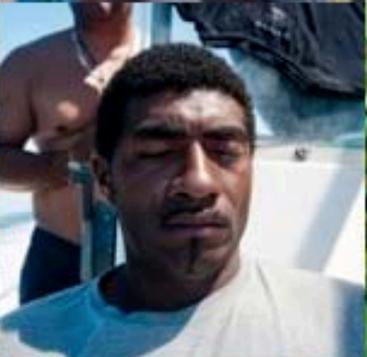
# Planning for Management At Larger Scales: National



- Conservation of Fiji's remaining forests could improve the health of coral reefs by 8-58%, depending on model parameters
- The most cost-effective forest is in watersheds that are heavily forested and influence a large area of coral reefs, thus contributing most to increasing coral reef health
- Coral reefs influenced by heavily cleared watersheds are a low priority for implementing protected areas regardless of fishing pressure (Klein et al. in review)



Vinaka vakalevu



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