



# SAVING FIJI'S ENDANGERED BATS

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ISLAND ARKS SYMPOSIUM  
23<sup>RD</sup> – 27<sup>TH</sup> OCTOBER 2017

ANCHORAGE BEACH  
RESORT  
FIJI





# Who is NatureFiji-MareqetiViti?

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- NFMV – Local Membership based NGO
- Conservation and Biodiversity
- Small team of locals
- Collaboration

# Why bats? Status?

- Only native mammals in Fiji  
Ecological role :  
Pollination, seed dispersal
- 3 tree dwelling (Flying foxes – pollen and nectar).
- ❖ 1 endemic species (Critically endangered)
- 3 small cave dwelling bats (Two insectivorous – Endangered )



# The Campaign

- **Objective:** Build awareness and information on Fiji's bats for targeted conservation actions
- Local perception of bats?
- Building on previous work
- Conservation actions?
- How do we achieve them?
- How do we fully maximize our resources?





# The methods


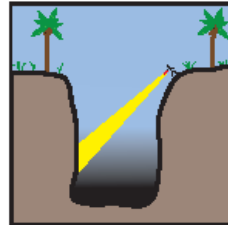
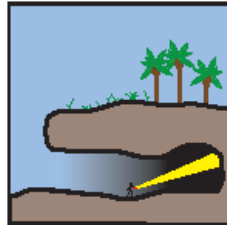
- Scientific research (2009 – present)
- Working with local communities
- Data gathering:
  - Community data (interviews)
  - Telemetry research
  - Cave visits
  - Cave monitoring

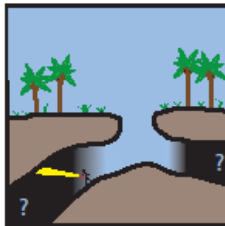
Date \_\_\_\_\_

### Fiji Caves Questionnaire

We are looking for caves in your area. Do you know of any caves nearby? ☐ Yes ☐ No

If yes, which of the following options most resembles the cave you are thinking of?




Can you draw the cave? If so, use this space.

Does the cave have total darkness? ☐ Yes ☐ No

Did you see any flying animals in the cave? ☐ Yes ☐ No


If yes, do you know what they were and how many? \_\_\_\_\_

Can you identify any of the following from the cave?




Fijian Free-tailed Bat

☐ Yes ☐ No ☐ Don't Know



Pacific Sheath-tailed Bat

☐ Yes ☐ No ☐ Don't Know



Swiftlet Bird / Nest

☐ Yes ☐ No ☐ Don't Know

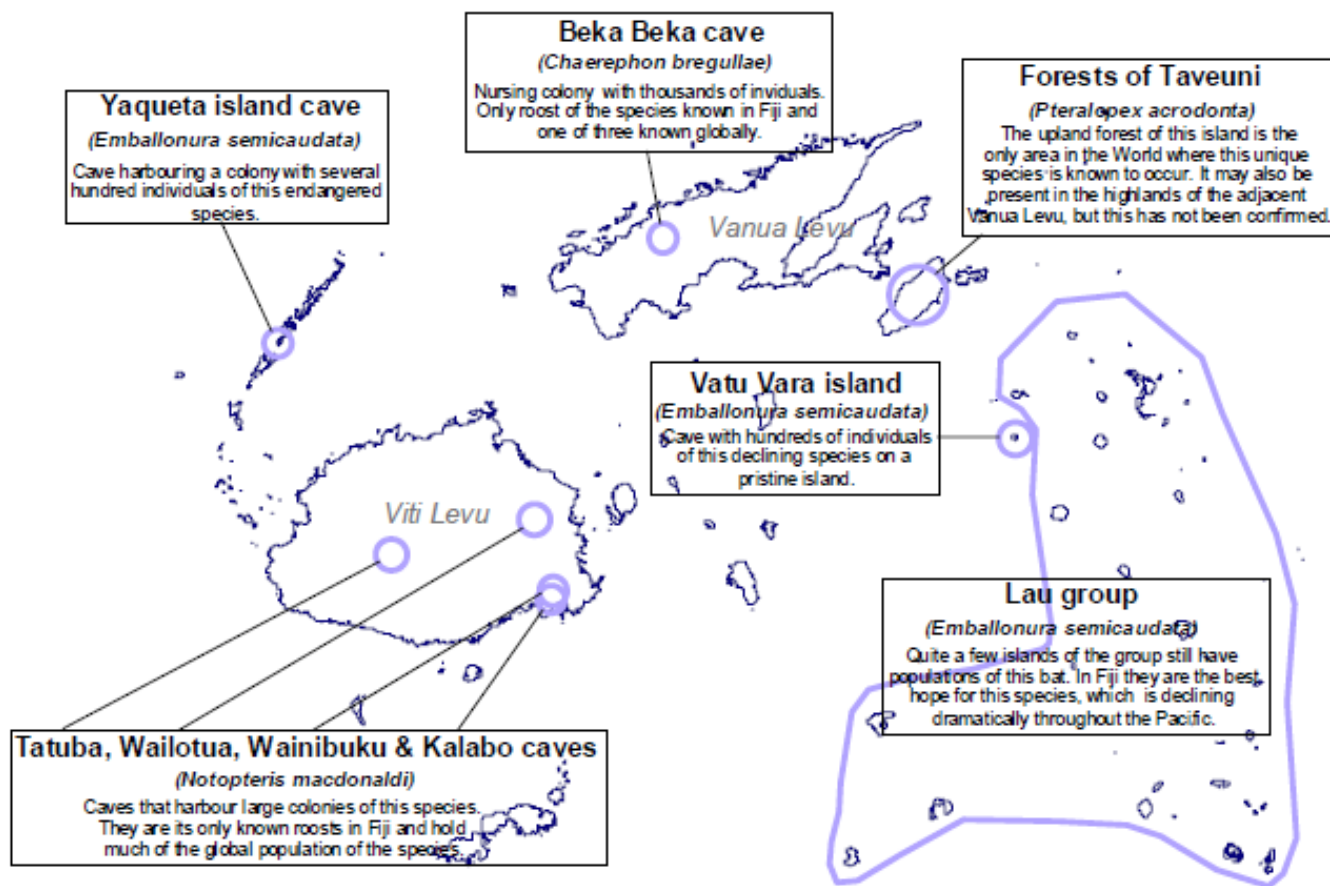
Can you or someone you know take us to the cave? ☐ Yes ☐ No

Please provide your contact info:

Name \_\_\_\_\_ Village \_\_\_\_\_ Phone \_\_\_\_\_

# Palmeirim 2005

## Key sites for bat conservation



## DISTRIBUTION, STATUS, AND CONSERVATION OF BATS IN THE FIJI ISLANDS

A report by:

Jorge M. Palmeirim  
Alan Champion  
Alivereti Nakatini  
Jone Niukula  
Marika Tuwawa  
Martin Fisher  
Mere Yabaki-Gounder  
Stanley Galovaki  
Thomas Dunn

September 2005

# Fiji Flying Fox

## *Mirimiri acrodonta*

- Identified 1978?
- Surveys in 1995, 2009.
- Priority Site ✓: **Taveuni Uplands.**
- AZE site. ✓
- Site Protected?

Forest Reserve

Proposed as a National Park  
and on list of Protected Areas  
for notification.

- Other actions?

- Threats
  - Specific, Restricted, Habitat Type?
  - Climate Change?
  - Naturally small range?
- Actions Required.
  - Population confirmation.
  - Basic biology.
  - Likely threats?



# Fiji mastiff bat

## *Chaerophon bregullae* **EN**

- Syn: *Tadarida bregullae*
- Family: Molossidae
- Only two species in the South Pacific region
  - Solomon mastiff bat
  - Fiji mastiff bat (Vanuatu and Fiji)
  - Small bat:
    - Males = 19g
    - Females = 20g
    - Head-body = 65mm
    - Tail = 40mm
- Cave dwelling
- Insectivorous
- Only **one** global roosting cave known





# Since 2009

## Summary of research and results

### 2012

- 2012-2015 (cave mapping and roost survey)

#### Bat caves in Fiji

Status and conservation of roosting caves of the Fiji blossom bat (*Notopteris macdonaldi*), the Pacific sheath-tailed bat (*Emballonura semicaudata*) and the Fiji free-tailed bat (*Chaerephon bregullae*).



Joanne Malotaux  
NatureFiji-MareqetiViti  
July 2012





# Recommendation - 2015

- **Secure protection status of Nakanacagi bat cave**
- Repeat population count over 3-5 years
- Confirm and protect other bat caves in Vanua Levu and Taveuni
- Action Plan?

# Conservation Actions:

## Derived from Gaps & Next Steps

- Essential bat ecological information through:
  - Telemetry work (how far it goes to eat)
  - guano analysis (what it eats – agricultural pests?)
- ❑ Management plan (cave and surrounding area)
- ❑ Restoration of original vegetation (Native dry forest – threatened system with only 2% remaining – reserve?)
- ❑ Alternative livelihood options to ensure protection and encourage the stakeholders to work together

# Approach :COLLABORATION

## Who can do what? How?



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TRUST®



batcon.org  
BAT CONSERVATION  
INTERNATIONAL



# 2016

- Deployment of bat detectors (sound meters)
- Confirming cave leads
- Population study – methodology revisited
- Consultations, Training and Awareness – All stakeholders
- Fiji Bat Conservation Initiative (Network of experts and steering committee)
- Rainforest Trust Fund Proposal :
  - Securing the land/protecting the cave
  - Biodiversity Rapid Assessment (in and out of the cave)
  - Alternative livelihoods
  - Management Plan
  - Training and capacity building
  - Identifying gaps ( More work needed)



# 2017


- Telemetry work
- Expert volunteers (cave mapping, telemetry, sound meter/understanding how bats use the landscape)
- Received Rainforest Trust Fund
- Cave leads
- More investigations on Taveuni (Tagging?)
- Following up on cave leads
- Mirimiri ( methodologies/ future research and approaches)


Date \_\_\_\_\_


**Fiji Caves Questionnaire**

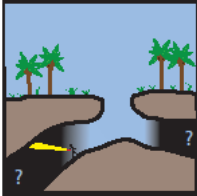
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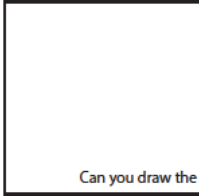
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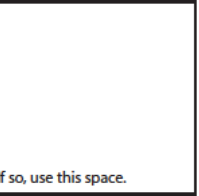












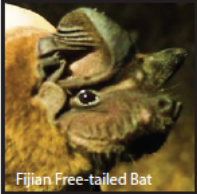
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Can you or someone you know take us to the cave? ☐ Yes ☐ No

Please provide your contact info:

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# The Results

- Advocacy
- Science



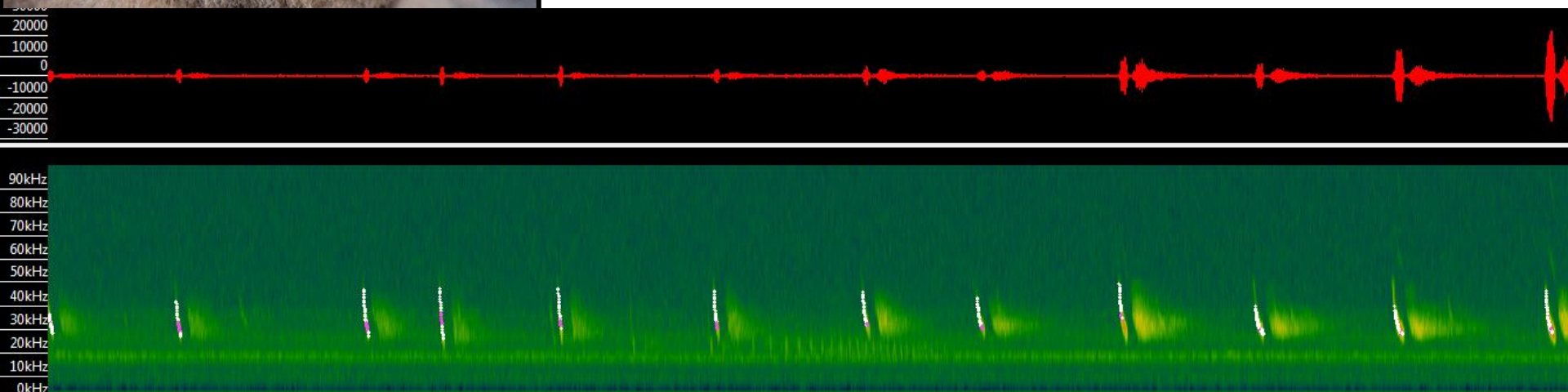
Fijian Free-tailed Bat



Pacific sheath-tailed bat

## Acoustic Analyses

- Confirm diagnostic calls for each species
- Initiate remote monitoring
- Evaluate timing and patterns to inform field surveys for roosts



# TELEMETRY RESULTS JANUARY 2017



- *49 bats had basic morphometric measurements taken on them*
- *25 wing biopsies were collected for genetic studies*
- *20 guano samples were collected for diet studies*
- **New knowledge:**
  - The colony appears to use forest habitats over much of the western half of Vanua Levu, including traveling south over the mountains
  - “large” numbers of reproductive males are in the cave at this time of year strongly suggesting it is a mating roost as well as a maternity roost
  - **First known recording of the echolocation call** for the Fijian free-tailed bat which will greatly facilitate broader use of the bat detectors with greater certainty on species identification
- Insights that we can recover tags in the cave which may allow us to use GPS tags on the bats in the future

# Achievements

- Better knowledge of bat foraging
- Updated database on bat caves (and abandoned bat caves)
- Nakanacagi cave – Sia = local knowledge, hindi speaking. We had been there since 2012, but only found out after Sia and Alivereti came in that the land was freehold – importance of having the right kind of people in the team.
- Securing Rainforest Trust Fund
- Network of experts - consulting on bat conservation actions and next steps

# Lessons Learnt

- The power of collaboration  
(International NGO's, government departments, CO's, Protected areas committee, Bat sanctuary committee, Public)



- Benefits of **not** running projects in isolation  
(BCI, Auckland Zoo, BGCI & RFT)
- Time management and planning



# Vinaka vakalevu

## Questions?



## CRITICALLY ENDANGERED

EXTINCTION IS FOREVER  
ENDANGERED MEANS THERE IS  
STILL TIME

HELP US SAVE THEM

ONLY IN FIJI- Help us save these critically endangered species  
[www.naturefiji.org](http://www.naturefiji.org)