



'The Management of Natural Heritage in the Face of Climate Change

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Culture; Conserving it Together, Lami, Fiji.

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Overview



- ▶ Species Conservation in Fiji
(our approach and experience)
- ▶ The link (vanua)
- ▶ The issue (How its being impacted by extreme weather events)
- ▶ Island endemics – Will we understand them in time?
- ▶ What are we doing about it
- ▶ Conclusion?



Species Conservation in Fiji

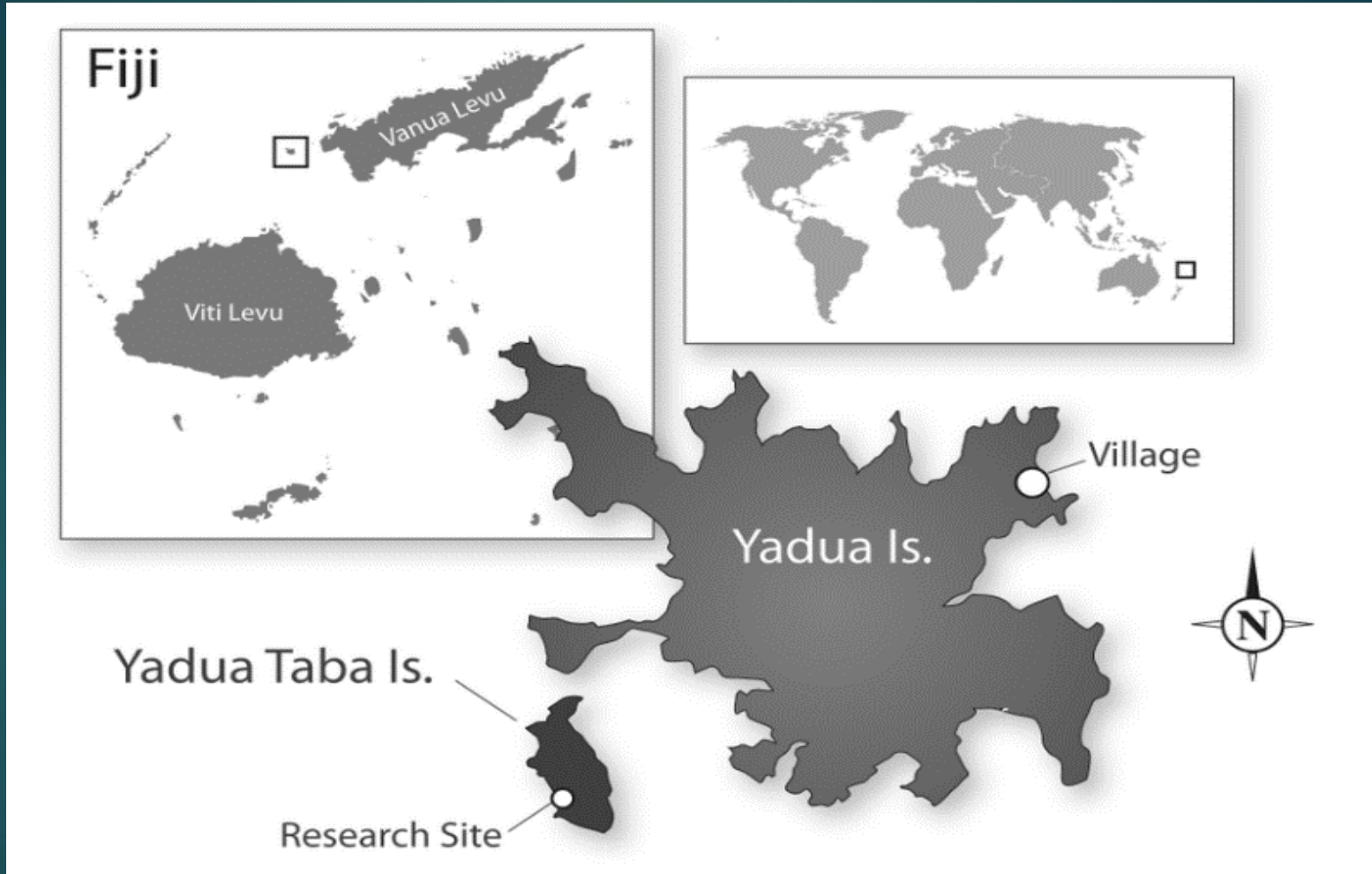
- ▶ You can not manage Nature if you do not manage People
- ▶ Ownership is the key to sustainability
- ▶ Ownership/ Conservation of species in Fiji – Stronger when there is a link to Identity, to the land
- ▶ What makes a Fijian? (Identity - Has a animal, a fish and a tree)
- ▶ We are part of the land, the land is not part of us



Climate impacts on Species/biodiversity

- ▶ Habitat suitability
- ▶ Availability of food/seasons
- ▶ Predator and prey
- ▶ Reproduction
- ▶ Ecological Functions
- ▶ Threats

Yadua & Yadua Taba Crested iguana sanctuary!



(Map © Morrison et al., 2009)

Crested Iguana

Brachylophus vitiensis



- ▶ 2004, 2005 (NTF – Iguana Specialist Group)
- ▶ Priority Site ✓: **Yadua Taba.**
- ▶ AZE site. ✓
- ▶ Site Protected?

National Trust of Fiji Owned - Crested Iguana Sanctuary (Yadua Taba)

- ▶ Other actions?
- ▶ Genetic work – different species on different Islands
- ▶ Island endemics
- ▶ Totem Species (**YADUA & NAKOROKOROYAWA (NAMOSI)**)

▶ Threats

- ▶ Specific, Restricted, Habitat Type?
- ▶ Climate Change? (All eggs in one basket)
- ▶ Naturally small range?

▶ Actions Required.

- ▶ Population confirmation.
- ▶ Basic biology.
- ▶ Likely threats?

Crested Iguana

Mitigation and Adaptation

- ▶ YADUA TABA – Conservation Lease
- ▶ Project – Determining Diet
- ▶ Enabled their captive breeding (Kula bird park)
- ▶ Habitat restoration – since 2011
- ▶ Removal of goats and rats
- ▶ Re-introduction to Monuriki – 32 young iguanas (May – 2015)



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
- ▶ Totem species/delicacy



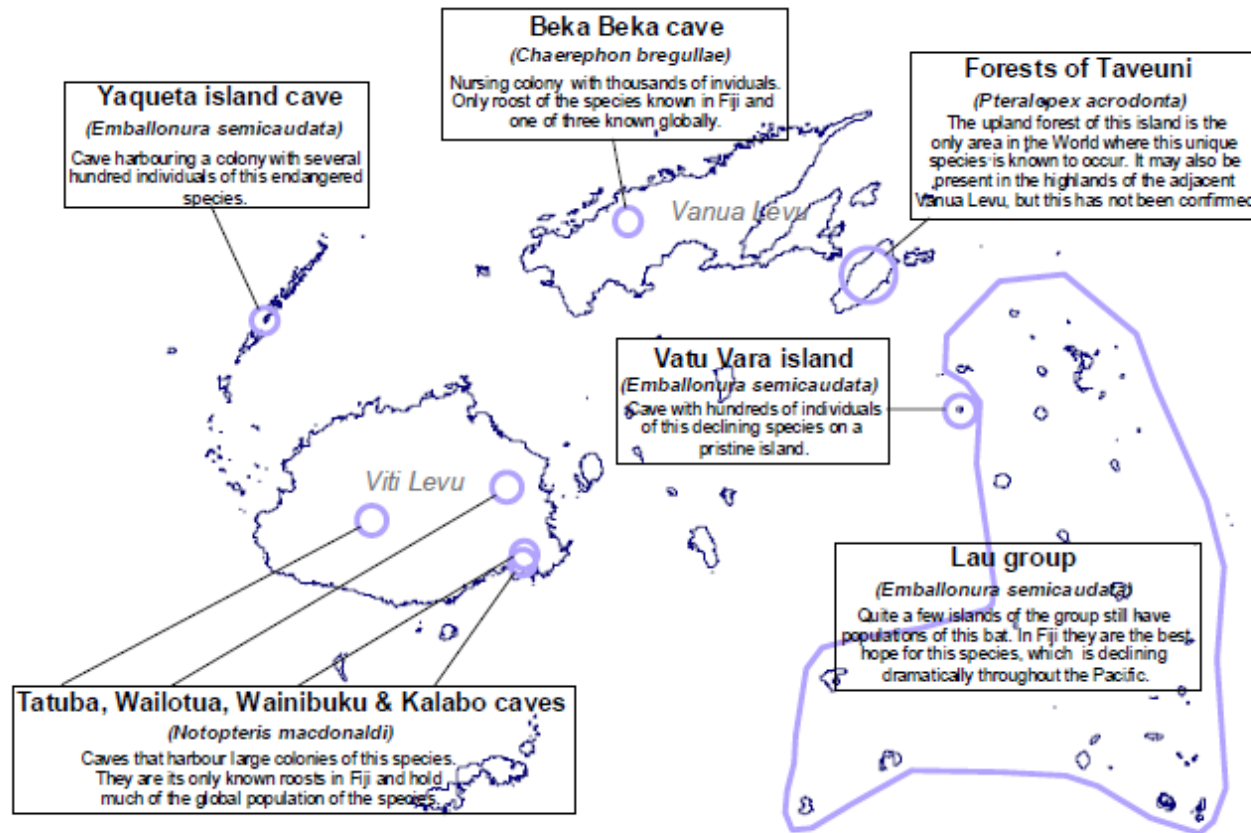
Fijian free tail bat: Mitigation and Adaptation Since 2009

- ▶ Confirmed bat cave – Nakanacagi
- ▶ Confirmed land owners
- ▶ 2014-2015 Cave mapping and roost survey



Palmeirim 2005

Key sites for bat conservation



Nakanacagi Cave

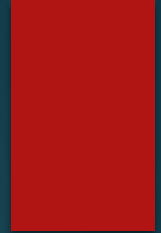
- ▶ 20 HA of land
 - ▶ Minor logging in the past (road running over the cave)
 - ▶ Pockets of native dry forest still remain
 - ▶ Bush fires and alien tree species
- ▶ Nakanacagi village (Yavusa Nauda)
 - ▶ Traditional custodians
 - ▶ Traditional knowledge of history and life cycle
- ▶ Two Free-hold blocks (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

2016



- ▶ Deployment of bat detectors (sound meters)
- ▶ Confirming cave leads
- ▶ Population study – methodology revisited
- ▶ Consultations, Training and Awareness – All stakeholders
- ▶ 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

Conservation Actions: ongoing (Mitigation and Adaptation)

- ▶ 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

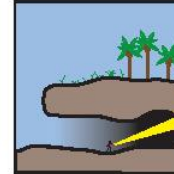
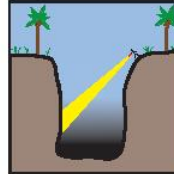

2017

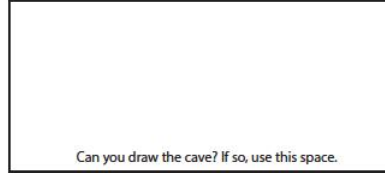
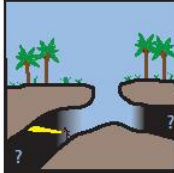
- ▶ Telemetry work
 - Expert volunteers (cave mapping, telemetry, sound meter/understanding how bats use the landscape)
 - Received Rainforest Trust Fund
 - Cave leads
 - More investigations on Taveuni (Tagging?)
 - Following up on cave leads
 - Mirimiri (methodologies/future research and approaches)

Fiji Caves Questionnaire Date _____

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 _____



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 and Lessons Learnt

- ▶ 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
- ▶ Benefits of **not** running projects in isolation (Auckland Zoo & BGCI)



Conclusion

There is still a lot that we don't understand about our many endemic and hence endangered species.

We need to understand these before we can effectively save them – put in place mitigation and adaptation measures to save them

In Fiji the Vanua (land, animals, plants, ecosystems) is part of our identity:
Their loss = is compromising who we are





Acknowledgements

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Vinaka

