



# Fijian Crested Iguana

Brachylophus vitiensis: Species Recovery Plan,  
2008—2012

Edited by Peter S. Harlow



International Union for Conservation of Nature



# Fijian Crested Iguana

*Brachylophus vitiensis*: Species Recovery Plan,  
2008—2012

Edited by Peter S. Harlow



The designation of geographical entities in this book, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this publication do not necessarily reflect those of IUCN.

This publication has been made possible in part by financial support from the Taronga Conservation Society Australia.

**Published by:** IUCN, Gland, Switzerland

**Copyright:** © 2008 International Union for Conservation of Nature and Natural Resources

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.

Reproduction of this publication for resale or other commercial purposes is prohibited without prior written permission of the copyright holder.

**Citation:** Harlow, P. (ed.) (2008). *Fijian Crested Iguana, Brachylophus vitiensis: Species Recovery Plan, 2008–2012*. Gland, Switzerland: IUCN SSC Iguana Specialist Group.

**ISBN:** 978-2-8317-1755-5

**Cover photo:** Fijian Crested Iguana. © Peter S. Harlow

**Layout by:** Peter S. Harlow

**Produced by:** IUCN SSC Iguana Specialist Group; [www.iucn-isg.org](http://www.iucn-isg.org)

**Available electronically:** IUCN (International Union for Conservation of Nature)  
[www.iucn.org/resources/publications](http://www.iucn.org/resources/publications)



**Fijian Crested Iguana *Brachylophus***  
***vitiensis***

**Species Recovery Plan**

**2008 - 2012**

**Fijian Crested Iguana *Brachylophus vitiensis***  
**Species Recovery Plan**  
**2008 - 2012**

Second Revision – Building on progress and objectives developed in a workshop held on 10 - 11 November 2004 at the University of the South Pacific, Suva, Fiji, and hosted by the National Trust of Fiji Islands.

Facilitators:

Peter S. Harlow, Rick Hudson, and Allison Alberts

IUCN encourages meetings, workshops, and other fora for the consideration and analysis of issues related to conservation, and believes that reports of these meetings are most useful when broadly disseminated. The opinions and views expressed by the authors may not necessarily reflect the formal policies of IUCN, its Commissions, its Secretariat, or its members.

# Fijian Crested Iguana *Brachylophus vitiensis*

## Species Recovery Plan

### Contents

<b>Contents</b> .....	<b>2</b>
<b>Foreword</b> .....	<b>3</b>
<b>Executive Summary</b> .....	<b>4</b>
<b>1.0 Species Recovery Plan</b> .....	<b>6</b>
1.1 Current assessment.....	6
1.2 Conservation actions implemented as of 2008 .....	7
1.3 Strengths, weaknesses, opportunities, and threats .....	8
<b>2.0 Overall Goal Statement</b> .....	<b>10</b>
<b>3.0 Conservation and Management Plan for the Fijian Crested Iguana</b> .....	<b>10</b>
3.1 Identify and prioritise islands of highest conservation value.....	10
3.2 Protect current and establish new habitat islands for Crested Iguanas .....	12
3.3 Implement a captive breeding and reintroduction program.....	14
3.4 Collect biological data required for sound conservation management.....	16
3.5 Produce a management plan for Yadua Taba Crested Iguana Sanctuary .....	18
3.6 Institute long-term education and awareness programs.....	18
<b>4.0 Appendices</b> .....	<b>22</b>
<b>4.1 List of National Participants</b> .....	<b>22</b>
<b>4.2 List of International Participants</b> .....	<b>23</b>
<b>4.3 List of Acronyms</b> .....	<b>25</b>
<b>4.4 List of References</b> .....	<b>26</b>

## **Foreword**

The Fijian iguanas hold a unique and enigmatic place in the minds of biologists around the world. Why do these iguanas occur only on islands in the south-west Pacific and how did they get there, considering all other iguanas live in the Americas? Today we know that the genus *Brachylophus* is basal in the phylogeny of the iguanas, but will we ever know if its ancestor arrived via the New World or perhaps from Asia? Biologists were amazed, when in 1981 John Gibbons described a second and larger species of *Brachylophus* from Fiji. Of course the Fijian people had always known about it, but the iguana's description by Gibbons gave the species immediate international recognition and a celebrity-like status.

In the years since Gibbons first recorded the Fijian Crested Iguana on islands in the Yasawa and Mamanuca island chains, many changes have occurred. Increasing agriculture needs, goat grazing and fires, tourist developments, and invasive plants have all drastically reduced the area of native forest available to the iguana. The compounding effects of introduced predators such as cats and exotic rodents have added to the species' decline. Today the Crested Iguana appears safe from extinction only on the tiny island of Yadua Taba where Gibbons first found it.

On 10 - 11 November 2004 seventeen members of the IUCN SSC Iguana Specialist Group and seven international ecologists, botanists, and zoologists met with local experts at the University of the South Pacific in Suva to draft this cooperative species recovery plan for the Fijian Crested Iguana. The threats facing the iguana are remarkably similar to those facing many species of West Indian iguanas, where members of the Iguana Specialist Group have been working for three decades. The combination of their experience in iguana conservation and the knowledge and experience of the Fijian contingent compliment each other in this document.

The goals of this plan are to prioritise the conservation actions necessary to ensure the long-term survival of the species. This plan details the need for accurate distribution and abundance data, basic life history information, a better understanding of the threatening processes, prioritisation and protection of remaining iguana habitat, forest restoration, genetic research, an increase in captive breeding efforts, implementation

of education and awareness programs, and the mobilisation of financial, technical and human resources.

The Iguana Specialist Group members visited the Crested Iguana Sanctuary island of Yadua Taba, and stayed in Denimanu Village on Yadua Island. This gave us an essential insight into the strong cultural attachment of the Fijian people to their land and sea. Our hope is that this Fijian wildlife icon and its unique habitat will continue to survive and flourish into the future.

Rick Hudson, Co-Chair  
IUCN SSC Iguana Specialist Group

## **Executive Summary**

The Critically Endangered Fijian Crested Iguana, *Brachylophus vitiensis*, is unique to Fiji and survives today on only a few islands in western Fiji. The Crested Iguana population on the small island of Yadua Taba is well protected and secure, but the species is rare and appears to be in rapid decline on all other islands within its range.

This document is a detailed five-year plan for conservation action considered essential to reverse the species' population decline and ensure the long-term survival of this Fijian wildlife icon and its natural habitat. It draws from the combined knowledge and expertise of highly qualified experts from several Fijian government departments, the University of the South Pacific, NGO institutions and biologists within Fiji, together with the skills and experience of the International Union for Conservation of Nature's Iguana Specialist Group (IUCN).

To reverse the continuing population decline of the Crested Iguana, intervention will be required on selected islands to halt and hopefully reverse forest degradation. Support from the land owning communities will be essential, and alternative types of land usage to grazing will need to be explored. Raising local and visitor awareness to the plight of Fiji's wildlife and natural habitats is the major future challenge for conservation in Fiji.

We have identified the areas of future research essential for the conservation of these iguanas. Accurate information on distribution and abundance, detailed data on iguana diet, reproduction, population ecology, genetics, and forest restoration are required as well to make future informed conservation decisions. Fiji is well positioned to coordinate this future conservation effort as it already has two well-established institutions with valuable first-hand experience in iguana conservation. The National Trust of Fiji Islands has been managing the Yadua Taba Crested Iguana Sanctuary for almost three decades, while Kula Eco Park in Korotoga has world-class facilities combined with years of experience in the captive breeding of this species. As captive breeding of genetically distinct races of Crested Iguanas has been recommended here, this combination of captive breeding and sanctuary management skills will greatly assist the rapid implementation of many of these recommendations. Funding sources to implement this plan present the biggest future challenge, but the tourism potential of Fiji's native wildlife has yet to be fully realised.

## 1.0 Species Recovery Plan

### 1.1 Current assessment

**1.1.1 Taxonomy.** The Fijian Crested Iguana is classified as *Brachylophus vitiensis* (Gibbons, 1981) and is morphologically and genetically distinct from the other two species of iguana found in the South Pacific, the Lau Banded Iguana *Brachylophus fasciatus* (Brongniart, 1800), and the Fijian Banded Iguana *Brachylophus bulabula* (Keogh *et al.* 2008).

**1.1.2 Status.** The Fijian Crested Iguana is listed as Critically Endangered on the IUCN Red List of Threatened Species, and is the only Fijian reptile listed as endangered in the Fiji Biodiversity and Action Plan (1998). This species is recorded from several islands in the Yasawa Group (Nacula, Matakawa Levu, Deviulau, Naviti, Waya, and Wayasewa), two islands in the Mamanuca group (Monuriki and Monu), one island off northern Viti Levu (Macuata) and Yadua Taba Island. On all of these islands except Yadua Taba it is rare, and all evidence suggests that these populations are low and continuing to decline. Only Yadua Taba has a high and stable population of over 6000 crested iguanas, almost 200 iguanas per hectare in optimal forest habitat.

**1.1.3 Natural History.** Crested Iguanas are arboreal and herbivorous, and eat leaves, buds, flowers, and fruit from a range of forest plants. Important tree species on Yadua Taba are Cevua (*Vavaea amicorum*), Kau Loa (*Diospyros elliptica*), Qiqila (*Micromelum minutum*), Vau (*Hibiscus tiliaceus*), Yagata (*Mallotus tiliifolius*), Moive (*Kingiodendron platycarpum*), Vesiwai (*Pongamia pinnata*), Cibi Cibi (*Cynometra insulari*), and the leaves and fruit of the introduced passionfruit (*Passiflora suberosa*) and the vine Gasau Cebucebu (*Jasminum didymium*). On Yadua Taba iguanas lay a single clutch of 2 to 4 eggs in a carefully excavated burrow on the forest floor in the mid-wet season (February-April) every second year. Hatchlings appear in October-December.

**1.1.4 Conservation Issues.** The Fijian Crested Iguana is not hunted, eaten or traded. Crested Iguana populations are low and continuing to decline on all islands except Yadua Taba because of the continuing degradation of remaining native forests from clearing, burning, goat grazing, and invasive plants, plus predation by exotic predators such as cats and perhaps rats.

## **1.2 Conservation actions implemented as of 2008**

The Crested Iguana is protected by Fijian law under the Endangered and Protected Species Act 2002. Yadua Taba Crested Iguana Sanctuary was proclaimed in 1980, and a 33-year lease with the traditional owners was settled in 2004. A full-time ranger has been overseeing the sanctuary since the mid 1990s. Most goats were removed from Yadua Taba in 1981, but a few remained and the last individual was removed in 2003. Captive breeding colonies of Yadua Taba provenance iguanas are kept at Kula Eco Park in Korotogo (25 iguanas), and in 9 Australian zoos (45 iguanas), however all captive breeding has stopped since 2000 due to the small number of founders in Australia (2 male and 7 female) and because Kula Eco Park has exceeded its holding capacity. Previous awareness and education projects include several endangered species education programs within Fiji and the distribution of posters and children's books (5000 copies: Bach 1999) with the iguana conservation message in both English and the Fijian language.

The current population of Yadua Taba Island is estimated to be in excess of 6000 Crested Iguanas (Harlow & Biciloa 2001), while surveys of 17 islands in the Yasawa and Mamanuca island groups in 2000 and 2003 concluded that "Crested Iguanas are either extremely rare or extinct on all of these islands" (Harlow *et al.* 2007). A population estimated to be > 200 Crested Iguanas was recently discovered on the island of Macuata off the north coast of Viti Levu (Olson & Keppel 2004). An invasive-plant assessment and weed management plan for Yadua Taba is now in its third year of implementation (Taylor *et al.* 2005), a diet and habitat preferences study of Crested Iguanas on Yadua Taba has been completed (Morrison *et al.* 2008) and a reproductive and life history study is nearing completion (S. Morrison pers comm.).

### **1.3 Strengths, weaknesses, opportunities, and threats**

#### **Strengths:**

- Yadua Taba Crested Iguana Sanctuary is a unique and outstanding conservation success story.
- Two Fijian Crested Iguana conservation funds already exist: ICFFCI (International Conservation Fund for the Fijian Crested Iguana) and the Taronga Foundation Crested Iguana Fund.
- National and international interest in the Crested Iguana and its conservation is at an all-time high.
- The National Trust of Fiji Islands has had increased financial support for wildlife conservation projects.
- The Wildlife Conservation Society and other conservation NGOs have recently increased their presence in Fiji.

#### **Weaknesses:**

- Lack of resources (technical, financial, and human) impedes conservation work.
- There is limited public awareness and involvement in conservation issues.
- A severe lack of biological information on iguana distribution, abundance, diet, and reproduction impedes conservation progress.

**Opportunities:**

- Yadua Taba Crested Iguana Sanctuary is ideal for iguana conservation research (diet, reproduction, habitat requirements).
- World-class tertiary education in conservation at the University of the South Pacific (USP) has produced a group of capable and enthusiastic post-graduate students.
- Scientific community interest and research potential in Fiji are at an all-time high.
- Kula Eco Park is a world-class conservation centre with an outstanding record in iguana captive husbandry and breeding.
- Australian zoos have committed financial support and captive management.
- US and European zoos are prepared to commit financial support in exchange for being included in the captive management group.
- Natural history ecotourism is in its infancy in Fiji.
- Large numbers of international volunteers are available for conservation and habitat restoration projects (e.g., Raleigh International, Greenforce).
- Future private sector support potential remains unexplored.

**Threats:**

- Continuing habitat loss and degradation due to: increasing fire frequencies on forested islands; expansion of goat grazing; increasing demand for cleared land (clearing for plantations, gardens, livestock grazing, tourist developments) and the increasing spread of invasive plants.
- The increased spread of introduced predators, especially mongooses, cats, and exotic rats, to predator-free islands. These species are difficult and expensive to remove from medium-sized islands, impossible to remove from large islands.

## **2.0 Overall Goal Statement**

**“To ensure the long-term survival of the Fijian Crested Iguana on multiple islands within the Republic of Fiji.”**

## **3.0 Conservation and Management Plan for the Fijian Crested Iguana**

### **3.1 Identify and prioritise islands of highest conservation value**

#### **Considerations for Prioritisation of Islands:**

1. Existence of Crested Iguana population – current, historical, or potential (existence not proven by fossils or historical record)
2. Suitable dry forest habitat
3. Predators or invasive species on site
4. Distance from other extant populations
5. Presence of introduced herbivores (goats, cattle)
6. Proximity to human habitation
7. Land ownership
8. Government support, stakeholder involvement/support
9. Accessibility

#### **Key Islands Earmarked**

1. Yadua Taba
2. Macuata
3. Monuriki
4. Monu
5. Devuilau
6. Yasawa Islands not surveyed or where iguana populations are in decline (Sawa-i-Lau, Waya, Nacula, Matacawa Levu, and Naviti).

**Island prioritisation for *in situ* conservation:**

- 1) Yadua Taba
- 2) Macuata
- 3) Monu
- 4) Monuriki

<b>ISLAND</b>	<b>BENEFITS</b>	<b>CONCERNS</b>
Yadua Taba	Largest population of Crested Iguanas (> 6000); 70 ha; good habitat; uninhabited; invasive plant problems being addressed; good stakeholder involvement; world famous	Single population vulnerable to catastrophic events (disease, cyclone, fire)
Macuata	Second largest Crested Iguana population (> 200); 40 ha; good habitat; uninhabited; genetically distinct from Yadua Taba, Monuriki and Monu iguanas; good potential for ecotourism and habitat restoration	Land ownership private; exotic rats present ( <i>R. norvegicus</i> ?)
Monuriki	Estimated 20 - 30 iguanas 2003; 40 ha; reasonable patches of remnant vegetation; genetically distinctive from Yadua Taba and Monu populations; cat-free; uninhabited; no records of juvenile iguanas for a decade	Goats present; community relations difficult (opposition to goat removal by land-owning Mataqali)
Monu	Estimated 20 - 30 iguanas 2003; 73 ha; genetically distinctive from Yadua Taba and Monuriki populations; same as above except juvenile iguanas seen in 2003	Same as above (same land-owning Mataqali)
Devuilau	Crested iguanas possibly extirpated (single live one seen in 2000); small area of remnant vegetation/habitat; uninhabited; landowners in contact with National Trust	Cats present; small total area (20 ha)
Yasawa Islands (not surveyed or populations in serious decline)	Genetic distinctiveness; some inhabited islands have large patches of habitat present (e.g., Nacula, Matacawa Levu, Naviti and Waya)	All populations heading for extirpation; need more research/surveys; invasive plants, cats and goats present on most islands

**Island prioritisation for *ex situ* conservation:**

- 1) Monuriki and Monu Islands if no immediate *in situ* improvements (i.e., goat removal and vegetation restoration)
- 2) Macuata (if ownership issues cannot be addressed and dealt with)
- 3) Yasawa island populations, e.g., Devuilau

**Prioritisation of islands for possible reintroduction/translocation:**

- 1) Namenalala Island
- 2) Castaway (Qalito) Island
- 3) Devuilau Island

### **3.2 Protect current and establish new habitat islands for Crested Iguanas**

There is an urgent need to undertake field activities necessary to protect and establish suitable additional habitats for the Crested Iguana.

**3.2.1** Pursue negotiations with landowners of Devuilau Island on the potential of forming a village-run iguana sanctuary for ecotourism.

Action: NTF and DOE

Funding: 10,000 FJD to cover 4-5 trips

**3.2.2** Establish ownership and negotiate with landowners of Macuata Island on the potential of establishing a sanctuary.

Action: NTF, WCS, USP

Funding: Unknown, potential to apply for grants for land purchase (e.g., Nature Conservancy)

**3.2.3** Continue negotiations with landowners of Monu and Monuriki Islands regarding the potential for an ongoing village-based ecotourism program focused on iguanas. Agree to iguanas initially being removed for captive breeding while habitat restoration begins.

Action: NTF and DOE in 2008

Funding: 10,000 FJD to cover 4-5 trips, potential to approach local tour operators and resorts for funding and apply for grants (e.g., Global Environment Fund).

**3.2.4** Continue follow-up weed control on Yadua Taba as recommended in the Five Year Plan of the report (Taylor *et al.* 2005).

Action: NTF, as regular part of the Ranger's duty.

Funding: NTF

Ongoing, with review in 2010

**3.2.5** Conduct botanical survey on Namenalala Island in 2008 to assess the potential suitability for translocation of Crested Iguanas.

Action: University of the South Pacific (USP) Herbarium/Department of Biology/or NTF.

Funding: 6,000 FJD

**3.2.6** Establish a domestic biosecurity program for preventing the continuing spread of invasive species (plant and animal).

Action: Discussion forum with USP, Ministry of Agriculture and Fisheries, Quarantine, and IUCN Invasive Species Specialist Group

Funding: Fiji Government

**3.2.7** Develop long-term research plan.

Action: USP, NTF, DOE, to develop research strategy for:

- Surveys of unsurveyed islands in Yasawas, northwest and north of Vanua Levu.
- Potential of island-specific exotic predator control or removal on islands with suitable iguana habitat (e.g., cats on Devuilau, *Rattus norvegicus* on Macuata).
- Potential for removing or excluding goats and ceasing burning practices on priority islands (especially Monu and Monuriki Islands).

### **3.3 Implement a captive breeding and reintroduction program**

Captive breeding for future reintroduction programs are urgently required for genetically distinct populations, beginning with remnant populations on Monu and Monuriki Islands.

#### **Background**

Genetic investigation of iguanas from Yadua Taba, Monu, Monuriki, and Macuata islands has identified that each of these islands supports genetically distinct populations (Keogh *et al.* 2009). In order to maintain the integrity of these populations, iguana lineages need to be kept separate, and iguanas of unknown provenance should not be used in any captive breeding program. Population estimates for animals on Monu and Monuriki indicate that there is a rapid and continuing population decline (Harlow *et al.* 2007), and that the only solution to avoid imminent extirpation is via captive breeding programs using the few remaining individuals. Although the Yadua Taba population appears secure at the present time, there is also a need to continue assurance colonies via captive breeding programs to protect against loss of genetic diversity in case of a stochastic event.

The majority (perhaps all) of captive Yadua Taba iguanas at Kula Eco Park should be moved, perhaps to other ARAZPA facilities, to alleviate resource constraints and to establish an *ex situ* assurance population for Monu and Monuriki populations. *Ex situ* facilities will also serve to expand educational awareness, facilitate fundraising for *in situ* conservation, and help promote ecotourism.

**3.3.1** Develop and disseminate a policy statement on the need for captive breeding that references IUCN policy, including goals of national and international captive breeding, methods, management control, constraints, and benefits of utilising captive bred progeny.

Action: ISG, NTF, DOE, DOF

Funding: None

**3.3.2** Transfer excess population of Yadua Taba provenance iguanas at Kula Eco Park to other appropriate national and international locations in 2008.

Action: DOE, KEP, ARAZPA and other possible recipients

Funding: None

**3.3.3** Negotiate with Mataqali Vunaivi to obtain Crested Iguana breeding stock from Monu and Monuriki Islands in 2008.

Action: NTF, DOE, USP

Funding: 6,000 FJD

**3.3.4** Expand captive breeding capabilities at Kula Eco Park for Monuriki, Monu, and other ESU populations.

Action: KEP

Funding: 40,000 FJD for construction; 10,000 FJD per year for operating costs; potential to apply for grants through American Association of Zoos and Aquariums Conservation Endowment Fund and International Iguana Foundation.

**3.3.5** Develop *in situ* and *ex situ* conservation initiatives with suitable partners to include potential breeding facilities, sites, forest restoration initiatives and the relocation of ‘problem<sup>1</sup>’ iguanas in accordance with the ESP Act.

Action: KEP, USP, DOE, and NTF

Funding: to be determined

**3.3.6** Develop protocols for pre-release animals, including genetic management, health screening, veterinary assessment and transport to release sites.

Action: ISG, Taronga Zoo, DOE

Funding: None

**3.3.7** Develop protocols for translocation and post-release monitoring.

Action: DOE, NTF, USP, ISG

Funding: None

---

<sup>1</sup> Problem iguanas include surplus iguanas at Kula Eco Park, confiscated pet iguanas etc.

**3.3.8** Develop protocols for ‘problem’ iguanas; to trace their origins, provide temporary shelter and subsequently release them at a pre-designated location.

Action: DOE, NTF, USP

Funding: None

**3.3.9** Request DOE for linkages to Trust Fund under EMA

Action: DOE, NTF

Funding: None

### **3.4 Collect biological data required for sound conservation management**

Information on the Crested Iguana’s biology, distribution, and habitat is urgently required to enable the implementation of sound conservation and management practices.

**3.4.1** Assess what is currently known about each island, including occupation by iguanas, threats, potential for restoration and iguana reintroduction or translocation.

Action: Taronga Zoo, IAS, NTF, WCS

Ongoing; complete for 18 islands (Harlow *et al.* 2007, Olson *et al.* 2002)

**3.4.2** Produce GIS-linked database containing information required to prioritise islands for iguana management and allow identification of gaps.

Action: USP Geography, IAS, Taronga Zoo, Suitable NGO

Funding: None

**3.4.3** Examine historic imagery from 1954 onward to assist in identification of potential iguana translocation islands throughout the historical range.

Action: USP GIS student

Funding: Unknown; includes imagery and photo interpretation time. USGS to investigate what is available

**3.4.4** Evaluate invasive plant species and their role in impacting habitat restoration.

Action: SPRH, Taronga Zoo, Suitable NGO

Complete for Yadua Taba only (Olson *et al.* 2002, Taylor *et al.* 2005)

**3.4.5** Continue and expand basic natural history research, with initial focus on diet, reproduction, and transect methods.

Action: Dr. P. Harlow and one Ph.D. student (S. Morrison) have mostly completed reproduction/demographics study (with ANU and IIF funding). Bulk of transect data is for Yadua Taba; some follow up on other islands for replication and validation needed. Diet Study completed (Dr. Clare Morrison *et al.* 2008); Reproduction Study ongoing (S. Morrison, in prep), Transect Methods report complete (Harlow & Bicilola, 2005).

Funding: 37,000 FJD per year per additional student for field work plus stipend.

**3.4.6** Conduct genetic studies sufficient to determine existing patterns of variation between and within Crested Iguana populations.

Action: NTF, Taronga Zoo, Australian National University. Mostly completed (Keogh *et al.* 2009), but lack of genetic samples has hampered full interpretation of results.

Funding: Per ESU, 3,000 FJD for sample collection, 2,000 FJD for sample testing, and 8,000-10,000 FJD for microsatellite development (specific genetic groups/analysis).

**3.4.7** Establish restoration potential for degraded forest habitat through goat removal or enclosure fencing, and investigate potential for expanding forest areas into previously disturbed areas through replanting or weed control.

Action: USP (student project)

Funding: 37,000 FJD per year for 3 years

**3.4.8** Collect additional information necessary to address identified knowledge gaps.

Action: USP (students as an addition to current research)

Funding: to be determined.

### **3.5 Produce a management plan for Yadua Taba Crested Iguana Sanctuary**

The National Trust of Fiji needs to strengthen and increase funding to implement its long-term management plan for Yadua Taba Crested Iguana Sanctuary, and use this as a model for future Fijian wildlife sanctuaries.

#### **3.5.1** Revise existing management plan by November 2008.

Action: NTF, Taronga Zoo, Environment Consultants Fiji Ltd, and ISG to review.

Funding: To be covered under existing budgets.

#### **3.5.2** Form working group to incorporate the recommendations and funding priorities from this workshop into the revised management plan for Yadua Taba.

Action: NTF in coordination with ISG and above partners

Funding: None

#### **3.5.3** Publish Yadua Taba Management Plan in both the Fijian language (a summary) and English and disseminate revised Management Plan to all organisations, government agencies, and local communities involved with Crested Iguana management and protection.

Action: NTF

Funding: 5,000 FJD

### **3.6 Institute long-term education and awareness programs**

There is an urgent need for education, awareness, and sustainable ecotourism programs to highlight the conservation of Fijian Crested Iguanas in the wild; this will require support from local communities, international communities, and visitors.

**3.6.1** Implement education and awareness programs for local schools.

- Kula Eco Park to have two educational animals available for outreach programs, with an initial focus on schools near existing iguana populations.

Action: KEP and appropriate NGO

Funding: 2000 FJD per year

- Produce coloring books, worksheets and posters, and incorporate into Fijian school curriculum.

Action: DOE, NTF, MOE and USP

Funding: 5,000 FJD initial investment

**3.6.2** Implement education and awareness programs for villages.

- Hold local educational village hall meetings targeting areas close to existing iguana populations.

Action: KEP, Mamanuca Environment Society, NTF, USP, appropriate NGOs

Funding: Transportation costs for educator

- Identify and train additional trainers from local villages

Action: KEP to train local people

Funding: Transportation costs for local people to attend training

**3.6.3** Implement education and awareness programs for hotels and tour operators, including production of brochures and information for tourists.

Action: Appropriate NGO

Funding: 1,000 FJD per island for printing costs

- Implement training program for activities staff and tour guides of hotels located near iguana-inhabited islands.

Action: KEP, appropriate NGOs, NTF

Funding: Incorporate into existing programs

- Produce signage and graphics for use on islands with existing iguana populations.

Action: NTF, with permission from landowners

Funding: 1,000 FJD per sign

**3.6.4** Implement education and awareness programs at the national level.

- Produce a series of films on Fijian native wildlife and habitats, with a focus on iguanas and National Trust activities (potential to expand for international audiences).  
Action: KEP / Fiji TV One  
Funding: 20,000 FJD per episode; potential to enlist a corporate sponsor
- Increase awareness of legislation and educate government officials and other stakeholders regarding illegal removal of iguanas through newspapers, radio, TV, posters, signage at airports, ports, and hotels, with a focus on islands with iguana populations.  
Action: DOE, NTF, appropriate NGOs, KEP  
Funding: 7,500 FJD
- Propose a motion declaring the Crested Iguana as a national symbol in order to help instill national pride.  
Action: NTF, DOE  
Funding: None

**3.6.5** Implement education and awareness programs at the international level.

- Include website links from the International Conservation Fund for the Fijian Crested Iguana (ICFFCI) to the ISG ([www.iucn-isg.org](http://www.iucn-isg.org)), the International Iguana Foundation ([www.iguanafoundation.org](http://www.iguanafoundation.org)), WCS ([www.wcs.org](http://www.wcs.org)), [www.fiji.com](http://www.fiji.com), [www.fvb.com](http://www.fvb.com), and [www.Fijivillage.com](http://www.Fijivillage.com)  
Action: ICFFCI and NTF  
Funding: None
- Produce a documentary film highlighting the Crested Iguana  
Action: BBC, National Geographic, Discovery Channel  
Funding: None, assuming project would be sold to networks; potential for donations

**3.6.6** Institute additional iguana conservation fee for every tourist visitor to iguana-inhabited islands.

Action: Local landowners, NTF, DOE, local tour operators

Funding: None, potential to generate one to several FJDs per visitor

**3.6.7** Institute mechanism to obtain a national level conservation fee from every tourist. (refer to EMA).

Action: DOE, NTF, MOT, Request DOE for linkages to Trust Fund under  
EMA

Funding: None

**3.6.8** Enhance ecotourism potential by creating naturalistic captive facilities for iguanas on tourist accessible islands and training a National Trust ranger/resort employee to care for the animals. Need to address the requirement for captive iguanas to be licensed and clarify the ESP Act and how it would apply to hotels/resorts. License applications would need to be assessed on a case-by-case basis, e.g., conservation education vs. tourist attraction.

Action: Local landowners, local NGOs, NTF, local tour operators, KEP, DOE. Guidelines on management methods required for these initiatives.

Funding: 2,000-10,000 FJD per enclosure, possibly generated by conservation fee

**3.6.9** Create specific tours for iguana viewing by tourists.

Action: NTF; local NGOs to work with landowners and other tour operators to create tour

Funding: None

**3.6.10** Explore potential to modify existing tours into a “Reef and Leaf” experience.

Action: South Sea Cruises, Sea Spray, Tokoriki, Matamanoa, Beachcomber Cruises, Local NGOs, NTF

Funding: None

## 4.0 Appendices

### 4.1 List of National Participants

Name	Organisation	E-mail
Bill Aalbersberg	Director, Institute of Applied Sciences, USP	aalbersberg@usp.ac.fj
Pita Biciloa	Yadua Taba Senior Ranger, National Trust of Fiji Islands	nationaltrust@connect.com.fj
Ramesh Chand	Director, Kula Eco Park, Korotogo	Kulapark@connect.com.fj
Indra Devi	Volunteer Accounts Clerk, National Trust of Fiji Islands	idevi@nationaltrust.org.fj
Elizabeth Erasito	Director, National Trust of Fiji Islands	eerasito@nationaltrust.org.fj
Linda Farley	Wildlife Conservation Society, South Pacific	lfarley@wcs.org
Philip Felstead	Director, Kula Eco Park, Korotogo	pfelstead@yahoo.com
Gunnar Keppel	Botanist, Department of Biology, USP	keppel_g@usp.ac.fj
Craig Morley	Conservation Biologist, Department of Biology, USP	morley_c@usp.ac.fj
Clare Morrison	Herpetologist, Institute of Applied Sciences, USP	morrison_c@usp.ac.fj
Alifereti Naikatini	Botanist, South Pacific Regional Herbarium, USP	naikatini_a@usp.ac.fj
Jone Niukula	Biological Reserves Coordinator, National Trust of Fiji Islands	nationaltrust@connect.com.fj
David Olson	Wildlife Conservation Society, South Pacific	dolson@wcs.org
Rob Perry Jones	CITES, WWF Fiji	robpjones@wwfpacific.org.fj
Luke Qiritabu	Department of Environment, Fiji	lqiritabu@govnet.gov.fj
Avisaki Ravuvu	Glomis Officer, National Trust of	aravuvu@nationaltrust.org.fj

	Fiji Islands	
Isaac Rounds	Conservation Officer, National Trust of the Fiji Islands	irounds@nationaltrust.org.fj
Sereima Savu	Cultural Heritage Officer, National Trust of Fiji Islands	nationaltrust@connect.com.fj
Manasa Sovaki	Department of Environment, Fiji	biodiversity@suva.is.com.fj
Apisai Tinakoro	National Trust of Fiji Islands	nationaltrust@connect.com.fj
Marika Tuiwawa	Curator, South Pacific Regional Herbarium, USP	Marika.Tuiwawa@usp.ac.fj
Teri Tuxson	Mamanuca Environment Society	diwalker@connect.com.fj
Di Walker	Project Manager, Mamanuca Environment Society	diwalker@connect.com.fj
Dick Watling	Consultant Biologist, Fiji	watling@connect.com.fj
Praveen Wignarajah	Marine Ecologist, Greenforce / National Trust of Fiji Islands	wignarajah@hotmail.com

#### 4.2 List of International Participants

Name	Organisation	E-mail
Allison Alberts	Conservation and Research for Endangered Species (CRES), Zoological Society of San Diego, USA	aalberts@sandiegozoo.org
Silvia Alvarez	Biologist, Costa Rica	
Joe Burgess	International Iguana Society, USA	CaribAnolis@aol.com
Steve Conners	Miami Metro Zoo, USA	Sconner@miamidade.gov
Robert Fisher	U.S. Geological Survey, San Diego, USA	rfisher@usgs.gov
Glenn Gerber	Conservation and Research for Endangered Species (CRES), Zoological Society of San Diego, USA	ggerber@sandiegozoo.org
Karen Graham	Sedgwick County Zoo, Wichita, USA	kgraham@scz.org

Tandora Grant	Conservation and Research for Endangered Species (CRES), Zoological Society of San Diego, USA	tandora@sandiegozoo.org
Peter Harlow	Herpetofauna Division, Taronga Zoo, Sydney, Australia	pharlow@zoo.nsw.gov.au
Stacie Hathaway	U.S. Geological Survey, San Diego, USA	sahathaway@usgs.gov
Sara Hicks	Taronga Zoo, Sydney, Australia	svhicksey@hotmail.com
Rick Hudson	Fort Worth Zoo, USA	RHudson@fortworthzoo.org
Scott Keogh	Australian National University, Canberra, Australia	Scott.Keogh@anu.edu.au
John Kinkaid	Department of Herpetology, Zoological Society of San Diego, USA	jkinkaid@sandiegozoo.org
Wendy Kinsella	Taronga Zoo, Sydney, Australia	wkinsella@zoo.nsw.gov.au
Chuck Knapp	Conservation and Research for Endangered Species (CRES), Zoological Society of San Diego, USA	cknapp@ufl.edu
John Kunna	Jamaican Iguana Recovery Project, Jamaica	kunnani@yahoo.com
Jeff Lemm	Conservation and Research for Endangered Species (CRES), Zoological Society of San Diego, USA	jlemm@sandiegozoo.org
Bonnie Raphael	Wildlife Conservation Society, New York, USA	braphael@wcs.org
Ivan Rehak	Praque Zoo, Czech Republic	ophis@tiscali.cz
Katarina Rehakova	Praque Zoo, Czech Republic	ophis@tiscali.cz
Victor Reynoso	Instituto de Biologia, Ciudad Universitaria Mexico, Mexico	vreynoso@ibunam.ibiologia.unam.mx

Jennifer Taylor	NSW National Parks and Wildlife Service, Sydney, Australia	Jennifer.Taylor@environment.nsw.gov.au
Rick Van Veen	Jamaican Iguana Recovery Project, Jamaica	rick_vanveen@hotmail.com
Joe Wasilewski	International Iguana Society, USA	jawnatsel@bellsouth.net

### **4.3 List of Acronyms**

ARAZPA	Australasian Regional Association of Zoological Parks and Aquaria
DOE	Dept. of Environment (Fiji)
DOF	Dept. of Forestry
EMA	Environment Management Act
ESP	Endangered and Protected Species Act 2002
ESU	Evolutionarily Significant Unit
FJD	Fijian dollars
IAS	Institute of Applied Science (University of the South Pacific)
ICFFCI	International Conservation Fund for the Fijian Crested Iguana
IIF	International Iguana Fund (USA NGO)
ISG	IUCN SSC Iguana Specialist Group
IUCN	International Union for Conservation of Nature
KEP	Kula Eco Park
NGO	Non-Government Organisation
NTF	National Trust of Fiji Islands
MOT	Ministry of Tourism (Fiji)
SSC	Species Survival Commission
USGS	United States Geological Survey
USP	University of the South Pacific (Suva, Fiji)
WCS	Wildlife Conservation Society

#### 4.4 List of References

- Bach, C. (1995) Vuki and the Vokai. Also published in Fijian as 'Vuki Kei Na Vokai', Zoological Parks Board of NSW & National Trust for Fiji. 16pp.
- Gibbons, J.R.H. (1981) The biogeography of *Brachylophus* (Iguanidae) including the description of a new species, *B. vitiensis*, from Fiji. **Journal of Herpetology** 15(3): 255-273.
- Harlow P.S. & Biciloa P.N. (2001) Abundance of the Fijian crested iguana (*Brachylophus vitiensis*) on two islands. **Biological Conservation** 98: 223-231.
- Harlow P.S. & Biciloa P.N. (2005) Survey technique and data analyses for estimating Fijian iguana abundance. Unpublished report. 8 pp.
- Harlow P.S., Fisher M., Tuiwawa M., Biciloa P.N., Palmeirim J.M., Mersai C., Naidu S., Naikatini A., Thaman B., Niukula J. & Strand E. (2007) The decline of the endemic Fijian crested iguana *Brachylophus vitiensis* in the Yasawa and Mamanuca archipelagos, western Fiji. **Oryx** 41: 44-50.
- Keogh, J.S., Edwards D.L., Fisher R.N. & Harlow P.S. (2008) Molecular and morphological analysis of the critically endangered Fijian iguanas reveals cryptic diversity and a complex biogeographic history. **Philosophical Transactions of the Royal Society, Series B** 363(1508): 3413-3426.
- Morrison, C., Osborne T., Harlow P.S., Thomas N., Biciloa P. & Niukula J. (2008) Diet and habitat preferences of the Fijian Crested Iguana (*Brachylophus vitiensis*) on Yadua Taba, Fiji: implications for conservation. **Australian Journal of Zoology** 55: 341-350.
- Morrison, C., Keppel G., Thomas N., Rounds I. & Harlow P.S. (2009) Critically endangered Fijian crested iguana shows habitat preference for globally threatened tropical dry forest. **Pacific Science** 63(2): 223-242.
- Morrison S., Harlow P.S. & Keogh J.S. (2009) Nesting ecology of the critically endangered Fijian Crested Iguana *Brachylophus vitiensis* in a Pacific tropical dry forest. **Pacific Conservation Biology** 15: 135-147.

- Olson, D.M., Tuiwawa M.V., Niukula J., Biciloa P., Keppel G., Naikatini A., Thaman B. & Vakausausa L. (2002) Conservation of Fijian Dry Forest and Fijian Crested Iguanas on Yadua Taba Island. Unpublished report. 53 pp.
- Olson, D.M. & Keppel G. (2004) Results of a Rapid Survey for the Presence of Fiji's Crested Iguana *Brachylophus vitiensis* on Macuata Island, Vunitogoloa, Ra Province, Viti Levu, Republic of Fiji Islands. Unpublished report.
- Taylor, J.E., Harlow P.S & Niukula J. (2005) Invasive-Plant Assessment and Weed Management Plan for the Fijian Crested Iguana Sanctuary Island of Yadua Taba, Bua. Unpublished report. 60 pp.



INTERNATIONAL UNION  
FOR CONSERVATION OF NATURE

WORLD HEADQUARTERS  
Rue Mauverney 28  
1196 Gland, Switzerland  
Tel +41 22 999 0000  
Fax +41 22 999 0002  
[www.iucn.org](http://www.iucn.org)

