

Building community support to search for the **RED-THROATED LORIKEET IN FIJI**



J.G. Kuhlmann del.

M & N. Harhart imp.

TRICHOGLOSSUS AUREOCINCTUS

BIODIVERSITY
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LESSONS LEARNED
TECHNICAL SERIES

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Building community support to search for the Red-throated Lorikeet in Fiji

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The Critical Ecosystem Partnership Fund is a joint initiative of l'Agence Française de Développement, Conservation International, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation.

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ABOUT THE BIODIVERSITY CONSERVATION LESSONS LEARNED TECHNICAL SERIES

This document is part of a technical report series on conservation projects funded by the Critical Ecosystem Partnership Fund (CEPF) and the Conservation International Pacific Islands Program (CI-Pacific). The main purpose of this series is to disseminate project findings and successes to a broader audience of conservation professionals in the Pacific, along with interested members of the public and students. The reports are being prepared on an ad-hoc basis as projects are completed and written up.

In most cases the reports are composed of two parts, the first part is a detailed technical report on the project which gives details on the methodology used, the results and any recommendations. The second part is a brief project completion report written for the donor and focused on conservation impacts and lessons learned.

The CEPF fund in the Polynesia-Micronesia region was launched in September 2008 and will be active until 2013. It is being managed as a partnership between CI Pacific and CEPF. The purpose of the fund is to engage and build the capacity of non-governmental organizations to achieve terrestrial biodiversity conservation. The total grant envelope is approximately US\$6 million, and focuses on three main elements: the prevention, control and eradication of invasive species in key biodiversity areas (KBAs); strengthening the conservation status and management of a prioritized set of 60 KBAs and building the awareness and participation of local leaders and community members in the implementation of threatened species recovery plans.

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The Polynesia-Micronesia Biodiversity Hotspot is one of the most threatened of Earth's 34 biodiversity hotspots, with only 21 percent of the region's original vegetation remaining in pristine condition. The Hotspot faces a large number of severe threats including invasive species, alteration or destruction of native habitat and over exploitation of natural resources. The limited land area exacerbates these threats and to date there have been more recorded bird extinctions in this Hotspot than any other. In the future climate change is likely to become a major threat especially for low lying islands and atolls which could disappear completely.

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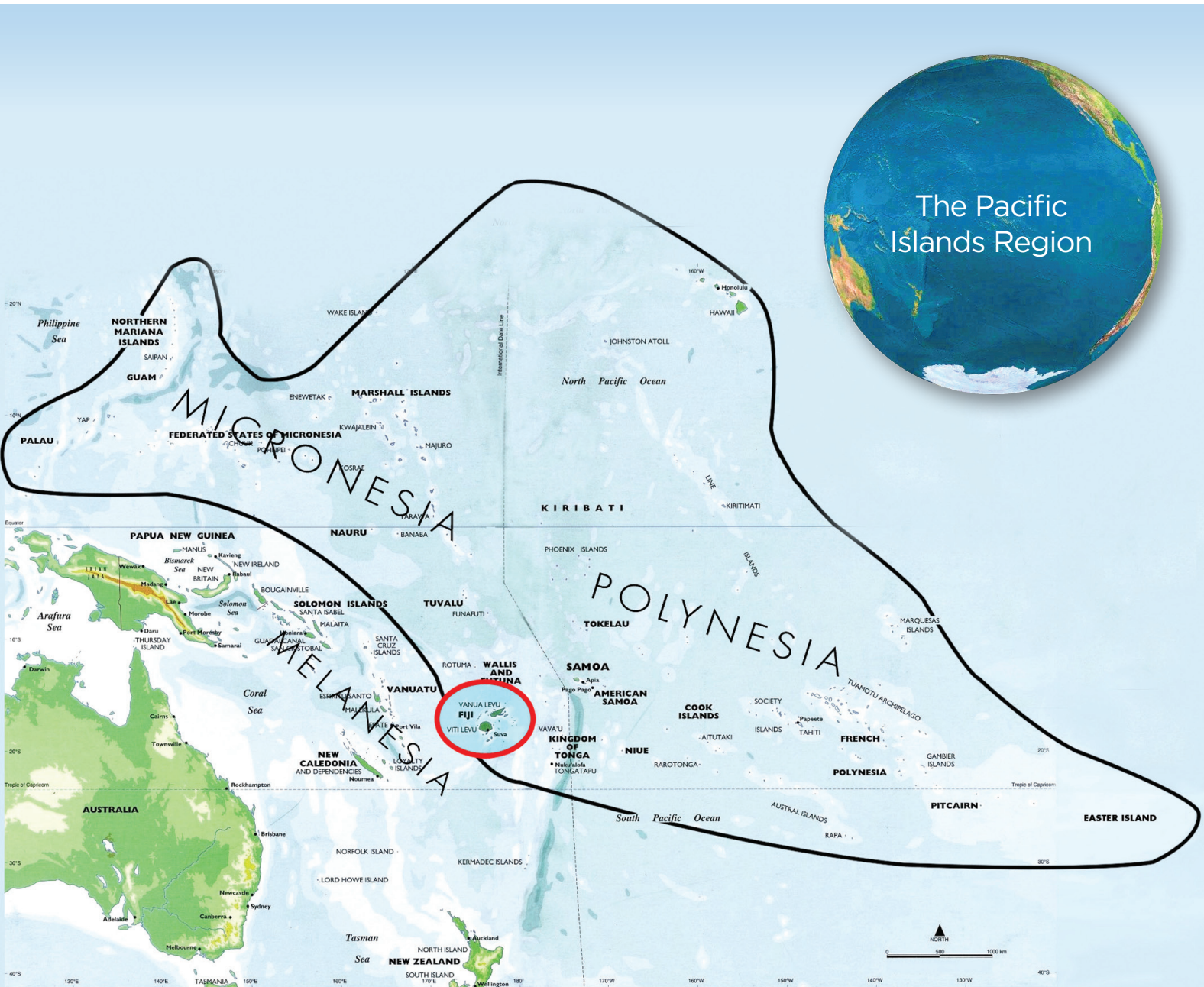
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Location of the project in the Polynesia-Micronesia Biodiversity Hotspot





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Charmosyna amabilis by St. George Jackson Mivart (1827–1900), 1896, R. H. Porter (London).
Source: <http://biodiversitylibrary.org/page/39965142>

BUILDING COMMUNITY SUPPORT TO SEARCH FOR THE RED-THROATED LORIKEET IN FIJI

Lessons Learned

The primary objective of the project – to provide up to date information on the Red-throated Lorikeet was realized, although in the end the bulk of the work was undertaken by highly experienced bird observers rather than trained community members.

In retrospect, it was probably unrealistic to believe that with the resources the project could offer, one could train community youth to a level where they could independently undertake surveys for species such as the Red-throated Lorikeet which is both extremely rare (perceived situation at the beginning of the project) as well as being extremely difficult to detect (retiring, crepuscular nature of the bird).

Project Design Process

Aspects of the project design that contributed to its success/shortcomings

Centering the project on the Tomaniivi Nature Club Site Support Group enabled the small grant resources to be applied immediately to activities with known individuals/communities. This dispensed with the necessary preliminaries of entry into and getting to know a new community(s) and their environment. Despite this we underestimated the logistical requirements (time and cost) of getting community members into the right location to undertake meaningful surveys for the Red-throated Lorikeet.

On the other-hand the project was flexible enough to switch the survey component to surveys being done by highly experienced bird observers, such that they were professionally implemented.

Project Implementation

Aspects of the project execution that contributed to its success/shortcomings

The project was flexible enough to switch the survey component to surveys originally planned for community members, being done by highly experienced bird observers, such that they were professionally implemented. This was especially important in that the initial surveys with the community members did not reveal any Red-throated Lorikeets indicating that a broader survey effort was required.

Overall the number and location of surveys combined with the experience of the observers provided a high level of confidence in the 'negative' result.

Other lessons learned

relevant to the conservation community

Although an attractive idea to both the community and the umbrella organisation, expecting untrained community members to become trained to make useful scientific observations of an extremely rare and difficult to detect bird, was probably unrealistic. This might be considered specific to the situation at Tomaniivi, the nature of the bird and the resources available from a small grant, but it also likely to be true in many similar situations when the competence of communities to be trained to undertake scientific observations is overestimated.



Acknowledgements

NatureFiji-MareqetiViti is grateful for funding from the Critical Ecosystem Partnership Fund which catalysed all the components of this project. Dr Kerry Herman volunteered her very considerable expertise to NatureFiji-MareqetiViti which provided a foundation on which the project was able to build. NatureFiji-MareqetiViti is also very grateful to Vilikesa Masibalavu for the series of surveys he undertook and to Mark O'Brien and Dick Watling for the surveys which they undertook.

Rochelle Steven added greatly to the project with her survey of community ecotourism potential and we are grateful to her and Dr Clare Morrison for this important contribution.

The project would not have been possible without the support of the Nadala community and, in particular, members of the Tomaniivi Nature Club. Kerry Herman would like to thank Litia Taubere, Taivesi Saukuru and Meli Naiqama for their help in the field and in the organisation of her accommodation and general stay in Nadala and the Monasavu, in general; and, to Elizabeth Kalidredre for her hospitality and warmth.

KULAWAI

Red-throated Lorikeet *Charmosyna amabilis*

SPECIES RECOVERY PLAN

2013-2017



Abbreviations & Acronyms

ECF	Environment Consultants Fiji Ltd.
IAS	Institute of Applied Sciences (University of the South Pacific)
IUCN	International Union for the Conservation of Nature
GoF	Government of Fiji
NFMV	NatureFiji-MareqetiViti
NGO	Non Government Organisation

Context

Taxonomy

Family	Psittacidae
Scientific Name	<i>Charmosyna amabilis</i> (E.P. Ramsey, 1875)
English Name	Red-throated Lorikeet
Local Name	Kulawai

Intraspecific Taxa

None described. Original description appeared in Sydney Morning Herald 28 July 1875, this antedates *Vini (Charmosyna) aureicincta* (E.L. Layard, 1875) which is sometimes used for this species (Peters 1937; Amadon 1942 and others); refer Mayr (1945), Watling (1982).

Conservation Status

IUCN Red Data List: Critically Endangered: C2a(i,ii);D

(<http://www.iucnredlist.org/details/106001381/0> using ver 3.1)

The Kulawai was last assessed by BirdLife International (2012) before the completion of the current project. Under this assessment the Kulawai qualifies as Critically Endangered because the lack of recent records, despite considerable survey effort, suggests it has:

C2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals;

C2a(i,ii). The remaining population is likely to comprise no subpopulation estimated to contain more than 50 mature individuals, and at least 90% of mature individuals in one subpopulation;

D. Population size estimated to number fewer than 50 mature individuals.

Past Range and Abundance

Kulawai specimens have been collected from Viti Levu, Ovalau and Taveuni in the past. No specimens have been collected from Vanua Levu, but that may be because the island has been very poorly collected (unconfirmed observations have been recorded from Vanua Levu). It has always been regarded as a rare species although there are 46 specimens in 11 museums around the world, and 12 specimens were collected during a one-month visit by the US Whitney South Seas Expedition in May 1925 (Attachment 1).

Recent Range and Abundance

Overview

Since 1965, there have been no confirmed records of the Kulawai (specimens, photographs or observations by those familiar with the species) on Taveuni or Ovalau. The last specimen collected on Taveuni was in 1912, and on Ovalau in the 1870s. There is a specimen from Viti Levu taken at Nadarivatu in 1977 (Fiji Museum – Attachment 1), and photographs taken from Monosavu in the mid 1970s (see cover page).

Records of observations reported to Dick Watling¹ for the Kulawai since 1965 are collated in Attachment 2 and summarised in Table 1. There have been 25 records of which 15 are considered confirmed, the last being in 1993. Some of the unconfirmed records are accompanied by detailed field notes and are likely to be good observations.

¹ Records are maintained from experienced birders and ornithologists only. Observations are treated as unconfirmed if made without supporting photographs by: 1) an individual with no or little experience of Fijian birds; and/or, 2) in an area in which they have not previously been recorded.

Table 1: Reported Sightings of the Kulawai (Confirmed (C), Unconfirmed (UC) and Total (T) since 1965.

Period	Viti Levu			Taveuni			Ovalau			Vanua Levu			Combined		
	C	UC	T	C	UC	T	C	UC	T	C	UC	T	C	UC	T
1965–75	8	3	11		1	1							8	4	12
1976–85	4		4										4		4
1986–95	3		3					1	1		1	1	3	2	5
1996–05		2	2		1	1								3	3
2006–		1	1		1	1								1	1
Total	15	6	21		3	3		1	1		1	1	15	10	25

Since 2000 when the IUCN Red Data Listing Threat level was raised from Vulnerable to Endangered because a lack of observations indicated a decline in the Kulawai population, there have been four specific searches for the Kulawai by experienced ornithologists. All of these have been unsuccessful.

K.Swynnerton and A.Maljkovic 2001–2002

Between November 2001 and April 2002, Swynnerton and Maljkovic conducted 79 days or part-days of searches involving 373 man-hours of timed observations in likely Kulawai habitat on Viti Levu and Taveuni (Swynnerton & Maljkovic 2002). No Kulawai were observed during the three months of field observations. Trapping for rats was also undertaken and the number of black rats trapped in montane native forest was similar to numbers known in forests on other tropical islands where rats threaten endemic bird populations. Evidence collected of mongoose and feral cats suggested that they have penetrated into the forest interior, and may be a contributing factor to bird population declines.

V.Masibalavu and G.Dutson 2002–2005

Masibalavu and Dutson undertook 498 hours of further targeted surveys in forest areas on all four islands where the Kulawai has been recorded (Masibalavu & Dutson 2006). These searches also failed to find any Kulawai, after which the species's threat status was re-classified to Critically Endangered in 2006.

V.Masibalavu and C.Mucklow 2008

Masibalavu & Mucklow (2008) report on 91 hours over 10 days of dedicated survey work between 14 January and 25 January, 2008, in the Nadarivatu area surrounding Mt Tomaniivi and the Monasavu area. No Kulawai were observed.

NatureFiji-MareqetiViti Kulawai Project 2010–2012

NatureFiji-MareqetiViti (NFMV) received a small grant funding from the Critical Ecosystem Partnership Fund which enabled dedicated searching for the Kulawai and an attempt to train community members of NFMV's Tomaniivi Nature Club to be able to search for the bird independently.

During the 18 month project period (Nov 2010 – June 2012) over 810 hours of searching was undertaken mainly in the upland Nadarivatu-Nadrau-Monosavu area of central Viti Levu, but also a significant survey was undertaken in the Wainavadu catchment – one of the least disturbed catchments in Viti Levu. The Kulawai was not observed.

Table 2: Component Surveys of the NFMV Kulawai Project (2010–2012)

Observer	Dates	Location	Duration	Reference
Dr Kerryn Herman	Feb-Mar 2011	Nadarivatu-Monosavu, Viti Levu	558 hours (including training of youth)	Herman (2011)
Vilikesa Masibalavu	9-13 Nov 2010	Nadala, Viti Levu	24 hours (including training of youth)	Masibalavu (2012)
Vilikesa Masibalavu	21-24 Nov 2010	Naqaranibuluti and Nadarivatu Nature Reserve, Viti Levu	24 hrs	Masibalavu (2012)
Vilikesa Masibalavu	11-13 Jun 2010	Monosavu Dam catchment, Viti Levu	23.5 hrs	Masibalavu (2012)
Vilikesa Masibalavu	14-16 July 2011	Nadarivatu, Monosavu, Viti Levu	17 hrs	Masibalavu (2012)
Vilikesa Masibalavu	7-10 Sept 2011	Namosi, Naitasiri (Waidina Rd.), Viti Levu	31.5 hrs	Masibalavu (2012)
Vilikesa Masibalavu	20-23 Sept 2011	Monosavu, Nadrau, Viti Levu	27 hrs	Masibalavu (2012)
Dick Watling	April 6th – May 6th 2011	Wainavadu-Waisoi catchments, Namosi, Viti Levu	72 hrs	Watling (2011)
Dick Watling	June-Oct 2011	Nadarivatu, Nadala, Nadrau, Monosavu, Viti Levu	23 hrs	DW Notes
Rochelle Steven	May 2012	Nadala-Vatumoli, Viti Levu	12 hrs (including training of youth)	Steven (2012)
Mark O'Brien	Oct 2010-Sept 2012	Des Voeux Peak area, Taveuni	7.5 hrs	O'Brien (in litt)
Mark O'Brien	Oct 2010-Sept 2012	Namosi Road area, Viti Levu	18.5 hrs	O'Brien (in litt)
Total			2,122 hrs	

Other Notable Forest Surveys by Ornithologists with Extensive Experience in Fiji

In the last decade there have been several significant 'BioRap' type or EIA baseline forest surveys by experienced Fijian and visiting ornithologists (with considerable experience in Fiji) are relevant to the search for the Kulawai. These include:

- 2002. Waivaka R. catchment, Namosi – ornithologists Dick Watling, Guy Dutton – 54 hrs of forest survey. No sightings of Kulawai. (Environment Consultants Fiji 2003);
- 2003-4. Two baseline surveys undertaken in the Sovi Basin for the PABITRA project. ornithologists – several led by Vilikesa Masibalavu. c.40 hrs of standardised surveys and many more hours of incidental observations. No sightings of Kulawai. (Morrison 2003, 2004);
- 2006 – 23-26th May – ornithologists Dick Watling, Alifereti Naikatini camping at the headwaters of the Wainibau-Wainimakutu River below the Vunitoroilau ridge, Namosi, (Environment Consultants Fiji 2006);
- 2008. Nakauvadra Range, Ba – ornithologists Dick Watling, Alifereti Naikatini, Senivilati Vido – Conservation International BioRap. >100 hrs of standardised and unstandardised surveys + observation posts in forest and forest edge. No sightings of Kulawai (Environment Consultants Fiji 2008);
- 2009. Joske's Thumb-Waimanu, Rewa – ornithologist Dick Watling – 15 hrs of standardised survey in forest and forest edge; 15 hours non-standardised observations. No sightings of Kulawai. (NatureFiji-MareqetiViti 2009);
- 2010. Nakorotubu – a RAP survey – ornithologists Vilikesa Masibalavu, Alifereti Naikatini. 38 hrs of forest, forest edge and open surveys. No sightings of Kulawai. (Morrison et al. 2011)
- 2012 Emalu – Navosa – ornithologists – Alifereti Naikatini, Senivilati Vido – 5 days in the field (25 hrs searching presumed) (IAS in prep).

Summary of Recent Kulawai Searches

In the decade November 2001 – June 2012 a variety of experienced/highly experienced ornithologists undertook 2096 hrs of either focused searches for the Kulawai, or general forest bird surveys, without success. This represents 354 days of 6 hrs searching/observation. The Kulawai, like all of the *Chamosyna* are unobtrusive and very easily overlooked, even experienced field observers will likely miss the Kulawai on occasions unless they are specifically looking for them. The forest survey time is nonetheless sufficient to conclude that the Kulawai is extremely rare, and consideration be given to a status of extirpated from Viti Levu.

That the Kulawai has become rarer since the 1970s is indubitable and the absence of recent confirmed observations in the uplands of Viti Levu leads to serious consideration having to be given to it being extirpated on Viti Levu. It should be noted that the late 1970s and 80's saw major changes and developments in the Nadarivatu-Monosavu area with the construction of the Monosavu dam, the Nadarivatu-Wainimala-Serea 'cross Viti Levu' road being constructed, roads being constructed to nearly all the inland villages; major logging in the area by the Emperor Gold Mine; and, Nadala/Nadarivatu Forest Reserves being converted to pine/mahogany plantations and species/ provenance trial sites. At the same time there has been considerable movement out of villages by villagers to set up settlements or farmhouses along the roads.

It is clear that since 1965 about 93% of search time for the Kulawai has been on Viti Levu; almost no time on Ovalau (one unconfirmed sighting); very little time on Vanua Levu (one unconfirmed sighting) and only two Kulawai-targeted and two general surveys on Taveuni (a total of about 156 hours of survey time). During this period there have been three unconfirmed sightings over the years from visiting birders). At the same time, and in contrast to upland Viti Levu, there has been almost no change to the forests of Taveuni over the last 50 years and where there has been change it has been edge encroachment with the exception of the telecommunication development on Des Voeux Peak and access road. The vast majority of the forest on Taveuni remains untouched. There has been insufficient survey work on Taveuni, Vanua Levu and Ovalau to reach any conclusion on the Kulawai's status on these islands.

Charmosyna Lorikeets

The genus *Charmosyna* comprises 14 species distributed from Buru Island (Indonesia) in the west through Irian Jaya, Papua New Guinea, Bismark Archipelago, Solomon Islands, Vanuatu, Santa Cruz islands and New Caledonia. The Kulawai in Fiji represents the eastern-most range of this genus. Four species are in the IUCN Red List (2012) as Vulnerable, Endangered or Critically Endangered. The New Caledonian lorikeet *C.diadema* is known only from two specimens collected in 1859 and an observation in 1913 (Forshaw 1989) and recent attempts to locate it have failed (Dutson 2011). The blue-fronted lorikeet *C. toxopei* is only definitively known from seven specimens collected in the 1920s. Recent attempts to locate it failed and recent sightings are considered uncertain (BirdLife International 2012). Reasons for the decline and rarity of *Charmosyna* lorikeets are cited variously as small populations and restricted range, habitat destruction and degradation, avian malaria, cyclones and invasive species (Stattersfield & Capper 2000).

Ecology of the Kulawai

There is little information on most species of *Charmosyna*, they are notoriously difficult to find (Beehler et. al 1986) and characteristically inhabit mountainous regions with high rainfall (Juniper 1998). The information available about the Kulawai is fragmentary and basically speculative.

Although generally regarded as being an inhabitant of mature forest, most observations of the Kulawai have been at the forest edge or in secondary or degraded forest areas. This may reflect that they may be easier to observe in such situations. Several *Charmosyna* lorikeets are regarded as being highly nomadic and others resident in the highland forests and making nomadic visits to the lowlands even between islands i.e. the Palm Lorikeet *C.palmarum* of N.Vanuatu and the Santa Cruz islands (Dutson 2011). In 1923, ornithologist Casey A. Wood describes Kulawai visiting Suva “*Hypocharmosyna aureicincta*, the pretty little Gold-collared Lorikeet, said by Layard to be found only on Ovalau, Viti Levu and Taveuni, is still seen occasionally on the two last-named islands, but is now probably extinct on the first. During my residence in Suva, a small flock for several days visited the garden of Sir Maynard Hedstrom and then disappeared. In Taveuni they are rarely seen away from the high mountains interior. The five skins in the Tring Museum were collected by T.H. Kleinschmidt in the interior of Viti Levu about 1872. I am afraid this charming little species is vanishing from Fiji” (Wood & Wetmore 1926).

It may well be that although the recent confirmed observations of the Kulawai indicate that it is not restricted to mature forest at all, it is the presence of such forests in the near vicinity which may act as refuges from which they visit forest edge and adjacent areas.

All the recent confirmed observations of the Kulawai have been in the highland forests of Viti Levu and it has been assumed that the Kulawai is now restricted to such high altitude localities. This would be similar to some of the other *Chamosyna* and it has been suggested that rats and other invasive predators may not be so numerous at higher altitudes. Such an 'altitudinal' restriction (if it exists) on Viti Levu and Vanua Levu may be artificial, reflecting the absence of 'good' forest, except at higher elevations. Certainly it has been found at lower elevations previously – all the Ovalau records are at 'low elevation'.

With one or two exceptions, confirmed observations of the Kulawai have been made at three flowering trees – *Vuga Metrosideros collina*, *Drala Erythrina variegata* and *Drala(wai) E.fusca*. The first of these, *Vuga*, is abundant in the upland forest areas of Fiji as well as moist ridges in the lowlands – its flowering season is not well known. It appears to have an extended flowering season with irregular periods of concentrated flowering. *Drala* is a common secondary forest and agriculture-associated tree which has a highly synchronised flowering season in August and a week or two either side. *Dralawai* is very local but occurring in some large stands and flowers less synchronously than *Drala* – probably July to October.

Observations of the Kulawai have always been in the canopy, often of tall trees where it is usually extremely unobtrusive and difficult to detect except when actually feeding on the flowers. It is most often first detected while flying (Watling *pers. obs.*).

Threats

As noted previously the area where the Kulawai is best known from and where a decline is obvious, the Nadarivatu-Monosavu area, is also an area where there has been significant increase in development, infrastructure and human presence since 1965. Each of these factors which may have had a direct impact. Nonetheless there is still much forest in the area which is contiguous with the remaining areas of undisturbed forest on Viti Levu. Rather than a direct impact, an indirect impact through an increase in invasive black rats *Rattus rattus* may well be a more immediate reason for the decline. Swynnerton & Maljkovic (2003) showed that black rats are present in the montane native forest there in similar numbers known in forests on other tropical islands where rats threaten endemic bird populations. It is well known that the small lorries and lorikeets of the Pacific are extremely vulnerable to predation by rats (eg McCormack & Künzle (1996), Ziembecki & Raust (2004), Seitre & Seitre (1992) but see Watling (1995) and it is quite possible that black rats are the immediate cause of the decline in Kulawai in the Nadarivatu-Monasavu area, with black rats increasing in the area in conjunction with infrastructure development and more widespread presence of village gardens and farms. This is all just guesswork, however.

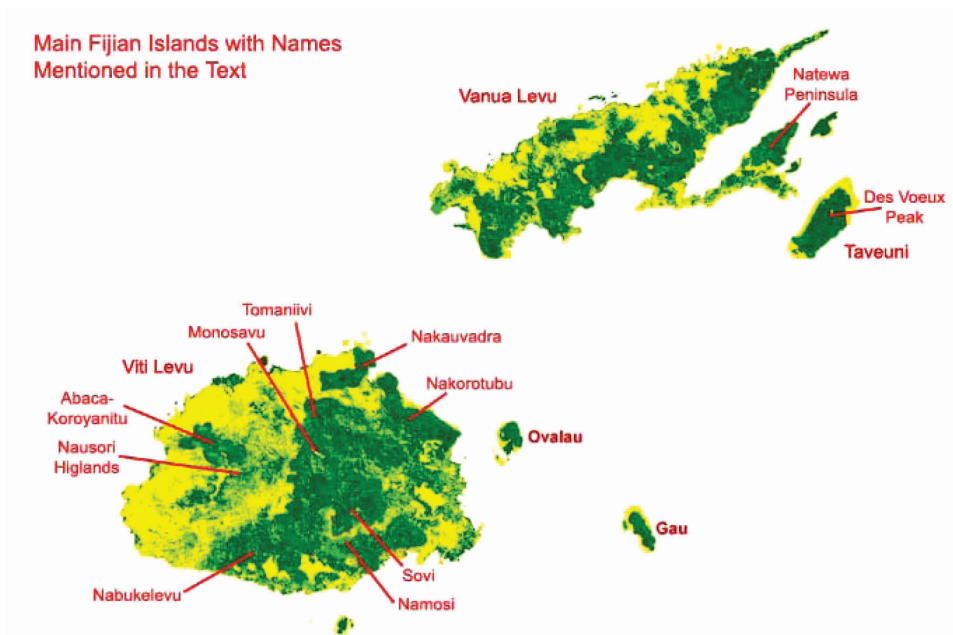


Figure 1: Location Map. Islands and localities mentioned in the report (forest cover in green)



Plate: 1: Filamentous flowers of Vuga – *Metrosideros collina* apparently much favoured by the Kulawai (Photo – Dick Watling-NFMV)



Plate: 2: Characteristic flowering Vuga – *Metrosideros collina* tree – a common species in highland forest all over Fiji and down to low elevations on forested ridges (Photo – Vilikesa Masibalavu).



Plate: 3: Drala – *Erythrina variegata orientalis*. Common tree of the forest edge, fallow and farmland visited by Kulawai (photo by Richard Parker smallislander on Flickr <http://www.flickr.com/photos/28722516@N02/2768789889/>)



Plate: 4: Dralawai tree – local tree of wet sites *Erythrina fusca*. Photo by palmbob <http://davesgarden.com/guides/pf/showimage/38378/>



Plate: 5: Dralawai flower *Erythrina fusca*. Photo by palmbob. <http://davesgarden.com/guides/pf/showimage/38377/>

Recovery Plan

Is Knowledge About the Kulawai adequate for Objectives and Actions to be Defined Accurately?

Very little is known about the Kulawai and it is clearly insufficient to enable detailed objectives to be drawn up other than to confirm its continued existence and then acquire more basic information.

Recovery Objectives for the Kulawai, Red-throated Lorikeet

The following are the immediate objectives for the Kulawai recovery plan, they are focused primarily on determining more basic information about the bat on which conservation management measures could be drawn up:

- Phase Confirm the continued existence of the Kulawai (Phase 1);
- If Phase 1 successful then Phase 2:
- Undertake captive husbandry of the Kulawai in Fiji; and
- Attain a good understanding of the ecology and behaviour of the Kulawai; and,
- Ensure good public and corporate awareness throughout Fiji of this iconic bird.

RECOVERY ACTIONS

CONFIRM THE KULAWAI'S CONTINUED EXISTENCE

The priority location for searching for the Kulawai should now shift from the uplands of Viti Levu to Taveuni:

Priority Action:

Targeted surveys in all forest areas on Taveuni for at least a full annual cycle.

Additional Actions:

Continued surveys in the forests of Viti Levu, Vanua Levu and Ovalau

UNDERTAKE CAPTIVE HUSBANDRY OF THE KULAWAI IN FIJI

Captive husbandry of the Kulawai needs to be developed – at the moment this is only possible at the Kula Eco Park which is already well established in the captive breeding of Critically Endangered iguanas. It has some experience in breeding nectivorous lorries as the Collared Lory *Phigys solitarius* breeds at the facility.

Priority Actions:

Locate a highly experienced international lorikeet breeding facility to work with the Kula Eco Park²;

2 Several species of *Chamosyna* are kept and bred in captivity and so there is avicultural knowledge for this genus. It is a matter of locating it and arranging an appropriate association with Kula Eco-Park.

Be prepared to initiate the captive breeding programme as soon as a population is located with potential for capture of several individuals;

ATTAIN A GOOD UNDERSTANDING OF THE ECOLOGY AND BEHAVIOUR OF THE KULAWAI

Assess ways to investigate breeding behaviour and ecological requirements of the Kulawai, in order to better address factors driving the current declines.

Priority Action:

Experienced ornithologists to undertake ecological and behavioural studies of the Kulawai when a population has been located.

Additional Action:

Reach a better understanding of the flowering cycle of the Vuga *Metrosideros collina*.

ENSURE GOOD PUBLIC AND CORPORATE AWARENESS ABOUT THE KULAWAI

The support of Fiji's wider community for forest habitat conservation and conservation of the Kulawai is essential to its long term survival. This will not be provided unless there is a good level of awareness at all levels of Fiji's wider community about the significance of this iconic bird and its apparent imminent or recent demise. A good start has already been made through the use of the name Kulawai for the National Ladies Volleyball team, and this branding should be continued and promoted further.

Priority Actions:

Prepare materials on the Kulawai in the vernacular;

Undertake awareness campaigns in schools, communities and the corporate sector.



Figure 2: Kulawai – Logo of the Ladies National Volleyball Team

Organisations Responsible for Conservation

Government lead: Department of Environment, National Trust of Fiji;

Local Conservation Organisations: NatureFiji-MareqetiViti, Institute of Applied Sciences, University of the South Pacific;

International Organisation: BirdLife International, Conservation International

Other organisations involved: Traditional landowners, Kula Eco-park and experienced Lory/Lorikeet breeding facility (to be identified).

Staff and Financial Resources Required

PHASE 1 FUND RAISING

Fundraising is to be the responsibility of the lead non-government organisations working in Fiji – NatureFiji-MareqetiViti (NFMV); Institute of Applied Sciences (University of the South Pacific); BirdLife International (BLI – Preventing Extinctions Programme) and Conservation International (CI), together with the National Trust of Fiji.

PHASE 1 PERSONNEL

Local Base and Coordination

NatureFiji-MareqetiViti, the National Trust of Fiji or the Institute of Applied Sciences (University of the South Pacific) are the potential local bases for the survey and its personnel, and will need to coordinate the programme at the national, provincial and local levels.

The most important position is the Lead Surveyor who needs to be a highly motivated and very experienced field ornithologist who has the temperament to work in the field for long periods and be able to cope with frustrations commonplace in forest field work in Fiji – especially bad weather, customary protocols etc.

The Local Counterpart needs to be a field biologist preferably one with experience in bird survey work. The Counterpart needs to be able to deal with all issues relating to customary protocols and in addition to gaining experience with the Lead Surveyor has the responsibility of working with local guides and assistants and identifying talented and motivated individuals who have the potential to become independent Kulawai surveyors.

PHASE 1 FINANCIAL RESOURCES

Table 3 provides the budget for Phase 1 of the Kulawai Recovery Programme

PHASE 2 PERSONNEL AND FINANCIAL RESOURCES

The resources required for Phase 2 are dependent on the outcome of Phase 1 and will be drawn up after a review of Phase 1.

Table 3: Kulawai Recovery Programme – Phase 1 Financial Resources

18 month Survey Programme				Exchange Rate: 0.565	
Category/Budget Item	Cost Calculation	Unit Cost	Number	Total Cost	
Personnel	US\$	(US\$)		US\$	F\$
Project Director: Dick Watling	1.5 months @\$5,000/m	5000	1.5	\$ 7,500.00	\$ 13,274.34
Salary: Lead Surveyor – Experienced field ornithologist	\$2,500 per month – 18 months	2500	18	\$ 45,000.00	\$ 79,646.02

Salary: Counterpart/Local ornithologist/ trainer of community members	\$1,000 per month – 18 months	1000	18	\$ 18,000.00	\$ 31,858.41
Local Guides	400 man days @ \$15/day	15	400	\$ 6,000.00	\$ 10,619.47
Travel					
Vehicle	12,000 km @ US\$0.9/km	0.9	12000	\$ 10,800.00	\$ 19,115.04
Inter-island transport: Ferry	10 return ferry trips for vehicle;	200	10	\$ 2,000.00	\$ 3,539.82
Inter-island transport: Plane	10 return plane trips for lead surveyor/ counterpart	150	10	\$ 1,500.00	\$ 2,654.87
Lodging and meals					
Field Base Rent Taveuni	12 months @ \$300/month	300	12	\$ 3,600.00	\$ 6,371.68
Villages	200 man/nights @ \$20	200	20	\$ 4,000.00	\$ 7,079.65
Supplies					
Field Equipment (Field Camping Eqpt – normal 4 man team (Surveyor/ counterpart/2 local guides)	Lump Sum	10000	1	\$ 10,000.00	\$ 17,699.12
Field Equipment (Binoculars, Scopes, Recorders, Playback etc.)	Lump Sum	5000	1	\$ 5,000.00	\$ 8,849.56
Field team supplies	\$1000/month (food; camping eqpt., field clothing, fuel, batteries etc.)	1000	12	\$ 12,000.00	\$ 21,238.94
Awareness/Community Outreach					
Community Meetings, Sevusevu etc.	2 village meetings /field month @ \$30/meeting – LS or Counterpart	30	12	\$ 360.00	\$ 637.17
Production/printing of material; media	Lump Sum	5000	1	\$ 5,000.00	\$ 8,849.56
Subtotals				\$ 130,760.00	\$231,433.63
Indirect costs	0.1			\$ 13,076.00	\$ 23,143.36
Contingency	Field Evacuation and other			\$ 6,164.00	\$ 10,909.73
	Grand Total			\$150,000.00	\$265,486.73

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Attachment 1

Red-throated lorikeet Specimens in Museum Collections.

(from Swinnerton & Maljkovic 2002)

Museums are: Macleay (Sydney), Liverpool (UK), British Museum of Natural History (Tring, UK), Australian Museum (Sydney), Philadelphia Academy of Sciences (USA), Natural History Museum Vienna (Austria), American Museum of Natural History (Washington), Delaware Museum of Natural History (USA), Fiji Museum (Suva Fiji), Victoria Museum (Melbourne).

Collection	Collection No.	Collector	Date collected	Locality	Sex	Comments
n/a	n/a	C. Pearce	17 June 1875	Ovalau	Male	TYPE, description only (Ramsay 1875)
n/a	n/a	C. Pearce	17 June 1875	Ovalau	Female	TYPE, description only (Ramsay 1875)
n/a	n/a	C. Pearce	15 June 1875	Ovalau	Unknown	TYPE for aureicinctus, description only (Layard 1875)
Macleay	B.1797	C. Pearce	Unknown	Ovalau	Male	Paralectotype (Fisher & Longmore 1995)
Macleay	B.1798	C. Pearce	Unknown	Ovalau	Male	Lectotype (Fisher & Longmore 1995)
Macleay	B.1799	C. Pearce	Unknown	Ovalau	Female	Paralectotype (Fisher & Longmore 1995)
Macleay	B.1799a	C. Pearce	Unknown	Ovalau	Female	Paralectotype (Fisher & Longmore 1995)
Liverpool	T.2774	C. Pearce	15 June 1875	Ovalau	Unknown	TYPE, Syntype aureicinctus (Fisher & Longmore 1995)
Liverpool	T.2773	E.L. Layard	August 1875	Taveuni	Unknown	
BM-Tring	89.1.20.106	E.L. Layard	1 Aug 1875	N'Gila, Taveuni	Male	Food: flowers. Beak: orange, legs: orange, iris: buff
BM-Tring	89.1.20.107	E.L. Layard	2 Aug 1875	N'Gila, Taveuni	Female	Food: flowers. Beak: orange, legs: orange, iris: buff
BM-Tring	89.1.20.108	E.L. Layard	22 July 1875	N'Gila, Taveuni	Female	Food: flowers. Beak: coral, legs: coral, iris: pale scarlet
BM-Tring	89.1.20.146	E.L. Layard	22 July 1875	Taveuni	Male	Food: flowers. Beak: coral, legs: coral, iris: pale scarlet
BM-Tring	89.1.20.178	E.L. Layard	2 Aug 1875	N'Gila, Taveuni	Male	Food: flowers. Beak: orange, legs: orange, iris: buff
BM-Tring	98.12.2.167	E.L. Layard	18 Aug 1875	N'Gila, Taveuni	Juvenile	Food: flowers. Beak: orange, legs: orange, iris: buff
BM-Tring	98.12.2.168	E.L. Layard	1 Aug 1875	N'Gila, Taveuni	Male	Food: flowers. Beak: orange, legs: orange, iris: buff
BM-Tring	98.12.2.169	E.L. Layard	2 Aug 1875	N'Gila, Taveuni	Female	Food: flowers. Beak: orange, legs: orange, iris: buff
BM-Tring	1912.6.14.8	A.R. Tarte	24 Jan 1912	Taveuni	Female	(Juvenile)."Lived in confinement for 4 months"
Australian	A2646	J.A. Boyde	Sept 18781	Fiji	Female	
Australian	30595	Grant	19021	Fiji	Unknown	
Australian	A836	W.J. Abbott2	Nov 18771	Levuka, Ovalau	Female	"kulawai"
Australian	Unknown	W.J. Abbott	Unknown	Levuka, Ovalau	Unknown	No details, on loan to J. Forshaw
Philadelphia	50571	E.L. Layard3	1877	Unknown	Male	Obtained from Australian Museum
Vienna	49.948	Th. Kleinschmidt	mid Dec 1875	Taveuni	Male	Obtained from Museum Godeffroy (No. 12809) in 1877
AMNH	618263	Th. Kleinschmidt4	Unknown	Viti Levu	Male	Native name: Thula Wai
AMNH	618264	Th. Kleinschmidt	Unknown	Viti Levu	Unknown	Native name: Thula Wai
AMNH	618265	Th. Kleinschmidt	Unknown	Viti Levu	Male	Native name: Thula Wai

Collection	Collection No.	Collector	Date collected	Locality	Sex	Comments
AMNH	618266	Th. Kleinschmidt	Unknown	Viti Levu	Male	Native name: Thula Wai
AMNH	618267	Th. Kleinschmidt	Unknown	Viti Levu	Male	Native name: Thula Wai
AMNH	618268	Th. Kleinschmidt	Unknown	Viti Levu	Unknown	
AMNH	618269	Th. Kleinschmidt	Unknown	Viti Levu	Unknown	
AMNH	221440	R.H. Beck	5 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: swelling
AMNH	249464	R.H. Beck	5 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: swelling
AMNH	249465	R.H. Beck	5 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: swelling
AMNH	249466	R.H. Beck	6 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: swelling
AMNH	249468	R.H. Beck	7 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: small
AMNH	249469	R.H. Beck	8 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: small
AMNH	249470	R.H. Beck	8 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: small
AMNH	249471	R.H. Beck	13 May 1925	Viti Levu	Female	Iris/legs/bill: yellow. Sex organs: swelling
AMNH	249472	R.H. Beck	13 May 1925	Viti Levu	Female	Iris/legs/bill: yellow
Ex-AMNH	249473	R.H. Beck	13 May 1925	Viti Levu	Male	Given to Dr. Streseman in Berlin, 1927
DMNH [AMNH]	39670 [249463]6	R.H. Beck	1 May 1925	Viti Levu	Female	Iris: orange, bill & feet: yellow, sexual organs swelling
DMNH [AMNH]	39671 [249467]6	R.H. Beck	6 May 1925	Viti Levu	Male	Iris, bill & feet: yellow, sexual organs small
Fiji, Suva	Unknown	F. Clunie	17 Sep 1977	Nadarivatu, Viti Levu	Female	Caught in a mist net
Victoria	57589	Unknown	Unknown	Unknown	Unknown	Mounted. No details, on loan to J. Forshaw
Victoria	57590	Unknown	Unknown	Unknown	Unknown	Mounted. No details, on loan to J. Forshaw

Notes:

¹ Date registered with the museum.

² Also on museum's records as donated by Abbott: one specimen exchanged to Walter Chamberlain (see note ³) and two missing from the collection.

³ Specimen obtained from the Walter Chamberlain collection in exchange with the Australian Museum, and is probably the same specimen as detailed in note 2.

⁴ Kleinschmidt collected for the Godeffroy Museum, Hamburg, between 1850 and 1880 (Watling 1982). Wood & Wetmore (1926) state 'five skins in the Tring Museum were collected by T. Kleinschmidt in the interior of Viti Levu about 1872' (but not currently at Tring).

⁵ Date not recorded but assumed same as specimen before and after.

⁶ Acquired from AMNH, [] = AMNH old collection number.

Attachment 2

Red-throated Lorikeet Sightings since 1965

COMPILED BY DICK WATLING

Observer	Date seen	Location		Altitude	Comments	Status	Reference
		Island	Locality	(m) ¹			
Watling	1965 – 1973	Viti Levu	Nadarivatu/ Nadrau	> 800	Two observations at Lomalagi and one near Navai. No more than three birds ² .	Confirmed	DW obs.
Clunie	1972	Viti Levu	Joske's Thumb	433	In fresh peregrine prey remains, feathers & contents of pellets. Not confirmed by fossil bone material from the eyrie.	Confirmed	Clunie (1972). Worthy (1999).
Gorman	Nov 1970 – May 1973	Viti Levu	Nabukulevu	120-180	78 hours observation at 150m–610m. Seen infrequently, rare.	Confirmed	Gorman (1975a)
Gorman	Nov 1970 – May 1973	Viti Levu	Nadarivatu plateau: Navai to Nadrau	760-910	25 hours observation. Seen infrequently, rare.	Confirmed	Gorman (1975a)
Gorman	Nov 1970 – May 1973	Viti Levu	Mt. Tomaniivi	610-910	26 hours observation.	Confirmed	Gorman (1975a)
Blackburn	Aug / Sept 1970	Viti Levu	Nausori Highlands	< 550	Two birds by P. Crombie. Not on Taveuni.	Unconfirmed ³	Blackburn (1971)
Holyoak	28 June – 6 July 1973	Viti Levu	Waisa, Vunidawa	200-250	Not uncommon on a forested ridge, seen twice and heard repeatedly	Unconfirmed ³	Holyoak (1979)
Holyoak	28 June – 6 July 1973	Viti Levu	Naitaradamu	800	Several seen.	Unconfirmed ³	Holyoak (1979)
Holyoak	12 – 21 July 1973	Taveuni	Not stated	510-1000	Widespread in the rainforest, seen or heard on 5 days. Two feeding in canopy of a tall tree at 700m, with collared lory and wattled honeyeater (unconfirmed) ³ .	Unconfirmed ³	Holyoak (1979)
Watling	Aug 1975	Viti Levu	Nadrau plateau	> 700	Small flock (4 or 5) seen feeding in a white flowered tree on path from Nadrau to Monasavu dam site along Nanuku Creek.	Confirmed	DW obs.
Beckon	1975 – 1978	Viti Levu	Monasavu	700-800	Photographs and video footage.	Confirmed	
Clunie	6 – 21 Oct 1979	Viti Levu	Nadrau plateau	730-820	Well known to everyone at Nadrau, saw 1 group of 3 and lone individual feeding in vuga, alongside kula. Said to be seen when vuga flowers, in small groups with kula in same tree.	Confirmed	Clunie (1979)
Watling	28 Sept 1981	Viti Levu	Road to Nadrau	c. 800	Three seen feeding in a white flowered tree, filamentous flower. Also present, collared lory, wattled honeyeater, orange-breasted honeyeater.	Confirmed	DW obs.
Watling	13 May 1985	Viti Levu	Mt. Tomaniivi	c. 800	Pair seen flying overhead at base of mountain.	Confirmed	DW obs.
Watling	22 Oct 1986	Viti Levu	Mt. Tomaniivi	> 800	Two or three seen briefly, flying and then visiting a vuga tree.	Confirmed	DW obs.

Watling	24 July 1991	Viti Levu	Mt. Tomaniivi (base)	c. 800	Pair in vuga with collared lory and wattled honeyeaters, for c. 15 minutes coming and going around the tree. At one point chased off a wattled honeyeater.	Confirmed	DW obs.
Kretzschmar	Jan 1993	Vanua Levu	Natewa Peninsula, Navonu Forest Station	<100	Two in flight in secondary forest (unconfirmed) ⁴ . After Cyclone Kina.	Unconfirmed ⁴	In litt. to DW
Kretzschmar	c. 1993	Ovalau	Near airport	< 50	In flight.	Unconfirmed ⁴	In litt. to DW
Watling	12 Aug 1993	Viti Levu	Road to Nadrau	c. 800	Three seen on a flowering drala. Distant view for c. 10 minutes, feeding on flowers with collared lory.	Confirmed	DW obs.
Allport	Sept 1998	Viti Levu	Nausori Highlands	< 550	A single and a group of four or five. Observation was in dry conditions in the middle of an El Nino.	Unconfirmed ³	In litt. to DW
Pohlman	26 June 1999	Taveuni	Road to Des Voeux Peak	c.900	Single adult perched high in the canopy	Unconfirmed ³	In litt. to DW
Hayman	10 June 2002	Viti Levu	Mt. Tomaniivi	800-1000	Two or three, visiting a red-flowered tree.	Unconfirmed ³	In litt. to DW and BLI
Skevington & Mathiesen	29 January 2006	Taveuni	Road to Des Voeux Peak	900	16°50'20" S, 179°58'12" W. Possibly this species heard.	Unconfirmed ³	In litt. to DW (trip report)
Kretzschmar	2008	Viti Levu	Near Nadrau settlement	c. 800	Single bird seen feeding on Vuga. Additional 2 hrs at site without success and two intensive days of searching Vuga in Nadarivatu-Monasavu area – c.300 trees without success	Unconfirmed ⁴	In litt. to DW

NOTES:

1 Altitudes recorded in feet have been converted to metres.

2 Visited site 3-4 times a year for about two days.

3 Observations are treated as unconfirmed if made without supporting photographs by: an individual; an individual with no or little experience of Fijian birds; in an area in which they have not previously been recorded.

4 Kretzschmar is an experienced ornithologist with considerable Fijian experience (but see note 3).

A reference in the Appendix in Lees (1990) to a sighting in Taveuni has no supporting field data and is not included here.





Red-throated Lorikeet 'Kulawai'

Charmosyna amabilis,

Monasavu-Tomanivi, Viti Levu

January–March 2011 survey report

DR KERRY HERMAN

INTRODUCTION

The Red-throated Lorikeet, or 'Kulawai' (*Charmosyna amabilis*) is one of 14 members of the *Charmosyna* genus and is the only representative found across the Fijian islands. It is the eastern most distributed of the genus and is endemic to the Fiji islands. The genus is generally considered to inhabit mountainous areas of high rainfall (Juniper and Parr 1998) and are notoriously difficult to study (Beehler *et. al* 1986, cited in Swinnerton and Maljkovic 2002) . In Fiji all historical records across Viti Levu have been in the highlands, however records in Taveuni and Ovalau have been at lower elevations. Since 1993, no confirmed sightings of the species have been made though a number of unconfirmed records do exist. Previous reports have summarised the historic records of this species (see Swinnerton and Maljkovic 2002) and so this won't be replicated in this document. However, in addition to these records, two unconfirmed sightings have since been recorded, one on the footslopes of Tomanivi and the other near Nadrau village (Watling pers com).

The Kulawai is listed as 'Critically Endangered' under IUCN redbook (IUCN 2011) listings and has been the focus of a number of surveys in recent years; as yet with no success in locating and subsequently confirming that the species is still extant. Much of this work has been carried out across the Tomanivi-Monasavu area in the Viti Levu Highlands, as this is believed to be the stronghold of the species. Some work has been undertaken further afield by local ornithologist Vilikesa Masibalavu, and Taveuni was surveyed in 2002 (Swinnerton & Maljkovic 2002).

The aim of the current survey was to try and locate Kulawai in the Tomanivi-Monasavu area and confirm that the species persists.

ECOLOGY

What is known on the ecology of the Kulawai is limited to the few observations that have been made of the species and is in general anecdotal.

The species is believed to be highly nectarivorous, and reliant on mature old growth forests (Swinerton & Maljkovic 2002; BLI 2011 Fact sheet). Observations have placed it in the mid to upper canopy where it forages in the blossoms of local trees. The species is believed to be highly dependent on the Vuga (*Metrosideros collina*, Myrtaceae) blossom (NFMV fact sheet 2010), which was focused on during Swinerton & Maljkovic (2002) survey. Most recent records of the species have placed it foraging in this tree (Watling pers com, Joerge Kretzschmar 2008).

Nothing is known on the species reproductive timing, habitat requirements or reproductive behaviour. Nothing is known on the species seasonal movements, however morphology would suggest that the species is highly mobile and capable of roaming over large areas in search of appropriate resources (D. Watling pers com).

LAND USE AND SITE LOCATIONS

Over a six week period in February and March of 2011 surveys were undertaken in the Monasavu area of the Fijian highlands (Figure 1a).

The lands surveyed fall within the Nadala Village boundaries and land use is varied. Areas have, historically, been used for forestry with experimental plots of *Eucalyptus deglupta* and *Pinus caribaea*, interspersed with extensive areas of mahogany (*Swietenia macrophylla*) plantation. These areas make up a mosaic with remnant native forest and modified agriculture land, some of which has been left fallow and is reverting to native cover.

Three broad native vegetation types can be distinguished across the survey area; Lowland Rainforest (to 700m asl), Upland Rainforest (700 – 850m asl) and Cloud Forest (>850m asl) (BLI 2006). Within the upland forest, three more specific vegetation types have been identified, based on the environmental and physiognomic characteristics of the area (ECF 2006). These are:

- *Slope Forest: floristically diverse and encountered on the mountain slopes. Understorey is dense.*
- *Ridge Forest: unique vegetation composition along undisturbed ridges, generally dominated by gymnosperms.*
- *Riparian Vegetation: found along the many creeks and rivers, with common endemic species including *Acalypha rivularis*, *Syzygium seemannianum* and *Ficus bambusifolia*.*

Cloud forest occurs on the higher peaks and is characterised by stunted growth forms (<6m), high precipitation and dense covers of bryophytes (ECF 2006).

The topography of the area is very rugged and steep, limiting access to much of the region. Roads, old forestry tracks and established walking tracks make up the majority of the access ways into much of the remnant forest. These tend to run along ridge lines. There are a number of peaks over 1000m asl, including Mt Tomanivi, which at 1,324m asl is Viti Levu's (and subsequently Fiji's) highest point.

Two areas designated as Important Bird Areas (IBA) have been identified in the vicinity of the survey area. These are the Greater Tomanivi IBA (FJ07) and the Rairaimatuku Highlands IBA (FJ08) (Bird Life International 2006). Both these areas were peripherally included in this survey. However access into the heart of these IBA areas was prohibitive with the time available and weather conditions.

Climate within the survey area is classed as a cool, wet montane (ECF 2006), which is quite a contrast to the hot and humid tropica climate generally associated with Fiji. Rainfall is seasonal, with highest falls recorded from Dec-March (wet season). Daily experience found mornings tended to be dry, whilst afternoons would invariably end up wet, with torrential rain beginning from around 2pm and continuing until well after dark. This substantially impacted on the time available to effectively survey.

Figure 1b provides a map of the survey area, replicated transect location as well as other areas walked in search of kulawai.



Figure 1a: Viti Levu . Monasavu region identified by bordered area.

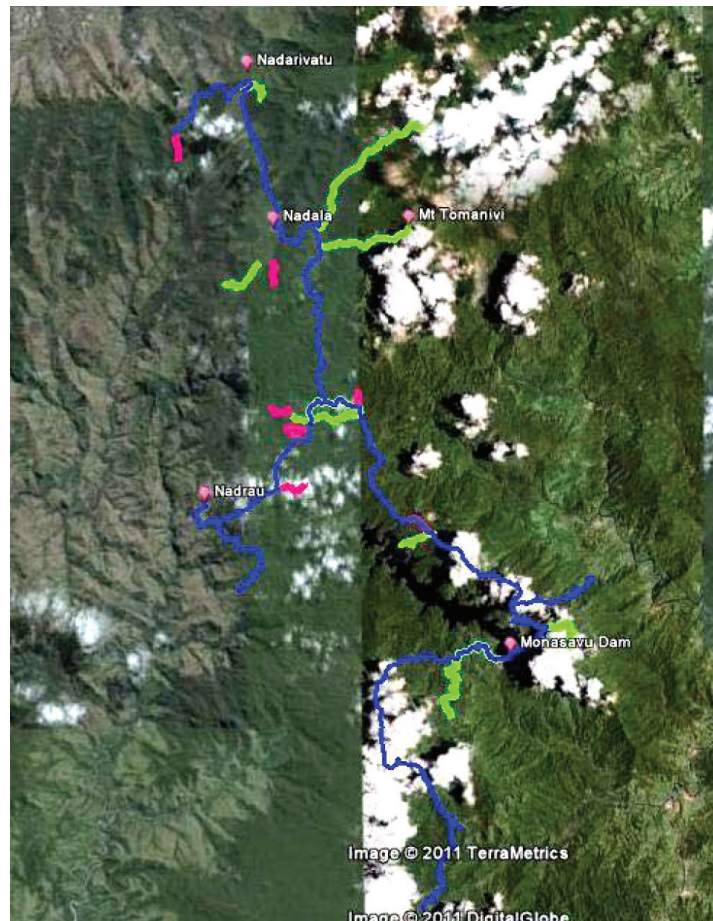


Figure 1b: Survey area. Pink lines show the location of established transects, green lines show other tracks walked, and blue shows roadways driven.

METHODS

Three standard survey methods were applied during the current survey; measured transects, timed point count surveys and general observations.

4.1 Transect surveys

A total of 7 transects were established throughout the survey period. Initially it was hoped to establish all transects at 1km in length. However, due to the topography and access to forested areas transect lengths were adapted to fit within the working environment. Sections of road, old forestry tracks and walking tracks were used as these gave an opening into the canopy where birds could be observed, as well as 10-20m penetration into the vegetation and canopy (depending on the transect). Transect information is provided in appendix 1. Transects were preferentially placed in areas where other nectarivorous bird species were prevalent, indicating an abundant food resource. The four indicator species were the Collared lorikeet (*Kula *Phigys solitarius**), Wattled honeyeater (*Kikau *Foulehaio carunculata**), Giant forest honeyeater (*Ikou *Gymnomyza viridis**) and Orange-breasted myzomela (*Delakula *Myzomela jugularis**). The start and end time of each transect

was waypointed to allow for accurate replication, and the actual route GPS to enable calculation of distances surveyed. Start and end time recorded on each pass. Generally transects were walked at approximately 1 km/hr, though this varied depending on condition of track, or identification time. Surveys were undertaken from sunrise and completed within 4 hours post sunrise to correspond with maximum periods of bird activity (Swinerton and Maljkovic 2002).

Records of birds seen or heard within 20m either side of the transect centre were taken. In particular focus was on the four indicator species and the Fiji parrot-finch (*Kulakula Erythrura pealii*). However, all other species were recorded as incidentals.

Records were only taken of individuals seen or heard ahead of the observer. Any birds flying along the transect from behind were not recorded, unless they were a new species for that survey period. This was to reduce the chance of re-counting individuals. Local guides were also present, with their main task of looking for red-throated lorikeets. Training of guides in bird identification was undertaken along transect lines.

4.2 Point counts

Times point counts were undertaken at each end of the transects as well as the approximate midpoint of the transects lines. Appendix 2 provides the co-ordinates for each of the point count locations. Counts were undertaken over a 30min period, with all individuals heard or observed within approximately 100m radius recorded by the author. Two local guides were also undertaking observations, however their focus was on looking for signs of kulawai as well as developing their observation and identification skills.

4.3 Targeted observations

Surveys were undertaken in a number of the eucalypt plantations around the survey area. These were one of the few location where any flowering was observed and as such supported large numbers of nectarivorous avifauna. The plantation eucalypts *Eucalyptus deglupta* are members of the Myrtaceae family, as is the Vuga. The structure of the flowers are similar within the family, and as there were limited nectar resources observed throughout the survey area, it was thought that perhaps the lorikeets may be able to exploit alternate food sources to the Vuga. The prevalence of other nectarivores indicated that the nectar availability within the plantations was abundant and the eucalypts may indeed provide a seasonal resource for nectarivores in the Monasavu area.

Towards the end of the survey period Vuga was found to be in flower on the western slopes above Monasavu Dam. Prior to this, the only observed flowering of the Vuga had been on the summit of Mount Tomanivi, which due to safety concerns and logistics was unable to surveyed.

Observations were undertaken at flowering trees (both individual trees or small stands) for the duration of the flowering period. Observations were also undertaken at other species found to be flowering during the survey period.

4.4 Miscellaneous observations

Observations and species presence were recorded along drives to and from sites, along tracks and a number of additional point counts were undertaken off transects.

RESULTS

A total of 558 hours were spent in the field searching for Kulawai. Of this total time about 500hrs can probably be considered as effective survey time – that is focus and concentration were at an optimum. Weather condition heavily influenced the amount of time available for effective surveying. Most mornings were found to be dry for the first 3-4 hours after sunrise, with rain generally setting in around the middle of the day and continuing throughout the afternoon. Unfortunately, whilst mornings tended to be dry, the cloud cover was dense and prohibitive for bird surveying.

5.1 Kulawai

No sightings of the Kulawai were recorded. Four unidentified green birds were recorded early on in the survey by one of the field guides. However, observations were of the back of the birds so the characteristic red-throat was unable to be confirmed. The distance over which the observations were made as well as the described size of the birds make it unlikely that the birds seen were Kulawai.

5.1.1 Foraging resources

For much of the survey period there were few, if any, noticeable flowering events across the greater study region. Small concentrated events were noticed within eucalypt plantations and individual eucalypt trees. Observations undertaken at these locations found high densities of nectarivorous species, with wattled honeyeaters and collared lorikeets the most abundant. Both myzomela and giant forest honeyeaters were also present. The detection of myzomela in the upper canopy was used as a positive indication that should they be present, red-throated lorikeets would be detectable from the forest floor. A *Syzygium sp.* (Myrtaceae) was also noted to be in flower during the survey period (pic). This was not flowering in high densities.



Syzygium sp. Photographed within the survey region.

Prior to starting the surveys, substantial amounts of vure (*Geissois superba*) were noted to be in flower along a number of roadways. This included the roads to the southern and northern transmitter towers above Nadarivatu, and the road between Monasavu Dam and Navai. Once surveying started, these flowering events had finished. However, in early April, at the cessation of the surveys, vure was beginning to flower again.

Small areas of *Turrillia ferruginea* (Proteacea) displayed flowering through the survey period. Outside of the plantations this appeared to be the most widespread nectar resource, and was frequently found to have nectarivores foraging when located. Densities of birds were not comparable to plantations.



Turrillia ferruginea in flower in the survey region. This plant was the most abundant in flower throughout the survey period.

The final weeks of the survey period found consistent flowering of vuga on the western slopes above Monasavu dam. Individual plants were flowering along approximately 2km stretch of the access road to the weirs associated with the dam and the power generation. It was noted that the first trees found in flower were at higher altitudes and the progression of flowering was to lower sites, suggesting a possible temperature effect on the flowering of this species. Trees were noted to hold flowers for little more than a week once buds began to open, providing a finite window of opportunity for both foraging species and observers.



Metrosideros collina blossom. Large image shows the patchiness of the flowering during the survey period.

5.2 Other Bird Species

Whilst undertaking focused searches for Red-throated Lorikeets, all other bird species encountered along transects and at points were recorded. A complete list of bird species recorded during the survey is presented in Appendix 3. All species expected to be recorded in the Monasavu area were recorded except for three species – Friendly ground dove (*Gallicolumba stairi*), Slaty Monarch (*Mayrornis lesson*) and Blue-crested Broadbill (*Myiagra azureocapilla*), and it is likely that the latter two were heard, but not recognised due to inexperience in call identification by the author.

The recorded diversity of species is a positive indication that whilst much of the accessible areas of the Monasavu area have been modified for forestry and some agricultural use, there has been enough native forest retained to support a complete assemblage of native avian species. This further highlights the importance of this region for bird species conservation and should be the focus of ongoing management for avian conservation.

Of the systematic point count and transect surveys 7 species countered over 100 individuals when data were analysed. These seven most abundant species are presented in table 1.

Table 1: Common avian species encountered during surveys.

Species name	Total count	Survey type
Wattled honeyeater <i>Foulehaio carunculata</i>	329	Point and transect
Silvereye <i>Zosterops lateralis</i>	269	Point and transect
Giant forest honeyeater <i>Gymnomyza viridis</i>	148	Point and transect
Collared lory <i>Phigys solitarius</i>	136	Point and transect
Polynesian triller <i>Lalage maculosa</i>	132	Point and transect
Fiji bush-warbler <i>Cettia ruficapilla</i>	127	Point and transect
White-rumped swiftlet <i>Aerodramus spodiopygius</i>	108	Point and transect

5.3 Endemic Species and High Conservation Value Species

Fifteen of the bird species recorded during the survey are endemic to Fiji. These were recorded during both surveys and incidental sightings. Generally, these endemic species were abundant across the study region. Those species encountered at lower rates tended to be species that are considered to be of conservation significance.

Masked shining parrot *Prosopeia tabuensis*, listed as Near Threatened (IUCN Redbook) was widespread and whilst not abundant (26 individuals recorded along transects and points) it was regularly encountered across the study region. The Black-throated shrikebill *Prosopeia tabuensis* (IUCN Vulnerable) was observed along one transect (male and female) and was re-recorded on a replicate survey. After observation of this species, call identification was enhanced, and

subsequently this species was noted on a second transect based on call identification. The Vulnerable Pink-billed parrot finch *Erythrura kleinschmidti* was observed incidentally in the last week of the survey period along a section of roadway to the west of the Monasavu Dam and the Long-legged warbler *Trichocichla rufa* (IUCN Endangered) was observed incidentally whilst undertaking reconnaissance to establish survey locations.

5.4 Introduced Avian Species

During the survey three species of invasive bird species were regularly recorded – Red-vented bulbul *Pycnonotus cafer*, Indian or Common myna *Acridotheres tristis* and the Jungle myna *Acridotheres fuscus*. These species were most abundant along roadways, tracks and easements.

DISCUSSION

6.1 Kulawai

Unfortunately the continuing inability to locate the Kulawai may indicate that this species has in fact become extinct within Fiji. Careful consideration needs to be taken should this status change occur. However, the lack of ecological knowledge of this species may be contributing to the lack of records with surveys being designed more on luck than strategic scientific basis.

There are two potential hypothesis for the presence (or lack thereof) of the Kulawai in the Monasavu region over the survey period, if this area is indeed the stronghold of the species.

The first hypothesis is that the species is nomadic and moves away from this area outside of peak vuga flowering times, in search of other food resources. The species' wing design suggest the ability for the birds to fly long distances (Watling pers com), suggesting it may be nomadic, searching out appropriate food resources. This behavioural pattern is well known in a number of lorikeet species. For example the Australian Swift parrot (*Lathamus discolor*) migrates between mainland Australia and the blue gum (*Eucalyptus globulus*) woodlands of Tasmania during the breeding season. Breeding corresponds with the peak flowering of the blue gum (SPRAT 2011). It may be that similar movement patterns occur in the Kulawai and the lack of food resources in the Monasavu region during the survey period indicates that the population of the species is elsewhere during low flowering period. The question then becomes one of where do the birds go? This hypothesis then raises the question of whether the flowering cycles of the vuga in the Monasavu region is an indicator of the presence and subsequent breeding of the red-throated lorikeet, assuming that the species is as dependant on this plant as believed. Again, should there be a connection between intense periods of flowering in the Monasavu and lorikeet breeding, one could then expect the potential detection for the species to increase during this period particularly if birds congregate in high resource. Birds also tend to call and be more obvious during breeding. This would then suggest that the region is a core breeding area, rather than the "stronghold" of the species.

The second hypothesis is that the species remains in the Monasavu region throughout the year, but is much more widely dispersed and much more nomadic during periods of low food resource availability. This suggests that the species can utilise a range of flower types and as such is not

as dependant on the vuga as believed. This will dramatically decrease the chances of locating the species, which if it is already at naturally low densities will become even scarcer. This further decreases the chances of locating individuals outside of peak flowering seasons. Subsequently individuals will only congregate, thus making detection easier, during periods of high food resource availability. It was based on this hypothesis that time was spent in eucalypt plantations, that the abundance of food resources (both nectar and pollen) would be concentrated enough to pull Kulawai into the plantations from the wider rainforest. This was not substantiated during the survey period.

Either one of these hypothesis would direct the methodology and timing of surveying for the Kulawai. Paradoxically, without ecological knowledge on the species the best methods of surveying cannot be determined, but this knowledge will not be obtained without finding the species first.

At present, the survey methods will depend purely on chance. There are a number of possible ways to increase the chances of finding the species. The first of these is the timing of the surveys undertaken. In is the belief of the author that this survey, plus the other two reports of Swinnerton and Malikovic (2002) and Masibalavu and Mucklow (2008) were undertaken at the wrong time of the year to optimise the chances of locating Kulawai in the Monasavu region.

Historic records of specimen collections as summarised in Swinnerton and Maljkovic (2002) have most individuals collected between May and October, Watling (pers comm.) observations fall within this time period and the last recorded observation of the species in 2008 was in July. Each of the recent surveys to locate Kulawai were undertaken over the wet season, with the 2002 survey run from November through to April, the 2008 survey undertaken in January and the current survey undertaken between January and March. For each survey Vuga (and other potential food resources) were noted to be patchy in flowering, but were the focus of intensive observational surveys. These methods have assumed that the second hypothesis – that birds are present all year round in the region – is the correct ecological assumption, and that individuals will be drawn to the patchy food resources available. To date this has obviously not resulted in the successful detection of the species.

Anecdotal observations indicate peak flowering of Vuga and other possible food sources occurs between April and July in the Monasavu area, with a second event between August and October (Swinnerton and Maljkovic 2002). These flowering event correspond with the historic collection dates and observation dates in the Monasavu. Should the peak flowering of Vuga be an important event in the Kulawai reproductive cycle (hypothesis 1), then this would suggest that these peak periods would be the optimal time to conduct surveys.

The timing of the survey is only one consideration. The actual methods applied also need to be considered. At this time, until confirmation of the species occurs and further ecological knowledge is obtained, again increasing the chance of locating individuals is the best bet to locating the Kulawai.

A large scale field survey, timed to co-ordinate with a peak Vuga session may locate individuals. A number of teams of 2-3 people may be posited around the Monasavu area at areas of extensive flowering. Teams would spend a day at a single location observing the bird activity in the area. Volunteers for such a survey could be easily sourced from within the greater international birding community as the opportunity to spend time in an area with the avifauna that the Monasavu area supports would be appealing to many birders worldwide. By providing accommodation, transport to Nadala/Nadarivatu from Tavua and food, such a survey would also provide revenue for the local villages in the Monasavu region.

I believe at this time, the most effective method to try to confirm that the Kulawai is extant is to get as many bodies on the ground as possible during a peak flowering event of Vuga. Timing does not necessarily have to co-ordinate with the beginning of this event; in fact it would probably be more effective to time the surveys from the middle towards the end of the flowering events. This will give time for birds to arrive in the region in response to the event, and hopefully time surveys with peak numbers of individuals in the region.

6.2 Other Avian Species

The record of all (bar 3) bird species expected in the Monasavu region is a good indication that the assemblage in this region is still intact and the ongoing land management has not caused a loss of species in the region. The impact of land management on the abundance of individuals is unknown however, anecdotally, there are stark contrasts in the activity of birds in the mahogany plantations with native forest; the plantations appear to support few if any birds, and there are elevated numbers of nectarivores in the eucalypt plantations during periods of flowering.

Surveys undertaken in 2006 by ECF failed to locate owls in the region, though they were believed to occur there. Confirmation of the presence of Barn owls *Tyto alba* in the region occurred during the current surveys. An individual was observed early morning on the Monasavu Road and a pellet was discovered at the base of Monasavu Dam.

The SPREP Bird Conservation Priorities and a Draft Conservation Strategy for the Pacific Islands region (Sherley 2001) identifies the lack of a national project to monitor the forest birds of Fiji as a key area that needs developing. This requirement stems directly from the Fiji Biodiversity Strategy and Action Plan: *Objective 2.4: Achieve a detailed knowledge of the occurrence and status over time of Fiji's biodiversity resources, in particular the threatened endemic forms – Action 36. Objective 4.1: Effectively manage threatened species – Actions 60, 61, 63*

The general avian surveys undertaken during this study may contribute to establishing a number of locations in the Monasavu area to contribute to the ongoing monitoring of the forest birds of Fiji. Ongoing surveying of the established transects, will over time, enable a more comprehensive understanding of what is happening with regards to the forest avifauna.

6.3 Invasive Species

The increasing use of the forest around the Monasavu region for forestry, agriculture and other purposes is opening up access to these forests for invasive avian species. Surveys undertaken in 2008 by Masibalavu and Mucklow failed to locate either common or jungle myna at one of her survey sites and she considered them to be generally uncommon at other survey sites. Red-vented bulbul were considered very common however (Masibalavu and Mucklow 2008). This current survey found similar abundances of red-vented bulbul, but increased numbers of common myna. Miscellaneous observations also found high numbers of this species around the banks of the Monasavu dam, and prevalent along powerline easements and walking tracks. These tracks are increasing the penetration of these aggressive, introduced species into the remaining forest which may contribute not only to the decline of the red-throated lorikeet, but also may impact on the sustainable populations of other avian species.

Blanvillain et al (2003) found that both common myna and red-vented bulbul contributed to the decline in the breeding success of the Tahiti flycatch (*Pomarea nigra*), and Thibault et al (2002) suggest

that both these introduced species are compounding extinction effects on Polynesian monarchs. Pell and Tidemann (1997) found directly that mynas were more aggressive in the competition for nest hollows, out competing a number of Australian parrot species. There may be size parameters that limit direct competition between mynas and kulawai for nest hollows, however there may be an overlap in hollow sizes that once accessible to the lorikeets are now no longer available. This potential loss of breeding resource, combined with habitat loss and increasing nest predation from introduced rodents, may be another contributing factor to the apparent decline in the Kulawai.

6.4 Survey Constraints

As with all other surveys in the Monasavu region the main constraints to the current survey were access to forested areas and weather conditions. The topography of the region is mountainous, with steep drop offs, confining most access ways to ridgelines or along waterways. Subsequently large tracts of forest are literally inaccessible. These access issues may bias the results of both surveys for kulawai and general bird surveys. It is likely that disturbance tolerant species, including invasive species, will be more readily detected along established transects. More cryptic and “non-edge” species will be harder to detect.

Weather played havoc to surveys, confining most of the survey work to the mornings. Generally mid-day and afternoons were rained out. Mornings were also plagued by low cloud, impacting on observational distances.

6.5 Community Involvement

A secondary outcome of this survey was the involvement and training of two local community members. Both provided local knowledge of the area, as well as access to village land. It is hoped that the skills passed on in bird identification and survey planning – such as the need for accurate information to be communicated by local guides – will enable the development of eco-tourism ventures based around birding. The Monasavu region supports a unique avifauna, which will appeal to many travellers. Combining this demand with local knowledge, accommodation, transport requirements and catering, there is the potential to develop a sustainable industry that will benefit not just the trained guides, but the community as a whole. If home stays are arranged, the local women engaged to cater for tour groups or local drivers contracted to provide transport from Tavua to and around the mountains, the entire region should be able to benefit.

The skills learnt by local community members will also be passed onto other community groups. The involvement of the Tomanivi Nature Club will become invaluable in the ongoing monitoring of not only Kulawai, but the avifauna as a whole in the region. The Nature Club was established and is run with the guidance and support of NatureFiji–MareqetiViti.

Conclusion

Unfortunately the outcomes of this survey raise further questions as to the likelihood that the Kulawai has in fact gone extinct. There has been no confirmed record of this species in recent times, and specific, targeted surveys have failed to turn up any signs of the species. Survey timing may have a significant influence on the inability to detect the species and until surveys are run at other times of the year, any changes of status to the species should be refrained from being made.

General bird surveys and locations of transects may be the first step in establishing a formal, long term project to monitor the avifauna in the Monasavu region. This area supports a high number of species, and it appears that the natural species assemblage has been maintained in the region, regardless of past land management. This should be considered should any future plans to modify the local landscape be developed.

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Appendix 1

TRANSECT LOCATION AND DESCRIPTION

ID	Start point (WGS 72)	End point (WGS 72)	Length (m)	Location description	Replicates
NDL	602886 8051016	602961 8050099	1000	Behind Nadala village, access from road running behind school, track runs north/south towards Navai. Combination of open, agricultural land and forest.	2 – both rained out
KR1	599384 8055562	599489 8054658	925	Walking track of road to Koro towers. Track runs north/south. Track runs through forestry land, into plantation mahogany. End point before plantation starts.	2 – second replicate rained out
NDR1	603584 8045580	602827 8045723	1000	Forestry track runs from Nadrau Road to river. Runs through combination forestry/impacted agricultural land and forest. Used in other surveys, and is believed to be general location where last 2008 observation occurred. Runs east/west.	2
NDR2	604199 8044857	603896 8044430	1700	Loop of track through forest. Northern section established as access to power line easement. Runs east west of Nandra Road, and loops back, with parallel track south of access track.	2
NDR3	603107 8042671	604056 8042850	1100	Southern most transect off Nadrau Road. Runs from west to east through old growth, low impacted forest. Initial access through agricultural land. Runs towards edge of Monasavu lake.	2
MSV1	607904 8041516	608677 8041048	1000	Northern most Transect of Monasavu Road. Old forestry track, beginning to overgrow. Runs south/north through low impacted forest.	2
MSV2	606052 8045657	606112 8046274	650	Section of road along Monasavu Road. Selected due to high levels of Vure in flower at initiation of surveys. Runs through forest, with good views down into canopy. End at walking track that heads to Monasavu Lake.	2

Appendix 2

POINT COUNT LOCATION

Transect ID	Point ID	Easting (WGS 72)	Northing (WGS 72)	Total time (mins)	Comments
KR1	KR1a	599381	8055579	60	
	KR1b	599415	8055270	60	
	KR1c	599489	8054658	60	End of forest, heavily disturbed and going into Mahogany forest.
MSV1	MSV1a	607842	8041478	60	
	MSV1b	608373	8041350	60	
	MSV1c	608778	8041003	60	
NDR3	NDR3a	603201	8042709	60	Heavily disturbed
	NDR3b	603518	8042730	60	
	NDR3c	604056	8042850	60	
NDR2	NDR2a	603815	8044864	60	
	NDR2b	603409	8044960	60	
	NDR2c	603814	8044522	60	
MSV2	MSV2a	606051	8045754	60	
	MSV2b	606027	8046162	60	
NDR1	NDR1a	602877	8045862	60	
	NDR1b	603863	8045419	30	
	NDR1c	603573	8045490	30	Quite heavily impacted by agriculture as well as plantation pine

Appendix 3

BIRD SPECIES LIST AND TOTAL NUMBERS RECORDED.

I = INCIDENTAL OBSERVATION,

* INDICATES ENDEMIC SPECIES,

INDICATES INTRODUCED SPECIES.

ANSERIFORMES			
Anatidae	Pacific Black Duck	<i>Anas superciliosa</i>	I
FALCONIFORMES			
Accipitridae	Fiji Goshawk	<i>Accipiter rufitorques*</i>	6
	Swamp Harrier	<i>Circus approximans</i>	I
COLUMBIFORMES			
Columbidae	White-throated Pigeon	<i>Columba vitiensis</i>	28
	Barking Pigeon	<i>Ducula latrans*</i>	48
	Many-coloured Fruit Dove	<i>Ptilinopus perousii</i>	2
	Crimson-capped Fruit Dove	<i>Ptilinopus porphyraceus</i>	1
	Golden Dove	<i>Ptilinopus luteovirens*</i>	31
PSITTACIFORMES			
Psittacidae	Collared Lory	<i>Phigys solitarius*</i>	136
	Masked Shining-parrot	<i>Prosopeia tabuensis*</i>	26
STRIGIFORMES			
Tytonidae	Barn Owl	<i>Tyto alba</i>	I
APODIFORMES			
Apodidae	White-rumped Swiftlet	<i>Aerodramus spodiopygius</i>	108
CORACIIFORMES			
Alcedinidae	Collared Kingfisher	<i>Todirhamphus chloris</i>	6

PASSERIFORMES			
Hirundinidae	Pacific Swallow	<i>Hirundo tahitica</i>	1
Artamidae	Fiji Woodswallow	<i>Artamus mentalis*</i>	5
Sturnidae	Jungle Myna	<i>Acridotheres fuscus[#]</i>	4
	Common Myna	<i>Acridotheres tristis[#]</i>	32
Pycnonotidae	Red-vented Bulbul	<i>Pycnonotus cafer[#]</i>	68
Muscicapidae	Island Thrush	<i>Turdus poliocephalus</i>	1
Sylviidae	Fiji Bush-warbler	<i>Cettia ruficapilla*</i>	127
	Long-legged Warbler	<i>Trichocichla rufa*</i>	1
Eopsaltriidae	Pacific Robin	<i>Petroica multicolor</i>	30
Rhipiduridae	Streaked Fantail	<i>Rhipidura spilodera</i>	12
Monarchidae	Fiji Shrikebill	<i>Clytorhynchus vitiensis</i>	18
	Black-throated Shrikebill	<i>Clytorhynchus nigrogularis</i>	5
	Vanikoro Broadbill	<i>Myiagra vanikorensis</i>	14
Pachycephalidae	Golden Whistler	<i>Pachycephala pectoralis</i>	5
Campephagidae	Polynesian Triller	<i>Lalage maculosa</i>	132
Zosteropidae	Fiji White-eye	<i>Zosterops explorer*</i>	52
	Silvereye	<i>Zosterops lateralis</i>	269
Ploceidae	Fiji Parrotfinch	<i>Erythrura pealii*</i>	73
	Pink-billed Parrotfinch	<i>Erythrura kleinschmidti*</i>	1
Meliphagidae	Orange-breasted Honeyeater	<i>Myzomela jugularis*</i>	79
	Wattled Honeyeater	<i>Foulehaio carunculata</i>	329
	Giant Honeyeater	<i>Gymnomyza viridis*</i>	148

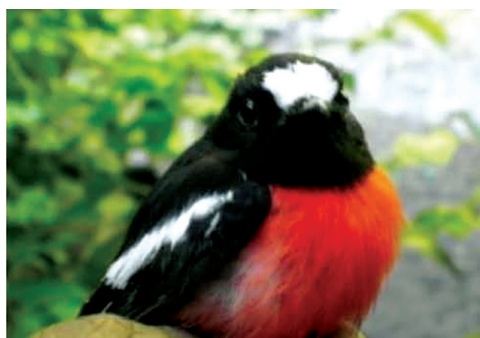
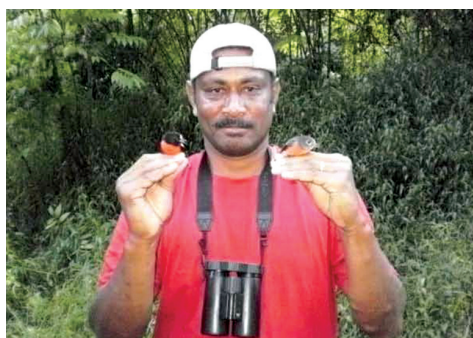


Further surveys of the Red- Throated Lorikeet, Kulawai *Charmosyna amabilis*

NADALA NATURE CLUB, VITI LEVU



VILIKESA T MASIBALAVU



Observing birds and learning bird handling and identification skills, Nadala Nature Club, Monasavu
(Photos: NFMV/Vilikesa Masibalavu)

LANDOWNER CONSULTATION AND PREPARATORY WORK FOR RED-THROATED LORIKEET SURVEY

9-13 NOVEMBER, 2010

SUMMARY

Preparatory work for more Red-throated Lorikeet (RTL) survey was done at Nadala village from Tuesday 9th to Saturday 13th November, 2010. The work includes:

- Meeting and introducing the CEPF funded Red-throated Lorikeet work to the Nadala community.
- Meeting with the Tomaniivi Nature Club and discussing future survey work.
- Developing local expertise in birds and bird survey methodology.
- Identify suitable areas for further survey work.

There was no sighting of the Red-throated Lorikeet made and no calls heard during the 5-day survey in Nadarivatu and Monasavu. Four members of the Nadala Nature Club were trained during the trip on birds and bird survey techniques. These four people will be used as leaders for more coordinated survey during the year. A total of eight sites were identified around Nadarivatu and Monasavu for further RTL survey work.

INTRODUCTION

The Red-throated Lorikeet is a critically endangered bird, endemic to the Fiji Islands (2008 ICUN). It has previously been recorded in Viti Levu, Vanua Levu, Taveuni, and Ovalau in old-growth native rainforest habitat (Clunie 1999). The last sighting of this bird was in 1993 and since then every attempts have failed to find a single bird.

FIELD PERSONAL

The survey was organized by NatureFiji – MareqetiViti where Vilikesa Masibalavu was hired to carry out the preparatory work. The community members include the Turaga ni Koro of Nadala village and three youth from the Tomaniivi Nature Club.

BIRD SURVEY

Bird survey and training was done with the team on Wednesday 10th and Thursday 11th November and Friday morning. On Friday afternoon and Saturday, I was doing birding alone down at Monasavu and Lutu, Wainimala because the team members belong to the SDA church.

The team started birding at Nakutu before we climb up the forest opposite Nakutu which also has their village water dam. The afternoon was spent at Vatumoli, Nadrau which also is the same site where a German birder, Mr Jorg Kretzma claim to have seen RTL in two of his visits to Fiji. This was confirmed by one of the local who was Mr Jorg's local guide when he saw the RTL. On Thursday, the team walked down the trail to the waterfall and on the way back followed the old forest track that crosses from Nadala to Lewa. Our afternoon birding was done at the Ratu Sukuna pool at Nadarivatu where some Vuga trees were found still blooming. Viewpoint observation was done on two of the Vuga trees and we continued on Friday morning.

The Monasavu to Lutu birding on Friday and Saturday was mainly incidental observations along the road. No Vuga trees were seen flowering instead Erythrina were flowering at Lutu village where most time was spent.

BIRD TRAINING

First the local guides were trained on the proper use and storage of binoculars and telescope. With survey techniques, two most commonly used survey methods were used:

1. Observation at viewpoint
2. Opportunistic observation

All bird species seen or heard were recorded for both methods at certain time interval.

SELECTED SURVEY SITES

The sites selected were based on the following criteria:

1. Presence of flowering trees especially Vuga (*Metrocideros collina*) and Drala (*Erythrina* spp).
2. Viewpoint for ease of observation
3. RTL reported sites

Nadarivatu and surrounding habitat

1. Nakutu
2. Koroto
3. Forest track from Nadala to Lewa
4. Southridge Radio Station Road and Nadarivatu Nature Reserve

Mt. Tomanivii and Surrounding Habitat

1. Track up to Tomaniivi Nature Reserve
2. Track up to Wabu Nature Reserve

Nadrau Plateau

1. Vatumoli

Monasavu

1. Inside dam area

RECOMMENDATION

1. Continue training the four local guides before engaging them on their own.
2. Concentrate on only 2 sites for doing training with the guides; i.e. Vatumoli, (Nadrau) and Tomaniivi.
3. Survey equipments are needed – Binoculars, Telescope

Next survey date

15 – 18 December, 2010

APPENDIX 1

Summary of Activities and Mileage

Date	Activities	Mileage
Tue. 9/11/10	Depart Suva to Nadala Present sevusevu and meeting with Tomaniivi Nature Club members	250
Wed. 10/11	Birding at Nakutu and Vatumoli, Nadrau	52
Thur 11/11	Birding around Nadala and Nadarivatu	18
Fri 12/11	Birding at Nadarivatu, Monasavu	63
Sat. 13/11	Birding at Laselevu, Lutu and back to Suva	88
		471

21-24 DECEMBER, 2010

SUMMARY

The search for Red-throated Lorikeet was conducted from Tuesday 21 to Friday 24 December, 2010 on two sites at Nadarivatu namely Naqaranibuluti and Nadarivatu Nature Reserve. There was no sighting of the bird after 24 observer hours where more than half of the time was spent on a single flowering 'Vuga tree' (*Metrocderous collina*) at Naqaranibuluti.

AIM

To search for the Red-throated Lorikeet.

TEAM

The survey was conducted by Vilikesa Masibalavu. None of the team members at Nadala village was available because there were two deaths in the village on the same week.

LOCATION, DATE AND METHOD

The survey was conducted in two areas of Nadarivatu from the 21-24th December 2010. A total of 24 'observer hours' of bird quantitative surveys was achieved, together with some additional hours of obtaining incidental records. The Naqaranibuluti Forest had a flowering Vuga tree where a total 15.5 observer hours was spent mainly in the morning. The afternoon was spent searching at Nadarivatu Nature Reserve with a total of 8.5 observer hours.

Quantitative fieldwork involved recording each bird seen or heard in measured time periods in the mornings and late afternoons. Special effort was made to observe the target species of the Red-throated Lorikeet by listening for their distinctive calls at viewpoints.

RESULTS

There were no sightings of the Red-throated Lorikeet. A total of 32 bird species were recorded, which included 17 of the 21 forest bird species that are classified as endemic or regionally endemic in Fiji. The most commonly recorded species were Collared Lory (88 recorded), Wattled Honeyeater (73 recorded), Orange-breasted Myzomella (61 recorded) and Barking pigeon (56 recorded).

There were no sightings of the threatened Fijian birds; Black-faced Shrikebill, Pink-billed parrotfinch and Friendly-ground Dove.

RECOMMENDATION

- Continue search in other areas as identified in Trip I report.
- Include students and local volunteers.

APPENDIX 1

SUMMARY OF BIRD OBSERVATION

Site name (text):	Nadarivatu		
Island (text):	Viti Levu		
Observation dates	21/Dec/10 – 24/Dec/10		
Total observation hours:	24.0		
English name	Total records	10-hr Abun. Index	Abundance category
Pacific Black Duck	0	0.0	Not recorded
Eastern Reef Heron	1	0.4	Rare
Fiji Goshawk	2	0.8	Rare
Peregrine Falcon	0	0.0	Not recorded
Pacific Harrier	2	0.8	Rare
White-throated Pigeon	10	4.2	Fairly common
Friendly Ground Dove	0	0.0	Not recorded
Spotted Dove	0	0.0	Not recorded
Barking Pigeon	56	23.3	Very common
Many-col. Fruit-dove	5	2.1	Uncommon
Golden Dove	28	11.7	Common
Collared Lory	88	36.6	Very common
Red-throated Lorikeet	0	0.0	Not recorded
Masked Shining Parrot	28	11.7	Common
Fan-tailed Cuckoo	6	2.5	Uncommon
White-rumped Swiftlet	24	10.0	Common
Collared Kingfisher	10	4.2	Fairly common
Pacific Swallow	0	0.0	Not recorded
Fiji Woodswallow	7	2.9	Uncommon

Polynesian Starling	11	4.6	Fairly common
Common Mynah	4	1.7	Uncommon
Jungle Mynah	9	3.7	Fairly common
Red-vented Bulbul	54	22.5	Very common
Island Thrush	6	2.5	Uncommon
Fiji Bush-warbler	22	9.2	Common
Long-legged warbler	0	0.0	Not recorded
Scarlet Robin	1	0.4	Rare
Streaked Fantail	8	3.3	Fairly common
Slaty Monarch	5	2.1	Uncommon
Shrikebill spp.	0	0.0	Not recorded
Lesser Shrikebill	10	4.2	Fairly common
Black-faced Shrikebill	0	0.0	Not recorded
Vanikoro Broadbill	10	4.2	Fairly common
Blue-crested Broadbill	7	2.9	Uncommon
Golden Whistler	3	1.2	Uncommon
Polynesian Triller	40	16.7	Common
Fiji White-eye	40	16.7	Common
Silvereye	2	0.8	Rare
Fiji Parrotfinch	22	9.2	Common
Pink-billed Parrotfinch	0	0.0	Not recorded
Red Adavat	0	0.0	Not recorded
Orange-br. Myzomela	61	25.4	Very common
Wattled Honeyeater	73	30.4	Very common
Giant Forest Honeyeater	34	14.2	Common

APPENDIX II

SUMMARY OF ACTIVITY AND MILEAGE

Date	Activities	Mileage
21/12/10	Depart Suva for birding at Naqaranibuluti	273
22/12/10	Birding at Naqaranibuluti and Nadarivatu Nature Reserve. Meeting with Rupeni Vauvau at Nadala village.	38
23/12/10	Birding at Naqaranibuluti and Nadarivatu Nature Reserve	14
24/12/10	Birding at Nadarivatu Nature Reserve	285

MONASAVU

11-13 JUNE, 2011

SUMMARY

The search for this long-lost bird was done within the Monasavu Dam Area. The site is also identified as a potential area for sighting RTL due to its remoteness, presence of flowering trees and high topographical feature. There were no sightings of the target bird Red-throated Lorikeet after 17.5 observer hours including 6:0 hours mist netting.

A total of seven new Long-legged Warbler territory were found as they responded to playback. These sites were mainly along the road from the main dam site to Waiboa Dam.

AIM

To search for the Red-throated Lorikeet.

TEAM

The survey was conducted by Vilikesa Masibalavu and a field guide Kaliova N Vasu.

LOCATION, DATE AND METHOD

The survey was done within the Monasavu dam area from Saturday 11 to Monday 13 June, 2011. The tracks at Monasavu are ideally located for survey work giving very good views of hillside and valley habitats. The primary habitat type at Monasavu varies with elevation and aspect, from upland rainforest through cloud forest.

A total of 23.5 observer hours of quantitative bird surveys was achieved which included:

- Standardized transect -observation during timed transects along road and then expressed as encounter rates (13 hours). (See Appendix I) Observation at timed periods at an observation post in this case a flowering Vuga tree (*Metrosideros collina*) (4.5 Hours) Mist netting (6 hours)

Birding was done along four roads:

- Road to Telecom repeater.
- Second road on the right from the dam to Waitubasavu outflow
- Along the main road from the dam
- Along road down to Waiboa dam

RESULTS

There were no sightings of the Red-throated Lorikeet.

Flowering trees were rare in the area at this time which causes us to do standardized transect walk. A Vuga tree was sighted on Sunday pm where there were only a few flowers present. It was not attracting a lot of birds except a few honeyeaters and myzomella. Interestingly, a male Black-faced Shrikebill was sighted on the tree obviously not attracted to the flowers but the tree could be well within its territory. The whole Monday morning was spent observing this flowering vuga tree.

Wattled honeyeater and Barking pigeon were the most common bird sighted. Collared lory, Fantailed Cuckoo and Masked shining Parrot were uncommon which may be attributed to the lack of flowering trees.

New Long-legged Warbler sites were discovered within the dam area. A total of seven new sites were found (See map Appendix III). These were confirmed as the birds responded to playback.

RECOMMENDATION

1. Survey area

Continue searching at Nadarivatu and Monasavu.

2. Survey method

Continue using stop and scan searches from good vantage points over flowering trees that hold numbers of other nectivorous species.

APPENDIX I: BIRDS AND OTHER VERTEBRATE SPECIES RECORDED AT MONASAVU 11-13 JUNE, 2011

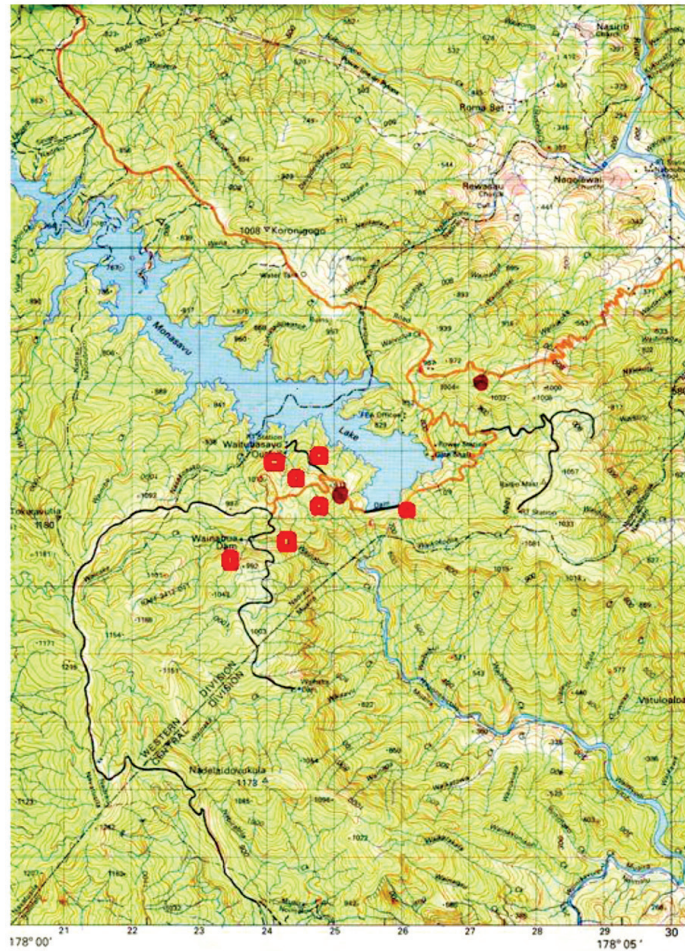
(Names and taxonomic order of birds follow the checklist in Watling (2001) Birds of Fiji and Western Polynesia)

English Name	Fijian Name	Scientific Name	Endemicity/ Status	Iucn Listing	Abundance Category	No Rec.
Forest birds						
Fiji Goshawk	Reba	<i>Accipiter rufitorques</i>	Fiji endemic	Endemic to Fiji	Uncommon	3
Pacific Harrier	Manu levu	<i>Circus approximans</i>			Rare	1
White-throated Pigeon	Soqeloa	<i>Columba vitiensis</i>			Not recorded	0
Friendly Ground Dove	Qilu	<i>Gallicolumba stairi</i>		Vulnerable	Not recorded	0
Barking Pigeon	Soqe	<i>Ducula latrans</i>	Fiji endemic		Common	31
Many-coloured Fruit-dove	Kulavotu	<i>Ptilinopus perousii</i>	Regional endemic		Fairly common	10
Golden Dove	Bunako	<i>Ptilinopus luteovirens</i>	Viti Levu endemic		Common	21
Collared Lory	Kula	<i>Phigys solitarius</i>	Fiji endemic		Fairly common	11
Red-throated Lorikeet	Kulawai	<i>Chamosyna amabilis</i>	Fiji endemic	Endangered	Not recorded	0

English Name	Fijian Name	Scientific Name	Endemicity/ Status	Iucn Listing	Abundance Category	No Rec.
Masked Shining Parrot	Kaka	<i>Prosopeia personata</i>	Viti Levu endemic	Vulnerable	Uncommon	2
Fan-tailed Cuckoo	Todi	<i>Cacomantis flabelliformis</i>			Uncommon	5
White-rumped Swiftlet	Kakabace	<i>Collocalia spodiopygius</i>			Common	16
Collared Kingfisher	Lesi	<i>Todiramphus chloris</i>			Uncommon	2
Fiji Woodswallow	Vukase	<i>Artamus mentalis</i>	Fiji endemic		Not recorded	0
Polynesian Starling	Vocea	<i>Aplonis tabuensis</i>			Common	13
Island Thrush	Tola	<i>Turdus poliocephalus</i>			Not recorded	0
Fiji Bush-warbler	Manu	<i>Cettia ruficapilla</i>	Fiji endemic		Common	23
Long-legged warbler		<i>Trichocichla rufa</i>	Fiji endemic		Common	16
Scarlet Robin	Diriqwala	<i>Petroica multicolor</i>			Fairly common	8
Streaked Fantail	Sasaira	<i>Rhipidura spilodera</i>			Not recorded	0
Slaty Monarch	Sasaira	<i>Mayrornis lessoni</i>	Fiji endemic		Uncommon	4
Lesser Shrikebill	Digisau	<i>Clytorhynchus vitiensis</i>			Fairly common	7
Black-faced Shrikebill	Kiro	<i>Clytorhynchus nigrogularis</i>	Fiji endemic	Vulnerable	Not recorded	0
Vanikoro Broadbill	Matayalo	<i>Myiagra vanikorensis</i>			Fairly common	10
Blue-crested Broadbill	Batidamu	<i>Myiagra azureocapilla</i>	Fiji endemic		Uncommon	3
Golden Whistler	Ketedromo	<i>Pachycephala pectoralis</i>			Not recorded	0
Polynesian Triller	Manusa	<i>Lalage maculosa</i>			Common	17

English Name	Fijian Name	Scientific Name	Endemicity/ Status	IUCN Listing	Abundance Category	No Rec.
Fiji White-eye	Qiqi	Zosterops explorator	Fiji endemic		Common	15
Silvereye	Qiqi	Zosterops lateralis			Not recorded	0
Fiji Parrotfinch	Qiqikula	Erythrura pealii	Fiji endemic		Common	25
Pink-billed Parrotfinch	Sitibatitabua	Erythrura kleinschmidti	Viti Levu endemic	Endangered.	Rare	1
Orange-breasted Myzomela	Delakula	Myzomela jugularis	Fiji endemic		Common	16
Wattled Honeyeater	Kikau	Foulehaio carunculata			Very common	64
Giant Forest Honeyeater	Sovau	Gymnomyza viridis		Vulnerable	Common	29
Non-forest birds						
Pacific Black Duck	Ganiviti	Anas superciliosa			Not recorded	0
Eastern Reef Heron	Belo	Egretta scara			Not recorded	0
Peregrine Falcon	Ganivatu	Falco peregrinus	Regional endemic race		Not recorded	0
Introduced birds						
Spotted Dove					Seen at FEA office	0
Common Mynah	Maina	Acridotheres tristis			Seen at FEA office	0
Jungle Myna	Maina ni veikau	Acridotheres fuscus			Seen at FEA office	0
Red-vented Bulbul	Bulbul	Pycnonotus cafer			Common	14
Red Adavat	Siti	Amandava amandava			Seen at FEA office	0

APPENDIX II LONG LEGGED WARBLER SITES WITHIN THE DAM AREA



APPENDIX III SUMMARY OF ACTIVITY AND VEHICLE MILEAGE

Date	Activities	Mileage
10/06/11	Depart Suva Arrive Monasavu	133
11/06/11	Birding along road to TFL repeater, main road.	49
12/06/11	Birding along road to Waiboia Dam, Waitubasavu outflow.	38
13/06/11	Birding along main road towards Dam Power 4.	130
		350

NADARIVATU & MONASAVU

16-18 JULY, 2011

SUMMARY

The two day survey was done at Nadarivatu and Monasavu. Observation was done only on two flowering Vuga trees – one at Nadarivatu and one at Monasavu. There was no sightings of the Red-throated Lorikeet.

AIM

To search for the Red-throated Lorikeet.

LOCATION, DATE AND METHOD

The search was done on 16-18 July, 2011. On the 17th search was confine to only one flowering Vuga tree along the road about 1 kilometer away from the Nadrau / Monasavu junction. The second day, 18th July was spent on a flowering Vuga tree at Monasavu right at the old rubbish dump near the junction leading down to the FEA office. (See plate)

A total of 17 observer hours of quantitative bird surveys was achieved in the 2 days where observation was confined to only two vuga trees.

RESULTS

There were no sightings of the Red-throated Lorikeet.

Vuga trees were just beginning to flower at this time as most are yet to flower. There were more Vuga trees flowering at Monasavu than Nadarivatu. Each one of them was attracting a lot of birds.

Bird activities were observed and there are some important lessons learnt:

Wattled Honeyeaters

- Wattled honeyeaters were the first to arrive and the last to go in the evening. They seem to be very aggressive to other birds especially the smaller ones such as Orange-breasted myzomella. They can be aggressive to the bigger ones too like Giant-forest honeyeater and Collared lory if they seem to outnumber them. The most number recorded at one time was 11.

Giant Forest Honeyeater

- Can only be one or few feeding. The most number at one was four.

Orange-breasted Myzomella

- In small number up to 5 but always getting chased away by the bigger birds. Collared Lory
- They are seen to always arrive in flocks of about 6-10 birds. Once they begin feeding they seem to dominate even sometime chasing wattle honeyeater.

Other birds

- Other birds that visit the flowering vuga tree includes Lesser Shrikebill, Polynesian Triller, Scarlet Robin, Golden Whistler, Fiji-bush Warbler, Red Vented Bulbul, Barking Pigeon, Blue-crested Broadbill and Slaty Monarch.

- Most of these birds were not feeding on the flowers but tree may be within their territory.

OTHER INTERESTING FINDINGS:

Java sparrow carrying nesting materials at Davilevu, Nausori – 10/08/11

Pink-billed Parrotfinch sighted at Naseuvou village -20/08/11

RECOMMENDATION

1. Survey area Continue searching at Nadarivatu and Monasavu.

2. Survey method

Continue using stop and scan searches from good vantage points over flowering trees that hold numbers of other nectivorous species.



Vuga Tree (*Metrociderous collina*) along road near Nadrau Monasavu junction.



Vuga Tree at Monasavu old rubbish dump

NAMOSI / SOVI BASIN & MONASAVU / NADRAU

7-9, 20-23 SEPTEMBER 2011

SUMMARY

A total of eight observation days was spent at Sovi Basin, Monasavu and Nadrau to search for the long lost bird Red-throated Lorikeet. In the Sovi Basin, observation was done mainly on the flowering *Erythrina Sobrahum*) while at Nadrau both Drala wai and Vuga (*Metrocederous collina*) were in bloom. There were no sightings of the Red-throated Lorikeet.

AIM

Continue searching for Red-throated Lorikeet in both Drala wai and Vuga.

LOCATION, DATE AND METHOD

Namosi / Sovi Basin

The search began along Namosi road on Wednesday 7th September to establish whether Vuga was also flowering in this area as it is at this time up Nadarivatu / Monasavu areas. Birding begins at 6:00am from the cattle farm at Nabukavesi looking at some of the flowering African Tulip along the road. The search was disturbed by heavy rain at 2:00pm and while driving along down Waidina road, it was observed that there were a lot of birds feeding on flowering Drala wai at Navurevure village.

The next two days (Thursday 8th & Friday 9th) was spent observing these Drala wai stands at Navurevure while the last day (Saturday 10th) was spent at Nauluvatu village. Observations on all these days were disturbed by afternoon rain; (See plate in Appendix).

A total of 31.5 observer hours of quantitative bird surveys was achieved in the 4 days.

Monasavu / Nadrau

The team (Vilikesa Masibalavu and Nasoni Nalewabau (Assistant)) arrived at Nadarivatu in the afternoon of Tuesday 20th September and went straight to birding from 3:00pm to 6:00pm. There were no flowering Vuga trees close to the road but only few can be seen up the ridges at Naqaranibuluti forest. On Wednesday 21st observation was done at Monasavu but no flowering Vuga tree was sighted. In the afternoon, the search moved to Nadrau where it was discovered that both Drala wai and Vuga were still flowering. The whole of Thursday 22nd was spent observing bird activity on one full bloom Vuga tree at Nadrau. This Vuga tree is located on the second logging road along Nagaga road about 300 meters from the main road. On Friday 23rd observation was done along the road through Monasavu on the way to Suva. A total of three hours birding was done along Nasalia road following the logging road on the right just before descending towards Nasalia village. This logging road according to Nasalia villagers reaches down to near Nakorosule village.

A total of 27 observer hours of quantitative bird survey was achieved during the four days.

RESULTS AND RECOMMENDATIONS

Though there was no sighting of the target species Red-throated Lorikeet in the whole survey, there were some interesting findings.

a. Drala Wai did attract a lot of birds and should be seriously looked at as part of the tree species to be observed along with Vuga. Their habitat should be located and mapped so we can easily identify and prioritize best observation site.

b. A total of five species were found to be feeding on the Drala wai flower. These are Wattled Honeyeater, Orange-breasted Myzomella, Giant Forest Honeyeater, Collared Lory and even interestingly Jungle Mynah. It was observed that Jungle Mynah though few in numbers was actually feeding on the flowers. Other birds found attracted to the tree but may or may not be feeding includes Polynesian Triller, Polynesian Starling, Vanikoro Broadbill, Red-vented Bulbul, Collared Kingfisher, Barking Pigeon, Lesser Shrikebill, Fiji Parrotfinch, Fiji Woodswallow, Many-colored Fruit Dove and Scarlet Robin.

c. Included in the above list are two sightings of the endangered Pink-billed Parrotfinch. The two birds nearly came together at about 12:30pm and perched with other birds on the flowering tree.

d. Peregrine falcon was observed hunting birds attracted to the Drala wai. This was observed at the Drala wai stand near Navurevure village. It was not successful after three attempts and the strike time was at an interval of about 25 – 40 minutes. It was not seen to have captured a bird but there were several occasion after this when birds scattered due to the presence of a bird of prey.

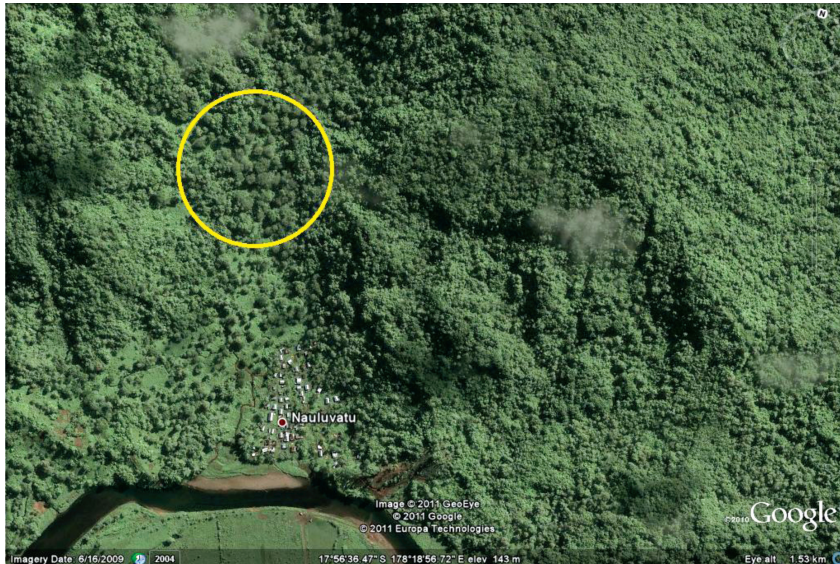
e. A huge flock of Masked Shining Parrot totaled 16 birds were observed at Namosi occupying two trees and after which also seen flying together. This was just before the heavy rain poured down about 2:00pm.

f. Nadrau has both the Drala and Vuga. At the time of observation both are flowering but may probably be approaching the end of their flowering stages as only a few flowers are remaining and are just not attracting a lot of birds.

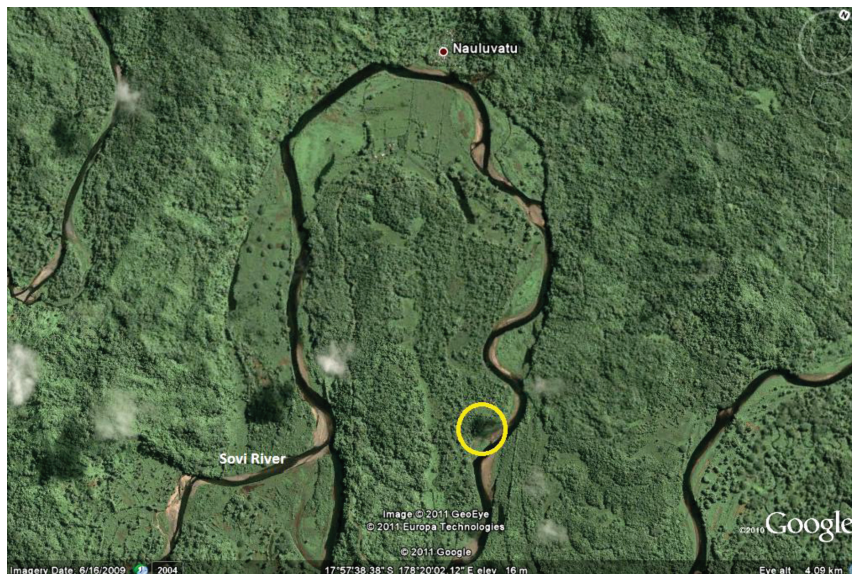
g. Vuga trees were not flowering at Namosi. It is important to continue monitor when do they flower. The key questions are why are they not flowering together with the Monasavu ones? When would they begin to bloom? It may provide some important information related to where the Red-throated Lorikeet could be migrating if it does.



Location of Drala Wai near Navurevure village, Waidina, Naitasiri.



Location of Drala Wai at Nauluvatu, Waidina, Naitasiri.



Location of Drala Wai at Nauluvatu, Waidina, Naitasiri.



Location of Drala Wai stands at Nadrau

APPENDIX II SUMMARY OF ACTIVITY AND VEHICLE MILEAGE

NAMOSI / WAIDINA / SUVA

Date	Activities	Mileage
07/09/11	Birding along Namosi Road through Waidina road.	92
08/09/11	Birding at Navurevure	60
09/09/11	Birding at Navurevure	65
10/09/11	Birding at Nauluvatu	70
Total mileage		287

NADARIVATU / NADRAU / MONASAVU / SUVA

Date	Activities	Mileage
20/09/11	Depart Suva via Rakiraki to Nadarivatu	280
21/09/11	Birding along road to Monasavu then Nadrau	78
22/09/11	Birding at Nadrau	10
23/09/11	Birding along road to Monasavu Dam / Nasalia road and back to Suva.	298
Total mileage		666

TOTAL TRIP MILEAGE = 287 + 666 = 953km



Promoting Awareness of the Kulawai, Red-throated Lorikeet *Charmosyna amabilis*



AN EXHIBITION OF MODELS AND MASI PAINTINGS OF ENDANGERED FIJIAN
FAUNA AT THE FIJI MUSEUM AND THEIR AUCTION FOR THE PROJECT

JUNE 2012

KELERA MACEDRU

ACKNOWLEDGEMENTS

NatureFiji-MareqetiViti greatly acknowledges the funding of the Critical Ecosystems Partnership Fund for the Kulawai project. Also to Anne O'Brien of Anniemals for the production of the 20 life sized models made from recycled materials and the 20 *masi* paintings of threatened species in Fiji.

To the staff of NatureFiji-MareqetiViti (NFMV) on the production of information materials, flyers, sponsor profiles and tickets sales leading to the launch of the exhibition at the Fiji Museum.

The Fiji Museum for providing the venue and allowing NFMV to showcase their exhibition for three months at no extra cost.

To the following sponsors for their support in sponsoring each animal model: Siwatibau & Sloan barristers and solicitors; Raintree lodge; Suliana Siwatibau (Trustee of NFMV), Dr. Gilianne Brodie, Austrop Foundation Australia, Environment Consultants Fiji Ltd, National Trust of Fiji, Wildlife Conservation Society, Multiple Intelligence School, Marita Manley, Birdlife International Pacific Secretariat, Natural Solutions Pacific and BSP bank.

INTRODUCTION

The Kulawai or Red-throated lorikeet (*Charmosyna amabilis*) is a Critically Endangered bird (IUCN Red list 2012) which is endemic to Fiji and recorded from the islands of Viti Levu, Taveuni and Ovalau, with an unconfirmed observation from Vanua Levu.

The last confirmed sighting of the Kulawai was in 1993 on the slopes of Mt Tomaniivi, Fiji's highest mountain. Since then several dedicated surveys have been conducted in areas of unconfirmed sightings of the bird, as well as the promising sites of undisturbed forest and remote upland catchments (Herman 2011), but all have reported no sightings of the Kulawai.

Due to the extreme rarity of this species, it is considered to have a total population of less than 50 birds (IUCN 2012), however the results of the current project when no birds were observed are such that consideration must now be given to the fact that this species may be extinct.

Animal Model Exhibition

In providing awareness on the Fiji Kulawai, an animal model exhibition was launched at the Fiji Museum on the 1st of June 2012. Twenty models of threatened species which included the Kulawai were created from recycled materials as a means of providing awareness to the general public on Fiji's true wildlife. With the models, paintings of the threatened species were also on display during the exhibition.

The objective of the exhibition was to:

3. *Provide a forum for discussion with members of the public on the plight of many of Fiji's native species, by providing a life size model of the species with updated information on its habitat and ecology.*
4. *Promote the Kulawai, Red-throated Lorikeet Project funded by the Critical Ecosystem Partnership Fund.*
5. *Promote the conservation activities of NatureFiji-MareqetiViti in order to rally more support on conservation efforts in Fiji.*
6. *The animal models would aid in education and awareness programs undertaken by NatureFiji-MareqetiViti in both rural and urban areas.*
7. *Proceeds from the exhibition would aid in the conservation projects undertaken by NatureFiji-MareqetiViti.*



Model of a Kulawai Red-throated Lorikeet made from recycled materials made by Anne O'Brien and donated to NatureFiji-MareqetiViti for auction for the Red-throated Lorikeet Project.

Tickets

Tickets to the launch of the animal model exhibition cost \$20 FJD per ticket, with catering for a total of 110 people.

Sponsorship of Animal Models

The sponsor of each life sized animal model was open to businesses, organizations as well as individuals for a minimum of \$200 FJD per model. As the exhibit will be on display for the two or three months after its launch on the 1st of June 2012, each sponsor would receive free eco-friendly advertising, compliments of the Fiji Museum.

Silent Auction on the Threatened Species Paintings

The *masi* paintings were also put on a 'silent auction' for the month of June 2012, for a minimum of \$100 FJD per painting.

METHODS

NFMV Advertising on the animal model exhibition

INFORMATION FLYER

Information flyers on the exhibition were printed and displayed in coffee houses, lodges as well as distributed via emails and postings on the NFMV facebook page, see *Appendix 1* for flyer.

NETWORKING VIA EMAIL

Potential sponsors were contacted at a personal level, with direct emails from the NFMV office, on the possibility of their sponsorship of an animal model of a particular species that maybe of interest to them. Each sponsor would receive a sponsorship agreement document in which they would identify which project they would support with their financial sponsorship, see *Appendix 2*

Sponsors of each animal received two free tickets to the launch of the exhibition as a way of getting in more people to bid for the *masi* paintings that were available through the silent auction.

Emails were also directed towards the NFMV membership network on the sponsorship of models as well as the availability of tickets at the NFMV office.

NATUREFIJI-MAREQETIVITI NEWSLETTER

NFMV produces quarterly newsletters per year, with our May newsletter issue no. 13 advertising the scheduled animal model exhibition to be launched at the Fiji Museum on the 1st of June 2012.

ADVERTISING ON THE 'MASI PAINTINGS OF THREATENED SPECIES'

Masi paintings will be on silent auction for the month of June 2012. A photograph of each painting has an associated Identification number to which it was displayed at the museum and advertised on the NFMV Facebook page. Visitors to the Fiji Museum as well as facebook visitors are able to send in their bids to the NFMV contact details provided, that is, Email: support@naturefiji.org with the details below:

- *Identification number of the masi painting of their choice*
- *Bidding amount (FJD)*
- *Name and contact details*

The winning bidders will be contacted by the NFMV office on the 1st week of July 2012. See *Appendix 4* for auction details.

TICKET SALES

Tickets were sold from the NFMV office, with all the staff standing by for sales, while recording of the ticket sales was done by Kelera Macedru.

Anne O'Brien creator of the animal models as well as the artist of the threatened species paintings also sold tickets with records that were also provided to Kelera Macedru before the launch of the exhibition.

RESULTS

Table 1: Summary of expenses for the Fiji Museum exhibit:

Details	Amount (\$)
Hire of exhibition space	\$500:00
Catering for 100 people	\$1,500:00
Fuel	\$80:00
Miscellaneous expense (blu tack + kava + lunch)	\$67:25
Total expenses	\$2147.25

Table 2: Summary of the revenue received during and after Animal model exhibition launch.

Total Revenue expected	Quantity No. sold/ No. available	Expected Amount (\$)	(a)Amount received (\$)
Tickets sold @ \$20 each	75/100	\$2,000	\$1,500:00
sponsor for animal models	18/20	\$4,000	\$4,444:20
Total amount on paintings that have received biddings (only highest bidder for each model recorded as of 8 th June 2012)	7/20	\$2000	\$1400:00
Total amount received			\$7,344:20

Excess of Income over Expenditure as of the 22nd June 2012: \$5,196.95 FJD

DISCUSSION

130 people attended the Fiji Museum animal model exhibition organized by NatureFiji-MareqetiViti, which included members, guests, sponsors and the general public and the press. Two presentations were given highlighting the plight of Fiji's threatened species especially the Kulawai. The models created a great deal of interest and awareness of the threatened animal species and this will be continued with the exhibition at the Museum remaining until the end of July at least. Awareness was raised of the activities undertaken by NatureFiji-MareqetiViti, especially with the Tomaniivi Nature Club (TNC) consisting of a group of youths from Nadala and nearby villages, situated near Mt. Tomaniivi, the area where the last confirmed sighting of the Kulawai, Red-throated Lorikeet was made.

This report reflects the revenue and expenses received from the 1st – 22nd June 2012. *Masi* paintings are still available for auction which will end on the 29th of July. Two animal models are available for sponsorship until the end of August 2012.


For details on the animal model sponsors see *Appendix 3*.

REFERENCES

Herman, K. J. 2011. *Red-throated Lorikeet "Kulawai"* *Charmosyna amabilis Monasavu-Tomanivi, Viti Levu. Report from January – March 2011 survey.* Unpublished NatureFiji – MareqetiViti Report # MV18: 2011/06, Suva.

IUCN list of threatened species, Version 2011.2, viewed 8th June 2012.


APPENDIX 1 EXHIBITION FLYER



NATUREFIJI-MAREQETIVITI PRESENTS
ANIMAL MODEL EXHIBITION
AT THE FIJI MUSEUM

On Friday June 1st an exhibition of models of Fijian animals will open at the Fiji Museum. Each species model is made from recycled materials by Anne O'Brien of Anniemals. Find out more about the work of NatureFiji-MareqetiViti, about Fiji's fabulous but endangered wildlife and what you can do to help!

Kadavu fantail




OPENING NIGHT
Friday 1st June at 7:30pm.
Tickets \$20 including refreshments.
Tickets are available at the NatureFiji-MareqetiViti office.

The exhibition at the Fiji Museum will run until the end of August.




SPONSOR A SPECIES
Each species model is available for sponsoring. For a minimum donation of \$200, the sponsor's name will be displayed beside the model for the full duration of the exhibition. Great advertising and helping wildlife at the same time!

If you would like to sponsor one of the model animals to help raise funds for NatureFiji-MareqetiViti, please email or phone using the contact details below.

Red throated Lorikeet



Visit the NatureFiji-MareqetiViti Facebook page for a sneak preview of the species models! At www.facebook.com/NatureFiji-MareqetiViti

  14 Hamilton-Beattie Street, Suva, Fiji
Tel 3100598
Email support@naturefiji.org
Website www.naturefiji.org 

APPENDIX 2: SPONSORSHIP AGREEMENT

Sponsorship Agreement:

14 Hamilton-Beattie Street, Suva, Fiji
 Box 2041, Government Buildings, Suva, Fiji
 Tel +679 3100598 Fax +679 3100582
 email support@naturefiji.org
 website www.naturefiji.org



**FIJI NATURE CONSERVATION TRUST
 ENDANGERED SPECIES EXHIBITION SPONSORSHIP AGREEMENT**

I, (name of authorised representative), confirm **Wildlife Conservation Society Fiji** support of the following projects:

Please number first three (3) preferences:

- ___ Children's book of Fijian wildlife
- ___ Fiji Sago Palm Project
- ___ Fiji's Endangered Bats Project
- ___ Garrick Reserve Endangered Palms Restoration Project
- ___ Fiji Crested Iguana Project (on Yaqaga Island)
- ___ Red-throated Lorikeet Project
- ___ Fiji Petrel Project
- ___ Taveuni National Park Project
- ___ NatureFiji-MareqetiViti Sustainability Fund

In support of the above projects, **Wildlife Conservation Society Fiji** will sponsor the model(s) listed below:

Species (Model)	Sponsorship amount	Or state preferred amount here (above FJD 200)
Hawksbill turtle	FJD 200.00	
Green turtle (Baby vonu)	FJD 200.00	

Upon signing this agreement, I agree to provide the above mentioned monetary support*.

.....
 Authorised Company Representative (sign here)

.....
 Date signed

*For payment please write a cheque out to:

Name of Bank	ANZ Bank
Address of Bank	ANZ House, 25 Victoria Parade, Suva
Name of Account	Fiji Nature Conservation Trust
Bank Account Number	10225116
Routing Code of the Bank	ANZBFJFX
Contact Person	Reena Fiu

NatureFiji-MareqetiViti is the operating organisation of Fiji Nature Conservation Trust, a registered charitable trust Reg # 817 Page 1 of 1

APPENDIX 3: ANIMAL MODEL SPONSOR DETAILS

Sponsor	Animal model sponsored	Amount sponsored (\$)
Siwatibau & Sloan barristers and solicitors	Rotuman myzomela & Pink-billed parrotfinch	\$400:00 FJD
Raintree lodge	Masked shinning parrot	\$200:00 FJD
Austrop foundation	Pacific sheath-tail bat & Fijian flying fox	\$500:00 AUS
Birdlife International Pacific Secretariat	Red throated lorikeet; Collared petrel; Bristled thighed curlew	\$900:00 FJD
Natural Solutions Pacific	Silkta	\$200: 00FJD
Wildlife Conservation Society	Baby vonu & Hawksbill turtle	\$400:00 FJD
Multiple Intelligence School	Black tipped-reef shark	\$200:00 FJD
Marita Brodie	Fijian burrowing snake	\$300:00 FJD
National Trust of Fiji	Crested Iguana	\$200:00 FJD
Gilianne Brodie	Giant Fiji long-horned beetle	\$200:00 FJD
Environment Consultants Fiji Ltd	Fijian copper-headed skink	\$300:00 FJD
Suliana Siwatibau	Fiji ground frog	\$200:00 FJD
BSP bank	Giant Forest Honeyeater	\$200:00 FJD
	Kadavu fantail	Yet to be sponsored
	Kadavu whistling dove	Yet to be sponsored

APPENDIX 4: MASI PAINTINGS 'SILENT AUCTION' DETAILS

(as at June 22nd 2012)

Pacific Sheath-tail bat [ID: PST_05]			
Pink billed parrot-finch [ID: PBP_20]			
Red-throated Lorikeet [ID: LRK_16]	\$150:00 Mary	\$181:00 Matt Capper	\$333:33 J Sloan
Lorikeet [ID: LRK_08]			\$333:33 J Sloan
Rotuman myzomela [ID: RMA_14]	\$333:33 JSloan		
Silkatil [ID: SL_02]	\$100:00 Deidre Madden		
Young turtles [ID: TRT_07]			
shark [ID: SHK_12]			
Fiji burrowing snake [ID: FBS_06]			
Bristled thighed curlew [ID: BTC_15]			
Collared petrel [ID: CLP_18]			
Crested Iguana [ID: CI_01]			
Fiji flying fox [ID: FFF_10]			
Fiji Giant long horn beetle [ID: LHB_09]			
Fijian copper headed skink [ID: CHS_13]			
Fijian ground frog [ID: FGF_04]			
Giant forest honeyeater [ID: GFH_03]	\$101 Nick & Natalie Askew		
Hawksbill turtle [ID: HBT_11]			
Kadavu fantail [ID: KFT_17]	\$100:00 Mary		
Kadavu whistling dove [ID: wsd_19]	\$100:00 Deidre Madden		

BIODIVERSITY CONSERVATION LESSONS LEARNED TECHNICAL SERIES

CEPF Small Grant Final Project Completion Report

Building community support to search for the Red-throated Lorikeet in Fiji

Organization Legal Name

Fiji Nature Conservation Trust

Project Title

Building community support to search for the Red-throated Lorikeet in Fiji

Date of Report

31st July 2012

Report Author and Contact Information

Dick Watling

CEPF Region

Polynesia-Micronesia Hotspot

Strategic Direction

Strategic Direction 3. Build awareness and participation of local leaders and community members in the implementation of protection and recovery plans for threatened species.

Grant Amount

\$ 19,173

Project Dates

1 November 2010 – 30 June 2012

73

Implementation Partners for this Project

Please explain the level of involvement for each partner

Department of Environment – overview – receives copies of all reports prepared and updates and NBSAP meetings;

Ba Provincial Authorities – overview – receives reports and updates for local district meetings;

Tomaniivi Nature Club – the Site Support Group for the Tomaniivi IBA/KBA – co-implementer of the project;

BirdLife International Fiji Programme and Conservation International – provision of advice when needed.

Conservation Impacts

Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile

The project has provided the longest series of searches for the Critically Endangered Red-throated Lorikeet, ever undertaken. In recent times (since 1965) this small lorikeet has only been recorded with certainty from the Tomaniivi IBA/KBA and adjacent forests and is one of the key species contributing to the designation of the Tomaniivi IBA/KBA. As such the work done has been a major contribution to our knowledge of the importance of the site, specifically for its role in the conservation of the Red-throated Lorikeet.

That the project's searches have failed to confirm the continued existence of the Red-throated Lorikeet gives rise to the greatest concern. The last confirmed sighting of the Red-throated Lorikeet was in 1993, although there have been several unconfirmed sightings since that time, the current project's work added to the several other unsuccessful searches for the Lorikeet in the past decade, means that we now have to acknowledge that Red-throated Lorikeet may well have been extirpated from Viti Levu. We have not done enough survey work on Taveuni where there remains significant undisturbed forest to reach a similar conclusion from there.

Please summarize the overall results/impact of your project against the expected results detailed in the approved proposal

1. A professional forest survey programme set up specifically for the Red-throated Lorikeet, and implemented.
2. No confirmed or unconfirmed sighting of the Red-throated Lorikeet – we need to acknowledge now that Red-throated Lorikeet is probably extirpated on Viti Levu;
3. Training for community members in bird observation and monitoring. Not very successful, however, two members of the Tomaniivi Nature Club trained and competent in searching for the Red-throated Lorikeet. One of whom, a lady became a proficient bird observer and very interested. However, it was not possible to train a cadre of youth in bird observation such that they could meaningfully regularly monitor transects and sites for the Red-throated Lorikeet. This was because of a variety of factors including logistics (sites were not close enough to the villages to be easily accessed at the right time of day); difficulties in teaching untrained birders to

accurately identify birds that they have no experience of; difficulties in maintaining interest in the absence of the trainer and/or incentives.

4. The potential for an ecotourism initiative, specifically bird guiding at Tomaniivi centered around one community member who did become a proficient bird observer and was keen to initiate a bird guiding programme for tourists, was evaluated on site by an overseas specialist;
5. Activities that raised the awareness of the Tomaniivi Nature Club as well as community members and local schools about the Red-throated Lorikeet. This included a visit and workshop by the Kulawai – the National Women’s volleyball team as part of a National HIV Awareness Programme.
6. Very successful function held at the Fiji Museum in the name of the Red-throated Lorikeet where models of Fiji’s endangered species made from recycled materials were exhibited and then auctioned with good publicity. An exhibition on display at Fiji Museum for nearly three months.
7. A detailed Species Recovery Plan prepared.

Please provide the following information where relevant

- *Hectares Protected:* N/A
- *Species Conserved:* N/A
- *Corridors Created:* N/A

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives

The project has provided a highly significant contribution in respect of our knowledge of the Red-throated Lorikeet – one of the IBA/KBAs most important species. Unfortunately, the result was a negative one – there is no evidence of its continued existence, which in itself is still highly significant, such that we need now to acknowledge that the Red-throated Lorikeet may well be extinct.

The bulk of the survey work was undertaken by highly experienced bird observers, rather than community members, as such there is little doubt about the overall outcome – no confirmed or unconfirmed observations.

In retrospect, it was probably unrealistic to believe that one could train community youth to a level where they could independently undertake surveys for species such as the Red-throated Lorikeet which is both extremely rare (perceived situation at the beginning of the project) as well as being extremely difficult to detect (retiring, crepuscular nature of the bird). Nonetheless the awareness raised during the project was excellent and there is at least one lady with the ability, interest and energy to undertake bird guiding for tourists.

The project was able to leverage a visit and report by two experienced overseas persons on the ecotourism potential of the area and the Tomaniivi Nature Club.

A very successful function was held at the Fiji Museum in the name of the Red-throated Lorikeet where models of Fiji’s endangered species made from recycled materials were exhibited and then auctioned with good publicity. An exhibition on the Red-throated Lorikeet and other endangered species was on display at Fiji Museum for nearly three months.

Were there any unexpected impacts (positive or negative)?

It was unexpected and very concerning that we would not observe the Red-throated Lorikeet during the project.

The following reports were prepared during the project:

Herman, K. J. 2011. Red-throated Lorikeet "Kulawai" *Charmosyna amabilis* Monasavu-Tomanivi, Viti Levu. Report from January – March 2011 survey. Unpublished NatureFiji – MareqetiViti Report # MV18: 2011/06, Suva.

Macedru, K. 2012. Promoting Awareness of the Kulawai, Red-throated Lorikeet *Charmosyna amabilis*. An Exhibition of Models and Masi Paintings of Endangered Fijian Fauna at the Fiji Museum and their Auction for the Project. Unpublished NatureFiji – MareqetiViti Report # MV18: 2012/11, Suva.

Masibalavu, V. 2011. Reports of surveys of the Red-throated Lorikeet, Kulawai *Charmosyna amabilis* with the Tomaniivi Nature Club, Nadala, Ba, Viti Levu. Unpublished NatureFiji – MareqetiViti Report # MV18: 2011/12, Suva.

Steven, Rochelle 2012. An investigative study into whether the Nadala/Vatumoli area could support nature-based tourism; and, a survey for the Critically Endangered Red-throated Lorikeet (*Charmosyna amabilis*). Unpublished report prepared for NatureFiji-MareqetiViti, Griffith School of Environment and International Centre for Ecotourism Research, Griffith University, Queensland, Australia

Watling, Dick 2011. Report on the Birds with Particular Reference to Threatened Species of the Wainavadu-Waisoi Catchments, Namosi, Viti Levu, Fiji. Unpublished NatureFiji-MareqetiViti Report # MV18: 2011/11, Suva

Watling, Dick 2012. Kulawai Red-throated Lorikeet *Charmosyna amabilis* Species Recovery Plan 2013-2017. Unpublished NatureFiji-MareqetiViti Report # MV18: 2012/20, Suva

Lessons Learned

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

The primary objective of the project – to provide up to date information on the Red-throated Lorikeet was realized, although in the end the bulk of the work was undertaken by highly experienced bird observers rather than trained community members.

In retrospect, it was probably unrealistic to believe that with the resources the project could offer, one could train community youth to a level where they could independently undertake surveys for species such as the Red-throated Lorikeet which is both extremely rare (perceived situation at the beginning of the project) as well as being extremely difficult to detect (retiring, crepuscular nature of the bird).

Project Design Process: (aspects of the project design that contributed to its success/ shortcomings)

Centering the project on the Tomaniivi Nature Club Site Support Group enabled the small grant resources to be applied immediately to activities with known individuals/communities. This dispensed with the necessary preliminaries of entry into and getting to know a new community(s) and their environment. Despite this we underestimated the logistical requirements (time and cost) of getting community members into the right location to undertake meaningful surveys for the Red-throated Lorikeet.

On the other-hand the project was flexible enough to switch the survey component to surveys being done by highly experienced bird observers, such that they were professionally implemented.

Project Implementation: (aspects of the project execution that contributed to its success/ shortcomings)

The project was flexible enough to switch the survey component to surveys originally planned for community members, being done by highly experienced bird observers, such that they were professionally implemented. This was especially important in that the initial surveys with the community members did not reveal any Red-throated Lorikeets indicating that a broader survey effort was required.

Overall the number and location of surveys combined with the experience of the observers provided a high level of confidence in the 'negative' result.

Other lessons learned relevant to conservation community:

Although an attractive idea to both the community and the umbrella organisation, expecting untrained community members to become trained to make useful scientific observations of an extremely rare and difficult to detect bird, was probably unrealistic. This might be considered specific to the situation at Tomaniivi, the nature of the bird and the resources available from a small grant, but it also likely to be true in many similar situations when the competence of communities to be trained to undertake scientific observations is overestimated.

Additional Funding

Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.

Donor	Type of funding*	Amount	Notes
Dr Kerry Herman	A	\$18,000	Six weeks as volunteer community trainer and expert search coordinator
Environment Consultants Fiji	A	\$9,500	15 Red-throated Lorikeet search days by Dick Watling with associated costs
Clare Morrison, Rochelle Steven, Griffith University	A	\$7,000	One week survey work and evaluation of ecotourism potential report
Anne O'Brien of Anniemals	B	\$3,000	20 models of endangered Fijian animals made from recycled materials and 15 paintings auctioned for Red-throated Lorikeet project

*Additional funding should be reported using the following categories:

- A Project co-financing (Other donors contribute to the direct costs of this CEPF project)
- B Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF project.)
- C Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

Further work on the Red-throated Lorikeet will not seek to replicate the community involvement envisaged by this project. It will rely entirely on expert input until such time as a site is located where the species can be regularly observed.

NatureFiji-MareqetiViti intends to follow up on the ecotourism-bird guiding potential with the community members trained during the project.

Summarize any unplanned sustainability or replicability achieved.

None

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

None required

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our website, www.cepfn.org, and publicized in our newsletter and other communications.

Full contact details:

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Organization name: NatureFiji-MareqetiViti

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Tel: +679 3100598

E-mail: watling@naturefiji.org

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