Research and conservation for the Collared Petrel *Pterodroma brevipes* in Fiji.

Report to the Audubon Naturalist Society for a Crowder Messersmith Conservation Grant prepared by Jeremy P. Bird, BirdLife International, 2012.

Collared Petrel *Pterodroma brevipes* caught on Kadavu, Fiji, May 2011. © Jeremy Bird/BirdLife International

Acknowledgements

This report documents the research findings and conservation actions that have resulted from three field trips undertaken in Fiji in 2011 and early 2012. The fieldwork was kindly supported by a Crowder Messersmith Conservation Grant from the Audubon Naturalist Society, the Craig S. Harrison Fund administered by the Pacific Seabird Group, the BirdLife International Global Seabird Programme and the Aage V. Jensen Charity Foundation.

Summary

In April and May, 2011, survey visits were made to Kadavu, Koro, Moala, Totoya and Matuku islands, Fiji, to search for globally threatened petrels, and to build local understanding of and capacity for petrel conservation. The surveys engaged members of the BirdLife International Pacific Regional Secretariat and the BirdLife Fiji Country Programme, NatureFiji-MareqetiViti, and the Nabukelevu Site Support Group in Kadavu.

Spotlighting surveys were conducted at night from vantage points on all islands - a floodlight was erected when possible (some locations were too difficult to access carrying the heavy equipment needed) and tape playback broadcasting threatened petrel breeding calls was used to attract birds. A hand held spotlight was used to help identify any birds detected. When boats were used to access islands observation were made at-sea of seabirds encountered during the trip.

Spotlighting surveys successfully detected the globally Vulnerable Collared Petrel *Pterodroma brevipes* on all islands visited. No active nesting burrows were found so definitive confirmation of breeding is still needed but the findings indicate Collared Petrel likely breeds on all islands. This is the first record of the species from Totoya or Moala, and strengthens anecdotal records of petrels grounded in villages on Moala and Koro. Polynesian Storm-petrel was not encountered at Nabukelevu, Kadavu, the source of the only breeding record of this species in Fiji originating from the 1800s. Wedge-tailed Shearwater was also found breeding on Totoya and Matuku. The findings of these survey visits are detailed in full in a manuscript copied in full below.

At-sea several globally threatened or Near Threatened species were encountered: Collared Petrel, Mottled Petrel *P. inexpectata* (Near Threatened), Tahiti Petrel *Pseudobulweria rostrata* (NT) and most significantly Fiji Petrel *P. macgillivrayi* (Critically Endangered). The Fiji Petrel seen at sea on 4/5/1a is only the fourth sighting of this species at sea following expeditions that recorded it in 2008 and 2009. The bird was seen between Totoya and Matuku flying in the direction of Moala and Gau (where it is believed to breed). Whether this species breeds in Yasayasa Moala is uncertain but this sighting and the observation of one all-dark bird while spotlighting on Matuku suggests that it is a possibility.

Following the success of these surveys an application was made to the Critical Ecosystem Partnership Fund that has successfully secured funds to implement a one year programme of research and to attempt to establish an artificial colony of Collared Petrels at Nabukelevu Important Bird Area, Kadavu. This project is run jointly by the Nabukelevu Site Support Group and the BirdLife Fiji Country Programme and is engaging local community members and national staff in petrel survey and conservation work. The project is building close links between the community on Kadavu and communities on the island of Gau where NatureFiji-MareqetiViti have been implementing research and conservation actions for petrels for some years.

In February 2012 BirdLife International and the Vatu-i-ra Site Support Group installed a remote playback device to broadcast petrel calls, and 20 artificial nesting burrows on Vatu-i-ra island. Since a successful rodent eradication in 2006 this island, which already supports internationally significant seabird populations, has been free from invasive mammals. This is the first attempt to establish a mammal-free population of Collared Petrels within their global range. News stories that have been published on the BirdLife International website have been provided in the body of this report to give full information on this, and other aspects of the work that has been conducted.

Finally, a financial summary of the work undertaken and the costs incurred is given.

In preparation paper:

Recent rapid land surveys for petrels and shearwaters (Procellariidae) in Fiji

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Introduction

The Pacific is pre-eminent among oceans in its importance for seabirds supporting more species, including more threatened species, than any other region (Butchart *et al*. in prep.). A recent global review of the status of and threats to seabirds identified several priority research actions as pre-requisites to implementing effective conservation actions (Butchart *et al*. in prep.). These include first locating and then monitoring breeding populations, gathering an improved understanding of species' ecologies and researching threats and their impacts on different species. There is a clear taxonomic bias in the frequency with which these research priorities are promoted. Butchart *et al*. (in prep.) and the IUCN Red List accounts for threatened seabirds (BirdLife International 2012) list a disproportionately high number of necessary research actions for storm-petrels (*Hydrobatidae*), petrels and shearwaters (*Procellaridae*) compared with other seabird species. This taxonomic bias can be attributed to basic ecology: the component species of these most poorly known families are characteristically highly pelagic and rarely encountered close to land, they return to land only at night, nest in burrows typically at altitude on densely forested islands and have become rare in the Pacific owing to invasive alien species (IAS) and historic over-harvesting (Carboneras 1992; Onley and Scofield 2007).

Fiji presents a microcosm of this Pacific-wide pattern, supporting several highly threatened yet poorly known seabird species. The Critically Endangered Fiji Petrel *Pseudobulweria macgillivrayi*, Collared Petrel *Pterodroma brevipes* (Vulnerable) and Tahiti Petrel *Pseudobulweria rostrata* (Near Threatened) are all believed to breed currently in Fiji (Shirihai *et al*. 2009; BirdLife International 2011). However, knowledge of the breeding distribution of these species is far from complete; the exact whereabouts of just two nesting burrows of Collared Petrel are known, none have been found for either of the other two species. Although there are some historic and anecdotal records from a number of islands recent sightings or groundings of birds apparently returning to colonies after dark have only been recorded from two islands: Gau (Fiji and Collared Petrels) and Taveuni (Tahiti Petrel). It is also evident that these species face threats in Fiji, the most pertinent of which are IAS. For example the University Museum of Zoology, Cambridge, UK, holds five specimens of Collared Petrel collected from Viti Levu, Fiji's largest island, in the late 1800s (Bretagnolle and Shirihai 2010). The species is now thought to have

been extirpated from this island owing to IAS, particularly through the introduction of Small Asian Mongoose *Herpestes javanicus*.

Recent at-sea searches have revealed the presence of other threatened species in Fijian waters for which there are no known breeding locations nationally. Some of these species are likely to be annual migrants or vagrants, but other species plausibly breed in Fiji (see Table 1 and Shirihai *et al*. 2009). These include White-throated (Polynesian) Storm-petrel *Nesofregetta fuliginosa* (Endangered) first recorded in Fiji from a bird taken on the nest in September 1876 on the island of Kadavu (Finsch 1877) but not re-recorded until it was seen at-sea in 2008 and 2009 (Shirihai *et al*. 2009); and Black-winged Petrel *Pterodroma nigripennis* to which anecdotal reports from the Lau group of islands in eastern Fiji may refer (Watling 2004).

The BirdLife International Fiji Programme and Pacific Secretariat are currently implementing two major initiatives for seabird conservation in Fiji: an island restoration programme removing invasive mammals from priority seabird islands, and the identification and protection of marine Important Bird Areas (IBAs) - priority sites for conservation of key at-sea seabird habitats. Surveys aiming to confirm presence/absence of target threatened petrel species as a first step towards evaluating restoration potential were conducted in April and May 2011, on priority islands in Fiji.

Table 1: Petrels, shearwaters and storm-petrels recorded in Fiji

Scientific name	Common name	IUCN Red List status	Suspected occurrence status	Source
Daption capense	Cape Petrel	LC	Non-breeding migrant	BirdLife International 2011
Pseudobulweria macgillivrayi	Fiji Petrel	CR	Breeding resident/migrant	BirdLife International 2011
Pseudobulweria rostrata	Tahiti Petrel	NT	Breeding resident/migrant	BirdLife International 2011
Pterodroma brevipes	Collared Petrel	NT	Breeding resident/migrant	BirdLife International 2011
Pterodroma cervicalis	White-necked Petrel	VU	Uncertain	BirdLife International 2011
Pterodroma inexpectata	Mottled Petrel	NT	Non-breeding migrant	BirdLife International 2011
Pterodroma nigripennis	Black-winged Petrel	LC	Uncertain	BirdLife International 2011
Pterodroma ultima	Murphy's Petrel	NT	Vagrant?	Shirihai *et al*. 2009
Pterodroma neglecta	Kermadec Petrel	LC	Uncertain	Shirihai *et al*. 2009
Pterodroma alba	Phoenix Petrel	EN	Vagrant?	Shirihai *et al*. 2009
Pterodroma leucoptera	Gould's Petrel	VU	Uncertain	Shirihai *et al*. 2009
Procellaria parkinsoni	Parkinson's Petrel	VU	Non-breeding migrant	Shirihai *et al*. 2009
Puffinus griseus	Sooty Shearwater	NT	Non-breeding migrant	BirdLife International 2011
Puffinus lherminieri	Audubon's Shearwater	LC	Uncertain	BirdLife International 2011
Puffinus pacificus	Wedge-tailed Shearwater	LC	Breeding resident/migrant	BirdLife International 2011
Puffinus tenuirostris	Short-tailed Shearwater	LC	Non-breeding migrant	BirdLife International 2011
Puffinus nativitatis	Christmas Island Shearwater	LC	Non-breeding migrant	Shirihai *et al*. 2009
Puffinus bulleri	Buller's Shearwater	VU	Non-breeding migrant	Shirihai *et al*. 2009
Puffinus carneipes	Flesh-footed Shearwater	LC	Non-breeding migrant	Shirihai *et al*. 2009
Oceanites oceanicus	Wilson's Storm-petrel	LC	Non-breeding migrant	Shirihai *et al*. 2009
Pelagodroma marina	White-faced Storm-petrel	LC	Uncertain	Shirihai *et al*. 2009
Fregetta grallaria	White-bellied Storm-petrel	LC	Uncertain	Shirihai *et al*. 2009
Fregetta tropica	Black-bellied Storm-petrel	LC	Non-breeding migrant	Shirihai *et al*. 2009
Nesofregetta fuliginosa	White-throated Storm-petrel	EN	Uncertain	Shirihai *et al*. 2009
Oceanodroma matsudairae	Matsudaira's Storm-petrel	DD	Non-breeding migrant	Shirihai *et al*. 2009

Methods

Target species

Island surveys targeted threatened and poorly known petrels previously recorded breeding or at sea in Fiji. Foremost amongst these species were Collared, Tahiti and Fiji Petrels. These species are all known to breed at altitude on forested islands. Surveys were timed to correspond with the peak calling period within the known breeding season of Collared Petrel and suspected breeding season of Fiji Petrel (O'Connor *et al*. 2010), but were after the peak season of Tahiti Petrel recorded in American Samoa (O'Connor and Rauzon 2004).

Survey site identification

The state of seabird knowledge in Fiji has been summarised, collating past records and identifying resulting survey priorities (BirdLife International 2009). This exercise highlit the islands of Ovalau, Kadavu and Moala because of historic breeding records of Collared Petrel. In addition to this, we used Google Earth to identify other potentially suitable breeding islands in need of targeted surveys i.e. 'high' islands (rather than flat sand atolls/cays) with considerable remnant forest cover. The second exercise identified Koro, where petrels have reportedly been grounded in villages in the past (D. Watlking pers. comm..), Totoya and Matuku in addition to the above islands (Figure 1). From this shortlist surveys were conducted on all islands bar Ovalau where surveys in 2004 failed to find any evidence of nesting petrels (Masibalavu and Dutson 2004).

Spot-lighting and acoustic surveys

Artificial lights are known to attract petrels, often with detrimental consequences significantly reducing juvenile and adult survival in some cases (Rodriguez and Rodriguez 2009). However, this behaviour has also been exploited to study threatened petrels attracting them to fluorescent flood-lighting and spot-lights (Crocket 1994). There is also considerable evidence that petrels can be attracted to the playback of conspecific calls (e.g. Podolsky and Kress 1992; Luzardo *et al*. 2008) and man-made 'war-whoops' (Tennyson and Taylor 1990). To maximise the chances of an encounter during short survey periods available on each island, these three methods of attraction were used in combination. Nightly an 8W fluorescent tube light was erected at dusk (c. 6.30 pm), attached to a 12V lead-cell battery. This floodlit an area around the survey point and is visible at distance to petrels returning at night from the sea. From 7.00 pm vocalisations of Collared Petrel, Tahiti Petrel and White-throated Storm-petrel were broadcast from a Radioshack mini amplifier-speaker for periods of three minutes every 30 minutes. These were interspersed with 'war-whooping' by observers every ten minutes for one minute. A LED Lenser P7 200 lumen spotlight was used to attract any birds heard calling in flight, and to scan for passing birds. Spot-lighting, playback and calling continued until 12.00 am to cover the hours with highest encounter rates identified during previous surveys on Gau (O'Connor *et al*. 2010). During this time each occasion when a bird was seen in the spot-light was recorded as a 'contact', and all individual calls were logged.

Figure 1: Islands surveyed including surveyed waypoints.

Results

Spot-lighting and acoustic surveys

A total of 49 hours were spent surveying for petrels and shearwaters during the hours of darkness on ten nights between 7/04/11 and 06/05/11. Collared Petrels were recorded from all five islands surveyed, although call frequency appears to be lower than has been recorded on Gau during an established spot-lighting programme (data from O'Connor *et al*. 2010; Figure 2; Table 2).

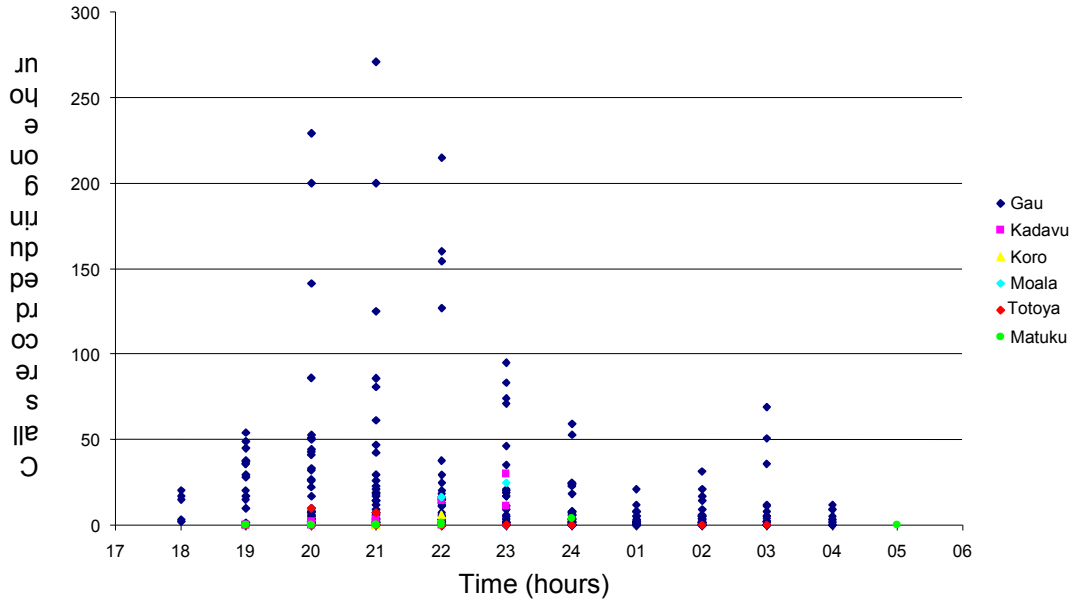

Figure 2: Mean number of Collared Petrel calls per hour. *Gau data from O'Connor *et al*. 2010.

Table 2: Call rates of Collared Petrel logged during night-time surveys

	Gau (O'Connor *et al*. 2010 - selected months)				Kadavu		Koro		Moala		Totoya		Matuku		Total (excluding Gau)	
	April		May													
Hour	n	Mean number of calls	n	Mean number of calls	n	Mean number of calls	n	Mean number of calls	n	Mean number of calls	n	Mean number of calls	n	Mean number of calls	n	Mean number of calls
19:00 - 20:00	12	15.75	8	28.25	2	0			2	0	1	0	1	0	6	0
20:00 - 21:00	12	23.42	8	18.88	2	1			2	0	2	5	2	0	8	1.50
21:00 - 22:00	12	17.25	8	12.63	2	1.5	1	0	2	0	4	1.75	3	0	12	0.83
22:00 - 23:00	12	8.17	8	11.63	2	7	1	6	2	8	4	0	2	0.5	11	3.36
23:00 - 24:00	13	5.08	8	13.25	2	20.5			1	25	3	0			6	11.00
24:00 - 1:00	9	4.22	7	8.71							1	0	1	4	2	2.00
1:00 - 2:00	9	3.56	7	1.86							1	0			1	0
2:00 - 3:00	9	3.56	6	7.83							1	0			1	0
3:00 - 4:00	5	1.80	6	7.83									1	0	1	0
4:00 - 5:00	3	1.00														
5:00 - 6:00													1	0	1	0

To eliminate bias caused by variable call frequencies of individual birds we compared presence/absence during each hour of recording across all islands (excluding Koro where only two hours of spot-lighting were completed). A Chi-square test of independence suggests there is a highly significant difference between expected and observed encounter rates across all islands sampled (χ^2 38.687, d.f. 4, $p<0.001$). However, the statistical power of this analysis is low given the small sample sizes obtained using the rapid survey protocol. Encounters were less frequent during rapid island surveys than they are on Gau during the established survey programme (Figure 3).

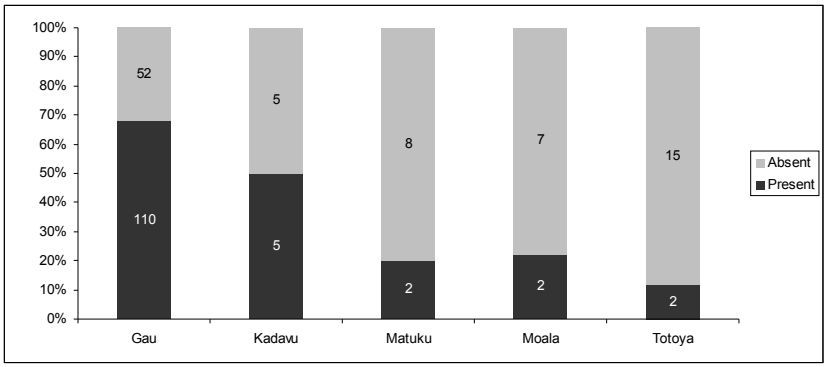

Figure 3: Proportion of hours when Collared Petrel was recorded as present or absent. Numbers represent the total number of hours surveyed. Data from Gau are from the months of April and May only (O'Connor *et al*. 2010).

No other petrel species were definitively encountered during spot-lighting and acoustic surveys. Wedge-tailed Shearwater was recorded from two locations during the survey. On 3/5/11 one bird was heard calling from outside a burrow on a small islet at the western limit of the entrance to Totoya's lagoon (18.991° S, 179.856° W), and two birds flew past the observers (JB, KM). On 6/5/11 JB, SC and KM camped on a small uninhabited islet on the east side of Matuku (19.176° S, 179.787° E) following local reports of all dark birds emerging from burrows at night, giving wailing cries and attracted to camp lights. Over 50 Wedge-tailed Shearwaters were observed beyond the reef while seawatching from the eastern end of the island from 5.30 pm till dusk. From dusk onwards no Wedge-tailed Shearwaters were seen or heard on the southern or western sides of the island and no burrows could be found around the southern beach or the ridge behind it, but three individuals were seen at the eastern end of the southern beach attracted by war-whooping and playback in the absence of a floodlight. The species apparently must breed on the northern side of the island and relatively impenetrable central ridge (27 m altitude).

During spot-lighting surveys various calls heard or observations of birds could not be identified. On 2/5/11 while camping at 18.991° S, 179.856° W on Totoya JB heard unidentified seabird-like calls between 03.00 and 03.50. A bird flew over on a number of occasions beyond range to be detected in the spotlight making a 'prrrrrrrpp' call somewhere between a purr and a trill, not attributable to any known seabird calls recorded in Fiji. On 5/5/11 JB and KM camped at the largest and most northerly of three rock pinnacles at the southern edge of a ridge that extends north to south down the centre of Matuku. Two Collared Petrels approached from the west, stalling in the wind when they crossed the ridge and became exposed to a headwind. Later in the same survey something all dark and the size of Collared Petrel stalled in the same way flying between the two pinnacles perhaps c. 20m distant, flapping into the wind; the bird was seen poorly and briefly in the light of a headtorch. At 2.30 am a bird flew over uttering the same prrrrrrrppp trill/purr heard on Totoya.

Discussion

Although not definitive proof that Collared Petrel breeds on all five of the islands surveyed our observations certainly indicate that this is likely. Given the rapid nature of this survey many variables remain that cannot be controlled for in analyses. This renders comparison with the longer-term dataset collected on Gau difficult. For example petrel attraction to spotlights varies with weather conditions and moon phase (Crocket 1984). While surveys were generally timed to occur around the new moon during back-to-back visits to Moala, Totoya and Matuku this was not possible, and observations took place regardless of weather conditions on any given night. It was not possible to disaggregate different weather conditions when running analyses. Similarly, potentially confounding variables such as annual variation, observer bias and detectability of birds at different locations could not be controlled.

Spot-lighting surveys are established on Gau so optimal vantage points have been identified over time. In contrast, during rapid surveys locations were chosen ad hoc. Given more time better locations might be identified that would yield more representative data on petrel occurrence. Encounter rates may have been low when observers were sited at the base of inaccessible ridges, or on one side of a slope, unable to detect birds on the other side. For these reasons, while encounter rates were lower during this survey than might be expected based on data from Gau, it is premature to draw firm conclusions.

Another potential issue with spot-lighting surveys that has never been addressed is the difficulty in drawing inferences about populations at a site. Spot-lighting does not generate a density estimate of birds so no population estimates can be calculated. The sphere of influence exerted by a spot-lighting station is unknown. Therefore, it cannot be established whether higher encounter rates at a spot-lighting station reflect 'better' sites where birds occur at higher density, or simply that birds breeding at low density are being attracted from greater distances (i.e. if one island is larger than another). We might expect larger islands to host larger populations even if birds occur at lower density and the island has an overall lower suitability than a smaller island. Productivity, a metric for island suitability, could be investigated through capture and ageing of birds at spotlights. Likewise, mark-recapture would allow population sizes to be estimated, but with the complication that the sphere of influence of a spotlight station remains unknown as does island fidelity of non-breeding birds recorded at spotlights. In the absence of known colonies/nests that can be studied in detail to improve knowledge of threats to Collared Petrel and inform actions, studying population trends and productivity through spot-lighting survey programmes offers potential conservation gains.

Regardless of the relative importance for Collared Petrel of each island surveyed, this study demonstrates that the species remains widespread in Fiji, almost certainly breeding at a number of different locations. These represent the first records of Collared Petrel from Totoya or Matuku, and the first confirmation from Koro, where previous records of petrels grounded in villages by lights have not been attributed to a species (D. Watling pers. comm.). Kadavu and Moala have had previous records of Collared Petrel. On June 6 1925 Correia (1927-1929 in D. Watling *in litt*. 2011) recorded:

"*many old holes, no birds inside. - only birds found all gray backed; - people went 3 times a week to get shearwaters to eat*[1]*; - they start coming in March, and during*

[1] This is referring to Collared Petrel rather than shearwaters.

March and April the people kill many hundreds and take eggs, but they stop killing in May in order to give the younger birds a chance to grow up. In June they start killing the young ones for eating, so this is the reason that very few are left in the holes; - collected about 20 in 2 days."

Harvesting was reported in east Kadavu in the 1980s (Watling 1986) and mid 2000s (BirdLife International 2006) and may continue today. Given the apparently high historic level of harvest, and that it continued in recent years, and given the long-term presence of invasive mammals on Kadavu it is interesting that Collared Petrel persists. An urgent next step is to establish population trends, the sustainability of any ongoing harvest, and annual productivity within the population. Preliminary attempts to address these questions within Nabukelevu IBA, the site of observations reported here, are being made through a Critical Ecosystem Partnership Fund project in 2012.

BirdLife International (2009) list nine islands in Fiji with reported current or historic breeding of Wedge-tailed Shearwater. We confirmed the first records of this species from Totoya and Matuku, but failed to record it at Nabukelevu, Kadavu. Its status at the summit of Nabukelevu is unclear, but Correia reports 'black shearwaters' nesting at Cape Washington (D. Watling *in litt*. 2011), presumably referring to Nagigia Island. Wedge-tailed Shearwater is a widespread and often abundant tropical species with colonies of tens of thousands of individuals in the Seychelles, northern Australia and Hawaii. Fiji does not hold any colonies of this order of magnitude; the largest are found in the Mamanuca islands and support fewer than 10,000 individuals (BirdLife International 2009; Bird *et al*. 2011).

Conservation implications and future actions

Collared Petrel was uplisted from Near-Threatened to Vulnerable on the IUCN Red List in 2011 following a review of available information (BirdLife International 2012). This review found that the species triggers criterion C2aii with a global population estimated to number fewer than 10,000 mature individuals that is undergoing a continuing decline, and with all sub-populations numbering fewer than 1,000 mature individuals (IUCN 2001). This remains the best approximation of the species's current status and the findings reported here do not change the assessment. While it is encouraging that the species is likely to be breeding at additional locations not reported in the IUCN Red List account we do not have estimates of the size of any of these sub-populations and there is no evidence to suggest they are more than tens or low hundreds of individuals. Furthermore, all islands visited currently support introduced mammalian predators that are inferred to be negatively impacting the populations.

It is hoped that further work by NatureFiji-MareqetiViti on Gau, and by BirdLife International on Kadavu will yield island population estimates, help to determine population trends, and clarify whether different islands can be treated as separate sub-populations or whether individuals transfer between breeding sites. Remote playback devices are being used as a conservation and research tool on both Gau and Kadavu to attract individuals to artificial nesting burrows where birds can be studied further and protected from invasive mammals. Furthermore, a playback device has been installed on Vatu-i-ra, a small island in Fiji where invasive mammals were eradicated in 2006, broadcasting calls of several species including Collared and Tahiti Petrels and Polynesian Storm-petrel. It is hoped that this will help to establish the first known predator-free breeding location for these species in Fiji (and globally in the case of Collared Petrel).

Although our findings suggest Collared Petrel is more widespread in Fiji than recent and historic records showed, there is a great deal more to be done. We still have very little idea of population sizes and trends, impacts of at-sea threats (and even what they may be) and invasive species, and true distribution. Historic sites like Vanuabalavu should be revisited and although surveys on Ovalau in 2004 failed to find Collared Petrel (Masibalavu and Dutson 2004) it was also missed during previous visits to Kadavu (Masibalavu 2003), so more work on Ovalau is warranted. Further survey effort targeting petrels is also needed in the Lomaiviti and Lau island groups, Fiji. Surveys are required to locate breeding colonies of Tahiti Petrel on Taveuni, and assess the island's importance for other petrel species. Tahiti Petrel may be expanding in the Western Pacific (BirdLife International 2012). Identifying colonies where population trends can be studied is an important step towards determining this. To date, no breeding sites are known in Fiji for Polynesian Storm-petrel but having been encountered during at-sea surveys (Shirihai *et al*. 2009; BirdLife International unpublished data) it is likely that it occurs as a breeding species because elsewhere in its range the species is thought to remain relatively close to colonies.

As we said in introducing this study, Fiji represents a microcosm of wider patterns in petrel knowledge and conservation efforts in the tropical Pacific. The research actions identified for Fiji to help improve current knowledge to a point where conservation actions can be effectively targeted can be paralleled elsewhere in the region. There is an opportunity for Fiji to act as a hub developing local capacity for petrel conservation research and actions importing best practices developed in New Zealand and Australia and exporting them to under-capacitated countries where further petrel conservation work is urgently needed.

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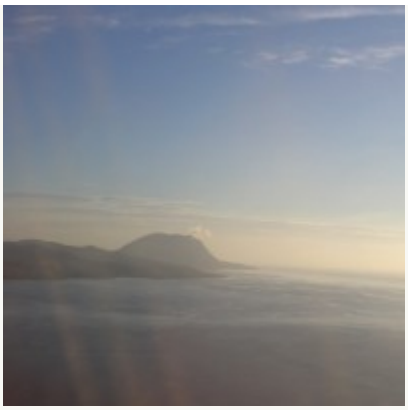
News stories published after field visits:

http://www.birdlife.org/community/2011/04/when-we-were-up-we-were-up/

When we were up we were up…

Tue, Apr 26, 2011

Blog Posts, News Posts, Pacific



Nabukelevu dominate the southern skyline of Kadavu, Fiji's fourth largest island.

Three staff in the BirdLife Pacific Secretariat recently returned from a two week trip to Kadavu, Fiji in search of the Collared Petrel. Jez Bird (Pacific marine Important Bird Area Co-ordinator) here recounts some of the adventures he had with Mark O'Brien (Senior Technical Advisor) and Mere Tabudravu (Conservation Assistant) during early April 2011.

Petrels in the tropical Pacific are amongst the most poorly known and highly threatened species in the region. These charismatic and long-lived seabirds present a real challenge to conservationists, returning to land after dark and yielding only tantalising glimpses at sea their habits and distributions remain something of a mystery. This becomes a real concern when we factor in that these species prefer to nest at altitude on steep-sided, forested islands where they and their eggs/chicks are typically prey to invasive mammals like rats, cats and pigs.

Fiji is a well known tourist Mecca but how many seabirds make the annual pilgrimage here to breed is less certain and recent surveys have thrown up a number of seabird surprises. The enigmatic **Fiji Petrel** (Critically Endangered) remains a phantom, seen at sea in recent years but proving elusive to conservationists working with NatueFiji-MareqetiViti to track down their breeding grounds on the island of Gau. So, with many unknowns left to tackle it was with some excitement that we headed to Nabukelevu (Mt Washington), a peak at the south-west tip of Kadavu, Fiji's fourth largest island.

BirdLife has been working at this site, an Important Bird Area, in conjunction with the**Nabukelevu Site Support Group** composed of volunteer members from local communities at the foot of the mountain. It's home to all **four of Kadavu's endemic birds** – these gems have amazingly evolved in site of Fiji's largest island somehow managing to keep themselves separate and never bridging the gap. Nabukelevu is also the source of the only record of **White-throated Storm-petrel** (Endangered) in Fiji from 1876. Nevertheless, our sense of anticipation wondering whether we were about to uncover new jewels in Fiji's crown soon turned to dread as the team battled up an 800 m mudslide carrying the kitchen sink to the top of the mountain. We all eat a lot during fieldwork, right? Wrong! I over-catered. And who new 800 m up could feel so far? Next time someone tells you to carry your backpack, a briefcase full of equipment and a 20 litre tub of Jacob's cream crackers up a hill just say no.

Put to shame by Joe Drau and Anare Bosse of the Site Support Group we eventually reached the summit and established camp for four nights **spot-lighting petrels** after dark. Or so we thought. Someone had other ideas as on dusk the heavens opened, and rarely closed for the next four days. The first evening attempting to attract any petrels unfortunate enough to have ventured out on 7th April was aborted after two hours with the camp in flood.

A waterlogged camp at the top of Nabukelevu

While we were aiming to attract petrels to our night-light on day 1 we only managed to coax in moths - but what crackers!

Day 2 dawned clear and bright; and then I awoke from my dream. In fact we were shrouded in mist and struggled to see our hands in front of our faces for much of the day. Confined to our tents the weather deteriorated further until the camp was buffeted by strong winds, lashing rain and frequent bursts of lightning. Finally though, at around 9pm things began to improve and we managed to set up our fluorescent tube and begin playback. Standing beside Mark at 10.15pm I heard the unmistakeable moan of a **Collared Petrel** beyond us in the dark. Mark on the other hand didn't, and this tantalising encounter was followed by silence until we finally both heard the same moan and low purring of a bird flying overhead. In all, twenty separate calls were heard during the evening probably relating to 2-3 individuals including a bird buzzing us in the spotlight on several passes overhead.

Click to listen to Collared Petrel call (Courtesy of Dick Watling).

The relief was palpable, the conservation status of Collared Petrel is being reviewed by BirdLife on behalf of the IUCN Red List in 2011 and the threats to this species globally (especially from invasive species) are a real concern. NatureFiji-MareqetiViti have been researching the species on Gau as part of their ongoing programme of work directed at Fiji Petrel, and work is continuing to clarify the taxonomic relationships and status of different populations. Ours is the **first confirmed record**of the species from Kadavu and follows anecdotal reports of petrel chicks brought into villages by dogs. To have an additional confirmed population in Fiji to begin work with to gain a better understanding of their status and the threats they are facing represents a great opportunity and one that we will work towards with Nabukelevu Site Support Group.

On day 3 we finally managed to dry out, but as Mark went from bad to better my health took a nose dive. As he switched the lights on in the evening I lay in a cold sweat in my tent. This lasted all of half an hour until I was roused by the cry "Oh wow! We've got one Jez". As I scrambled to layer up Mark was busily extracting a Collared Petrel from the mist net we'd erected. This whole trip had been designed as a pilot project and knowing that it's possible to catch birds paves the way for beginning to understand their ecology and demographics. It was a thrill to see Joe and Anare's reaction too – suddenly BirdLife's regional focus on tackling invasive species fell into place and the prospects for working further with the community are growing. The 'war whoops' we'd been uttering at the night to attract in petrels became congratulatory whoops and shaken hands.

A bird in the hand!

Joe Drau, Nabukelevu Site Support Group Chairman was integral to the whole operation.

Our final attempt to attract birds on 10th April was a complete washout but while tents, clothes and sleeping bags were dampened, spirits were not. The trip was a success paving the way for upscaling our involvement in Collared Petrel in the future. We estimated 10-15 Collared Petrels had been encountered during this flying visit, indicative we believe, of a

significant population inhabiting the site. **Next steps** are to secure funding to increase spot-lighting efforts to build up a marked population from which numbers at the site can be estimated and any other rarer species can be detected, radio-tag birds on Nabukelevu to help locate nesting burrows and then study breeding success and threats, particularly the impact of invasive species. We're hoping to build relationships between the BirdLife Fiji Programme and NatureFiji-MareqetiViti to share knowledge between staff, and to work within local communities to raise awareness about this unique site.

After a week of ups and downs our take home message was that another step has been taken down a long road towards improving the conservation status of many rare and threatened petrels in Fiji and the wider region.

Rain hampered efforts throughout the week but when the clouds parted briefly the views of Kadavu were memorable.

Acknowledgements *– the BirdLife Pacific Secretariat and BirdLife Fiji Programme would like to thank members of Nabukelevu Site Support Group for their continuing engagement in environmental action and education within the IBA, and also to the Crowder Messersmith Conservation Fund – Audubon Naturalist Society, the Craig S. Harrison Conservation Fund – Pacific Seabird Group, and the BirdLife International Global Seabird Programme for generously supporting this venture.*

http://www.naturefiji.org/newsstory.php?id=136

10 Days of Seabird Documentation in Yasayasa Moala

NatureFiji-MareqetiViti recently took part in a seabird survey in Yasayasa Moala with Birdlife International-Pacific Secretariat.

04/08/2011 - Kelera Macedru

On the invitation of Birdlife International-Pacific Secretariat, NatureFiji-MareqetiViti participated in a seabird survey amongst the islands of Moala, Totoya and Matuku. The results obtained, revealed that the waters between the islands of Totoya, Matuku and Moala are found to be important for seabirds, as a fair number of petrels were documented, namely the Tahiti petrel, Mottled petrel, and Collared Petrel, in the months between late April and early May. The most significant find was the sighting of a Fiji Petrel between the island of Totoya and Matuku, becoming the 3rd ever sighting recorded of this rare seabird.

From left to right: Steve Cranwell and Jeremy Bird of Birdlife International with Kelera Macedru of NatureFiji-MareqetiViti.

Land based research on the three islands, revealed that Collared petrels are indeed breeding on these islands. Collared Petrels are currently listed as a Near Threatened species (IUCN Red list 2011) with an assumed small population that is declining . Previously known to have only been breeding in the islands of Gau, Ovalau, Taveuni, Kadavu and Moala. It was once recorded in Viti levu and Vanua levu, but the population has since been extirpated since the predation of the introduced mongoose. Currently with the Fiji Petrel project by NFMV, studies have been focused on acquiring better knowledge about the ecology of the Collared Petrels. The information from this survey would provide ground information on petrel behavior that would prove beneficial to the research and ultimate protection of Fiji's only endemic seabird, the Fiji Petrel.

Fiji Petrel in flight near Gau Island (Source: Hadoram Shirihai).

Rat identification proved crucial to the seabird research, having recorded Pacific rats on all three islands, while near Naroi village in Moala, Black rats were identified. Black rats are major threat to seabird's globally; the existence of this rodent species would be a major threat to the Collared Petrels on the island, as well as other yet to be documented seabird species. The research was made possible with the kind assistance of the captain and crew of the yacht Infinity, that provided both passage, accommodation , as well as assisting in research activities both on land and at sea. On the 13th of July, 2011, NatureFiji-MareqetiViti on behalf of the research team, presented at the Lau Provincial Council meeting the findings of the 10 day survey trip. The presentation was received positively, particularly the results of the seabird survey.

Rat trapping - Pacific rats are common in Fij.

http://www.birdlife.org/community/2012/02/avian-matchmaking-on-valentines-day/

Avian matchmaking on Valentine's Day

Mon, Feb 20, 2012

News Posts, Pacific

BirdLife's Dr Mark O'Brien tests the speakers for Vatu-i-ra island, Fiji.

Two staff from the BirdLife Fiji Programme and the Pacific Secretariat gave up any amorous intentions of their own on Valentine's Day to try a little avian matchmaking. Together with volunteers from the Vatu-i-ra Site Support Group (SSG), the team spent three days on Vatu-i-ra Island, Fiji, installing a solar-powered sound system designed to broadcast the calls of several threatened seabirds in a bid to attract them back to the island.

"We're very excited to be contributing to the conservation of one of Fiji's rarer species," said Sione Gonewai of the Yavusa Nagilogilo, also Chair of the Vatu-i-ra Site Support Group. "As the owners of Vatu-i-ra our community recognises our role as custodians of the site. We've been working to protect the island, its seabirds and the marine environment upon which they depend for a number of years."

In 2006 with the local community BirdLife undertook a successful eradication of Pacific rats, accidentally introduced by people many centuries before. Introduced mammals have been the number one driver of bird extinctions and their impact has been particularly severe in the Pacific. However, thanks to a great deal of hard work across the BirdLife Pacific Partnership a number of islands around the region have now been cleared of invasives.

These sites are acting as safe havens for many species and Vatu-i-ra is no exception. The island supports internationally significant populations of several noddies, terns and boobies; and already since the eradication survey teams have recorded encouraging signs of regeneration such as an apparent increase in the number of ground-nesting birds like Crested and Bridled Terns – those that are most susceptible to predation.

Now the aim is to take full advantage of this site by establishing the first colony of Collared Petrels at a predator free location.

"Our mammal free islands are huge assets", said Sialesi Rasalato, BirdLife's Fiji Programme Conservation Officer. "Now we're really looking to join all the dots and maximise the potential these sites have for conservation".

Petrels are the most threatened group of seabirds in the tropical Pacific having suffered historical declines owing to both overharvesting of adults and chicks for food and the negative impact of invasive mammals. Collared Petrel was uplisted to Vulnerable on the IUCN Red List in 2011 because available evidence suggests its global population probably numbers fewer than 10,000 individuals and it is experiencing an ongoing decline. Although surveys last year discovered that the species still occurs on a number of islands around Fiji, they also found invasive mammals present at all sites.

Remote playback has proven itself to be an enormously successful tool in New Zealand and elsewhere for attracting threatened seabirds to breed at specific sites. In this case, selecting a predator-free island offers the chance of establishing a colony of a very rare species where one of the major threats has been removed. The speaker system can run for up to five years, switching on every night to broadcast calls and turning itself off again to recharge in daylight. As well as the sound system the team has installed 20 artificial nesting burrows to encourage the first birds in.

"Collared Petrel is an obvious target, but we're looking to benefit a number of Fiji's rare and threatened seabirds like Tahiti Petrel and Polynesian Storm-petrel," commented Sia Rasalato.

2012 marks the start of a real push for petrel conservation in Fiji. NatureFiji-MareqetiViti are continuing their searches for petrel burrows with specially trained dogs on Gau, and have just installed a playback device to begin attracting birds to artificial burrows where they can be effectively monitored and protected. The BirdLife Fiji Programme and the Nabukelevu site support group on Kadavu are also beginning a similar project.

BirdLife would like to acknowledge all of its donors who have supported the important work described here: The David and Lucile Packard Foundation, the Aage V. Jensen Charity Foundation, the Pacific Seabird Group, the Crowder Messersmith Conservation Fund and Critical Ecosystem Partnership Fund.

Financial Summary

Table 1: Expenditure for Kadavu survey

Item	Breakdown - FJ$/unit x units x days	Total FJ$
Expenditure during the trip		
Per diems for SSG staff	20 x 15	300
Transfers	155.50 + 75	230.5
Lodging in village		120
Freight	41 + 25	66
Contingency	150	150
Lunch 13/4/11	Jez and Mark	15
Taxis		105
Sub-total - expenditure during trip		986.5
Solar Panel from Gray Energy	580	580
Food	55.96 + 13.50 + 336.90 + 5.30 + 19.60	431.26
Sevusevu + Itatu	35 x 2	70
Sub-total - items to purchase before		1081.26
Flight	188.6 x 2 (NB - one extra flight was purchased but can be reclaimed)	377.2
Ferry	75 x 4	300
TOTAL Fiji Dollars		2744.96

Table 2: Expenditure for Yasayasa Moala survey

Item	Breakdown - FJ$/unit x units x days	Total FJ$
Expenditure during the trip		
Per diems for local staff + additional Waka + additional fuel	20 x 3 x 8	390
Sevusevu + Itatu	20 x 3 x 2	120
Taxis		30
Roko - Lau Provincial Office	30 x 11	330
Fuel		300
Sub-total		1170
Food		192.52
Sub-total - items to purchase before		192.52
Payment for boat	US$1000	1770
TOTAL Fiji Dollars		**3132.52**

Table 3: Expenditure during Vatu-i-ra playback installation

Item	Breakdown - FJ$/unit x units x days	Total FJ$
Expenditure during the trip		
Per diems for local staff	20 x 3 x 6	360.00
Taxis		296.20
Boat hire		920.00
Fuel		27.99
Sub-total		1,604.19
Food		234.25
Calling cards		27.00
Concrete		9.99
Waka		60.00
Nest boxes		2,090.00
Sound system		6,505.92
Sub-total - items to purchase before		8,927.16
TOTAL Fiji Dollars		**10,531.35**

Table 4: Overall breakdown of expenditure for three sub-projects

Small grants breakdown

Donor	Award	Currency	Total FJ$
Crowder Messersmith Species Conservation Fund	2,000.00	US$	3,540.00
Pacific Seabird Group Craig S. Harrison Conservation Grant	2,000.00	US$	3,540.00
Global Seabird Programme	3,592.00	US$	6,357.84
Aage V. Jensen Charity Foundation	1,256.00	EURO	2,970.00
TOTAL funding secured	**8,848.00**	**US$**	**16,407.84**
Kadavu expenditure			2,744.96
Yasayasa Moala expenditure			3,132.52
Vatu-i-ra expenditure			10,531.35
TOTAL expenditure			**16,408.83**
BALANCE			-0.99

The final expenditure was greater than the amount originally budgeted. The major contribution to this was duty charged on the import of the sound system for Vatu-i-ra and the expense of building a custom designed secure cage to prevent component parts like the battery and solar panel being stolen.