PROTECTING THE INTERNATIONALLY IMPORTANT SEABIRD COLONY OF VATU-I-RA ISLAND, FIJI

Feasibility Study

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Executive Summary

BirdLife International conducted a survey of Vatu I Ra Island in 2004, and subsequently identified it as an Important Bird Area due to the large colonies of seabirds. They identified that rats were present in large numbers and concluded that their eradication would be necessary for the protection of the birdlife of the island.

The owners of the island (the Nagilogilo Clan) are exploring eco–tourism as an activity to generate income for the community and agreed that BirdLife International apply for funds for the eradication project. Since then BirdLife International has met with the community in order to engage them in the eradication and raise their awareness of the significance of predators on bird populations. It has also supported them in their efforts to seek more active management of the island and in their aspirations for economic development.

In line with its development as a Pacific Invasives Initiative project a feasibility study group met with the community in April 2006, and visited the island.

The feasibility team concluded that:

1. The island of Vatu I Ra is suitable for the successful eradication of the Pacific rat population. This operation should be undertaken in July 2006.
2. A ground-based operation using Pestoff 20R manufactured baits containing the anticoagulant Brodifacoum should be employed.
3. Baits should be hand-spread over the entire island along marked lines to ensure total coverage. In addition elevated bait stations should be used in areas of high hermit crab densities as a back up to prevent crabs consuming baits intended for rats.
4. Based on similar operations elsewhere it was concluded that non-target risks to resident seabirds and lizards are negligible.
5. The Nagilogilo Clan understands and supports the project, and is willing to be involved.
6. BirdLife International has successfully engaged the local community in the project and has established access to advice and support for the development of the island.

The feasibility team recommends the following:

1. an eradication project is undertaken based on the methodology described in this report
2. the opportunity this project presents to refine rodent eradications in the presence of crabs should be taken
3. an operational plan is prepared in line with PII requirements
4. A biosecurity plan is prepared prior to the eradication and is consistently implemented.
5. A biosecurity officer is nominated by the Clan
6. A training session be designed and delivered to all those participating in the eradication to ensure safety and quality standards are employed.
7. An awareness package be developed on invasive species and delivered as a workshop with the community and as part of the training for guides for the eco- tourism project. The issue of reinvasion prevention needs to be part of this package.
8. A six-monthly monitoring Programme is scheduled by Birdlife to cover two years from the eradication.
9. Eradication of veldt grass is undertaken as soon as possible.

Introduction

Vatu I Ra is a small 2.3 ha island located in the Vatu I Ra Channel between Vanua Levu and Viti Levu about 15 km off the north east coast of Viti Levu. The island is owned by the Nagilogilo clan who live in two villages in Rakiraki province of Viti Levu.

BirdLife International carried out an Important Birds Area (IBA) assessment visit in 2003, followed by a survey in 2004. They subsequently identified it as an IBA due to the large colonies of seabirds. As a result of the survey BirdLife reported that rats were having a negative effect on the birdlife of the island and explained to the community the benefits of eradication.

The island is also listed as a Site of National Significance (SNS) in the Fiji National Biodiversity Strategy and Action Plan, and has also been identified as one of 14 IBA's in Fiji (Dutson & Masibalavu *in press*). The island supports nine species of breeding seabird including in excess of 20,000 pairs of black noddy (*Anous tenuirostris*) as well as breeding Hawkesbill turtles (*Eretmochelys imbricata)* and the endemic pygmy snake-eyed skink (*Cryptoblecephalus eximius*).

The 2004 surveys indicated that the Pacific rat (*Rattus exulans)* is present in high densities. Evidence from other islands suggests that when rats are present in high densities they are, through nest predation, a significant threat to seabird populations. Indeed, the 2004 survey has already provided evidence of depletion of ground-nesting seabird species compared to tree-nesting species (30-200 pairs of ground nesting species compared with about 27,000 pairs of tree nesting black noddies). This project seeks to protect seabird populations from further decline by removing the predation pressure posed by Pacific rats.

The island has a forest comprising *Pisonia grandis* with a canopy height of less than 6m with an open under story. Its highest point (18 metres above sea level) was once the site of a navigation light evidenced by a concrete pad and discarded batteries.

While the island is owned by the Nagilogilo Clan there are a number of visitors who land without permission from the owners. These visitors include people from local resort hotels and eco-tourism operators bringing paying customers, none of whom contribute to the island or its owners. Fishermen from as far away as Suva also camp on the island and harvest birds, eggs and turtles.

The clan has explored the possibility of generating income from tourist visits to the island (as a site of ecological importance). They have sought the help of BirdLife International to help them to manage the eradication of rats as a step towards this goal. The clan wishes to generate income for their community and see eco-tourism as a means to do this. They are upset that other tourist operators take trips to the island without the landowners benefiting. They wish to clarify to the public their ownership of the island and they wish to explore the development of their own tourist venture. In order to do this they need to manage the island more visibly and protect it from a range of ecological threats including rat predation and harvesting of birds, eggs and turtles.

A proposal by BirdLife International to eradicate the rats from Vatu I Ra using Regional Natural Heritage Program (RNHP) funds was approved through Conservation International's Critical Ecosystems Partnership Fund. This project was approved for development as a Pacific Invasives Initiative (PII) – supported project. This feasibility study report – and associated Project Design Document and

Operational Plan satisfies PII project development requirements.

PII feasibility study guidelines identify the following elements:
- The proposed project must be technically feasible
- risks can be effectively managed
- costs are acceptable and are outweighed by the benefits
- the local community and other stakeholders support the project and are engaged in its implementation
- There are prospects for outcomes to be sustained, and for the project to be up-scaled
- opportunities to raise awareness of the impact of invasive species on local habitats
- opportunities to enhance and develop the capacity of local agencies and communities to manage invasive species.

This feasibility study addressed each of these elements.

Feasibility study

The feasibility team met with the community on 20 April 2006 and visited the island on the following day. The brief visit was to survey the island, to investigate the feasibility of eradicating Pacific rats from the island and to provide an opportunity to train BirdLife International staff in assessing the removal of predators from this – and other islands in the future.

The team comprised:

Vilikesa Masibalavu, BirdLife International – project manager
Elenoa Seniloli, BirdLife International – project assistant
Rob Chappell, Department of Conservation, New Zealand – technical advisor
Karen Johns, Community Engagement Advisor, PII
Annette Lees, PII advisor

Also accompanying the team were:
David Orchard, Birdlife International (volunteer)
Moala Tokota'a, Wildlife Conservation Society
Sailosi and Apolosa from Viwa village who are part of the Viwa Island Restoration Project team (another Fijian PII-supported Demonstration Project).

The feasibility trip was organised by BirdLife International and funded using BirdLife and RNHP funds.

The objectives of the feasibility study were to:

1. Meet with the Nagilogilo clan to clarify their engagement with the rat eradication from Vatu I Ra
2. Conduct a site visit to:
    a. map the island
    b. assess the best methods for eradication
    c. determine an effective application rate that would deliver adequate bait to all rats on the island
    d. identify the presence of and risks to non - target species
    e. Train members of the BirdLife team and community members in eradication techniques
3. Identify long term management options for Vatu I Ra

Activities of the feasibility team

The group met with thirty members of the community (from two villages - Navuniivi and Nasau) including men, women and young people. Many issues were discussed at the meeting such as the community's connection with the island, their interest in rat eradication, concerns about the impact of toxins on the island's flora and fauna and eradication methods.

The next day the team were taken to visit the island accompanied by the clan leader Sione Goneiwai and eight others from the community. The island was mapped using GPS and explored in order to design the most effective eradication plan. A range of birdlife and other flora and fauna was noted, as was evidence of the effects of rats (bird and egg remains) and people.

A member of the team also met with a number of NGOs to explore the possibility of partnerships with BirdLife on environmental awareness and up scaling of the project.

Findings

The island is approximately 300m long and 100m wide and flat for the most part with rocky promontories at each end of the island. The shoreline is a mixture of coral beach and steep headlands. The island has an open canopy of *Pisonia grandis* allowing for easy movement throughout.

Native wildlife observed:

The following species were identified on or near the island:

1 Lesser frigate bird (*Fregata ariel*) – flying in numbers around island.
2 Masked booby *(Sula dactylatra*) – adults and late chicks on rock outcrop
3 Red footed booby (*Sula sula*) - small number on nests in *Pisonia grandis*
4 Brown booby (*Sula leucogaster*) – flying in numbers around island
5 Crested tern (*Stera bergii*) – eggs and chicks on rock ledge. Approximately 30 nests; one egg / chick per pair
6 Black naped tern (*Sterna sumatrana*) – larger number of eggs on coral beach – one egg per pair.
7 White tern (*Gygis alba*) – one pair possibly with nest
8 Black noddy (*Anous minutus*) – numerous nests in *Pisonia grandis.* Eggs and chicks at all stages. One egg / chick per pair in nests comprising *Pisonia* leaves feathers and guano.
9 White-tailed tropic bird *(Phaethon lepturus*) - one pair circling the island
10 No land birds were seen.
11 Pygmy snake-eyed skink *(Cryptoblepharus eximius*) – low numbers in rank vegetation on perimeter of island.

Presence of Invasives

Mammals

The only invasive mammal identified on Vatu I Ra is the Pacific rat (*Rattus exulans*). There are no reports of other rodents being present. No research has been carried out to assess the effect on the bird and reptile populations on this island but the team found evidence of recent black noddy chick predation to indicate that rats are feeding on this available food source. Given the dense rodent population (two Pacific rats were seen running through the forest in daylight) and food limited to that on the beach, and numerous breeding birds (no fruiting trees were found), it is assumed that the effect on breeding birds is significant over time. All the birds identified as breeding on the island have one chick per season; therefore any predation will have

significant population-level impacts. There were two ground nesting tern species found nesting on the open perimeter but no species using the ground beneath the forest. This may be the result of fallout from the intense nesting in the canopy, or predation by rodents.

Weeds

During time on the island the invasive African veld grass was found in three locations. This weed is of concern as if left to mature it provides a significant risk to the Island ecosystem including the ground nesting bird habitat.

Management of the weed needs to be incorporated into the operational plan and if possible undertaken at the same time as the rat eradication. The Clan, with the support of Birdlife, will need to develop a long term management plan for the control of this weed.

Harvesting

The clan advised the feasibility team that some harvesting occurred on the island. This they believe was mostly carried out by fishermen who use the island as a campsite. On landing on the island the next day for the site visit we found two fishermen camped. They had been fishing, and had come from Suva in a 6m open boat. Two very recent fire pits were found near their camp. One included the bones of a large seabird, possibly a booby. The other pit had green turtle bones and shell along with crested tern egg shells. The men departed the island shortly after we landed.

The clan had requested that BirdLife construct a large sign which they could erect on the Island in order to inform people of the importance of the island's ecology. The site visit provided the opportunity to erect the sign which stated; *"The Yavusa Nagilogilo wants to remind visitors that Vatu I Ra is being identified as a site of National Significance due to its wildlife. Therefore you are required not to litter, cut trees, harvest eggs/birds, disturb breeding sites or poison fish.*" The sign was in English and Fijian and was signed off with the words "*Fijian Government*".

Impact of Invasives on Island biodiversity

Removal of pacific rats from the Island will augment the seabird population and possibly lead to the return of ground–nesting (and perhaps burrowing) seabirds.

Studies on temperate islands in New Zealand indicated that Pacific rats have substantial impacts on forest structure through selective consumption of seedlings and the seeds from large-fruited trees (e.g. Campbell and Atkinson 2002). They also affect invertebrates and several species of lizards (Towns et al. in press).

Limited numbers of the indigenous pygmy snake-eyed skink (*Cryptoblepharus eximius)* was observed in the perimeter vegetation. This species may benefit from removal of Pacific rats, but at present there are no records of the effects of these rats on tropical reptiles to use as a guide. Furthermore, there are reports of behavioural changes by lizards in New Zealand once Pacific rats were removed (Atkinson and Towns 2005), and the recovery of some species of geckos suppressed to such low levels they could not be detected while the rats were present (R. Parrish *pers.comm*.). The appearance of unreported species of lizards on Vatu I Ra after rats are removed is therefore possible, and is a strong incentive for post-eradication monitoring.

Conclusions

The feasibility team concluded that the Island is suitable for rat eradication and that, with support, the community has the capacity to manage the Island biodiversity in the long term.

Options for the removal of Pacific Rats from Vatu I Ra are:

1 Trapping – while only a small island this technique has had limited success in past operations internationally. The potentially high capture rate of hermit crabs is likely to compromise this approach. Traps and/or sets would need to be specially designed. Given the potential limited success and cost it is therefore not the preferred option.

2 Aerial broadcast – Vatu I Ra is too small to justify the detailed logistics and high costs of an aerial operation involving bringing a helicopter, pilot and equipment from New Zealand.

3 Hand broadcast– this approach will provide complete coverage with minimal cost and risk. This is the preferred option.

Outline of the eradication approach.

It is recommended that the Pacific rat population be eradicated from the island by presenting baits containing the second-generation anticoagulant Brodifacoum to every rat. Due to the open and easy access we recommend a ground - based operation involving the hand laying of toxic 'Pestoff 20R' pellets. The operation will require a total of 60 kilograms of toxic bait being applied in two applications. This equates to approximately 26kg of bait per hectare.

A key issue still to be resolved is how to address the issue of significant crab interference with baits. Various approaches have been taken to date including applying very high densities of baits (90kg/ha in one recent project), and using bait stations or platforms to exclude crabs – and not rats. This project provides a significant opportunity to address this issue since there is only one (known) rodent present and the island is small and uninhabited. It is proposed to use this operation to test the hypothesis that it is possible to eradicate rats using toxic baits applied at 26kg/ha (in two applications of 13 kg each).

Bait will be hand-broadcast on the ground on marked transects along the island as well as around the perimeter. Three parallel lines 25m apart will be marked with flagging tape for the length of the island. A perimeter line will follow the forest edge just above the beach (Map 1). Bait will be hand-broadcast along these internal and perimeter lines. Two applications of bait 14 days apart will be applied along these lines**.** Particular attention will be given to applying bait along the perimeter line in the boulder and rank grass areas where rat densities may be higher.

Simple "bait platforms" consisting of a 250mm diameter pot plant saucer mounted on a peg so that the saucer is 40mm above the ground will be used to exclude hermit crabs from baits – whilst permitting rat access. Because crabs will not be able to access baits on these platforms, the platforms will serve as an additional tool to ensure all rats have access to bait. They will also potentially allow any remaining rats to be detected. Bait platforms will be located at a range of sites around the island.

At least seven days after the second baiting the island will be monitored, using two lines of 10 tracking tunnels, to detect any remaining rats. Wax tags lured with peanut butter will be spaced across the island and left for a week. Monitoring using rodent tracking tunnels and wax tags should be repeated every six months for two years. Tracking tunnels will be baited with burnt coconut as tests on Viwa Island have

shown this to be an effective and cheap lure.

The eradication operation will be undertaken by five of the clan and supervised by BirdLife International Project Coordinator Vilikesa Masibalavu and staff member Elenoa Seniloli.

Potential negative environmental effects of the project

While it is desirable to limit the use of toxins in natural environments, the benefits to native species from using toxins in properly planned and executed eradication operations typically outweigh negative effects. Monitoring of previous eradications of Pacific rats in New Zealand has indicated that populations of seabirds and reptiles have benefited significantly from the toxin-based removal of rodents (Atkinson and Towns 2005, Towns et al. in press). Seabirds will not take baits and there are no land birds or carrion feeders on the island.

Vatu I Ra has a significant population of hermit crabs. Research carried out so far suggests that Brodifacoum is not toxic to invertebrates – including crabs. While there is some risk of predators and scavengers accumulating high levels of toxin in their body tissues as a consequence of consuming crabs which have eaten toxic baits, no such predators or carrion feeders have been identified on Vatu I Ra. On the other hand, Towns and Atkinson (2004) found significant increases in invertebrate diversity after Pacific rats were removed from Korapuki Island in New Zealand. This was attributed to the removal of rat predation of invertebrates.

Another risk to address was the effect of 'Pestoff 20R' baits on the coral surrounding the island. Two studies in New Zealand have been carried out on the effects of this toxin on the coastal environment - off Kapiti and Hauturu Islands (Cole and Singleton, 1996). No negative effects were recorded in this study. This was further reinforced in an incident in which 18 tonnes of 'Pestoff 20 R' baits were dumped by accident into the sea at Kaikoura with no effect being noted (Merideth 2001). Bait will not be laid near the water on Vatu I Ra in order to minimise any possible negative effects.

A detailed operational plan is currently being prepared which will outline procedures to be employed.

Long term success of the project.

Incursions by invasive species to Vatu I Ra, as with any other islands of national significance, will be an issue that requires on-going surveillance and the application of appropriate response measures when they occur. Education for all users of the island will also be important. As a first step in this process the owners erected a sign provided by BirdLife International indicating to visitors both ownership and the significance of the island to the owners and internationally. During our talks with the clan we discussed the requirements of quarantine and education. The clan is to pursue gazetting of the island through the statutory process to further enhance the island's stature and provide legislation to support protection. A prevention plan will need to be prepared which outlines appropriate quarantine and contingency procedures. On-going surveillance monitoring to detect any new rat incursions will be critical.

Identification of risks and constraints for the project

1 The island takes 90 minutes to reach in a small open boat. Bad weather could prevent the eradication team reaching the island and provide a safety issue for the team. We recommend that one or two members of the eradication team

camp on the Island during the eradication. Too many people staying overnight may distort the rat behaviour and prevent their bait uptake.

2 In standard NZ applications to lay pollard based baits (such as Pestoff 20R) the general rule is that 100mm of rain will render the baits non viable in the field due to deterioration and moisture uptake. Vatu I Ra lies on the dry side of Fiji and to minimise this risk the eradication is planned for July, the driest time of the year.

3 Consumption of the bait by non-target species (hermit crabs in particular). This will be carefully monitored. Bait platforms to exclude crabs will be used in the second application to allow any remaining rats to access baits.

4 Increased fuel prices may prevent active monitoring. This will be mitigated by negotiations with tourist operators, and the clan's own cost recovery from eco tourism trips. Birdlife has resources to support monitoring of their Important Bird Areas.

5 Reinvasion will be mitigated by the following:

- Ongoing surveillance monitoring to detect any rat reinvasion. This should occur six - monthly and will need to be programmed by BirdLife. Rodent monitoring should include the use of tracking tunnels, wax tags and a rodent dog if one becomes available in Fiji. . While there may be a nil result each monitor, the island will not be declared rodent free until two years of nil result monitoring has occurred. This is standard practice internationally.
- A biosecurity plan must be developed and implemented prior to the eradication operation. The level of quarantine in the village and on boats (including bait stations on those regularly visiting the island) must be raised and consistently applied by the clan, and any other visitors.
- A contingency plan detailing actions to be taken in the event a rat invasion is detected or suspected must be prepared and implemented, as appropriate, by BirdLife in association with the clan.
- Quarantine procedures are promoted strongly to other visitors to the island including the hotels, eco-tour operators and fishermen.

6 Impact of increased foot traffic on the island

- The canopy of pisonia grandis is open at ground level allowing easy access for people to roam all over the island. Black noddies nest in the low canopy and eggs and chicks are within arms reach of people at all times of the year. The feasibility team saw many tern eggs on the coral sand and chicks amongst the rocks. The parents had been disturbed by the presence of people and the eggs were at risk of overheating in the hot sun or being inadvertently trampled on.
- The clan may need to consider restricting tourist visits from landing, and to view the wildlife from the boat. The Island is small and most birdlife is visible from the sea.

Monitoring

The requirement to visit Vatu I Ra on a regular basis provides a wonderful opportunity to monitor species to provide information on changes to populations of

the various species on the island, and on any new species that may appear. To be of use this must begin at the time of the eradication and could utilise a Master's student – perhaps from the University of the South Pacific, if available.

Ideal species to begin with would be the resident reptile - the pygmy snake eyed skink. Pit fall traps could be installed at the same time as the eradication and monitored to provide some indication of population density. This requires little material (paint tins, ply lids and bait) and can be left in place un-set after each visit. Bird monitoring should include the range of birds utilising the island and their breeding status.

BirdLife International has received funding for ongoing monitoring from the Darwin Fund, and has an ongoing interest in the protection of this Important Bird Area.

Research

The following topics have been identified as worthy opportunities for research.

1. Biology of Rattus exulans on tropical islands. Nothing is known about this for Pacific rat - only islands - it may be crucial for future operations. Hawaiian studies (mixed rat populations) found seasonal fluctuations in abundance.
2. The long-term effects of toxin applications in hermit crab habitats
3. Changes to island biota over time.
4. Breeding biology of bird species. There are indications that birds are breeding throughout the year on Vatu I Ra – further research on this would be valuable.
5. Impact of Pacific Rats on the population and density of reptiles and of habitat use by pygmy snake-eyed skinks. This could include trapping in arboreal habitats for species as yet unrecorded.

Management of the project

BirdLife International (Fiji) is the implementation agency responsible for the eradication operation and for monitoring of the project. They are a professionally run organisation with highly capable staff. However the staff have many competing demands and there needs to be a system put in place to ensure that the Vatu I Ra project is supported long past the time the project funds are spent. The relationship established with the community is strong, and will need to be maintained particularly over the next few years to ensure that the benefits of the eradication are maintained. This will have implications on staff time and resources.

The long term success of the project is dependent on the quarantine measures being maintained and the Island monitored, and this requires a long term commitment from Birdlife and from the community. We recommend that one community member be given responsibility for the Island biosecurity so that this person can be supported and trained where necessary.

Specific roles:

Project manager	Vilikesa Masibalvau; project oversight and consultation.
Team leader	Elenoa Seniloli; operational supervision and quality control.
Technical advisor	Rob Chappell (Dept of Conservation NZ); technical advice, training and operational support.
Field team	members of the clan Nagilogilo; implementation of field tasks.
Planning coordinator	James Millett; financial management, planning and reporting
PII coordinator	Souad Boudjelas; PII oversight & advice, peer review.

Capacity development

Rodents provide the greatest threat to bird populations in Fiji and the development of local expertise in their eradication will be important to this project and others in the future. The Vatu I Ra project along with the planned rodent eradication on Viwa Island in Fiji provide opportunities to increase the skills of staff and community members on eradication, monitoring and the maintenance of biosecurity generally.

The operational plan should identify the specific skills required and how those skills will be taught.

The Ministry of Tourism in Fiji, who have provided a grant to the clan for eco-tourism development, has a range of packages which include helping operators to understand the industry, helping them to explore eco-tourism options and encouraging operators to work together. The Tourism Industry Act in Fiji is under review and when the new provisions come into effect they will require tour operators to have a licence. This will positively benefit Vatu I Ra as it will require all tour operators to have permission from landowners before they visit ecological sites.

Villagers could also be trained in monitoring, data gathering and interpretation so that they can measure the effects of change over time and also the effects of their own tourism operations on the resource. Training for tour operators will be provided by two providers; TPAF- Training and Productivity Fiji and NCSMED- National Centre for small business and micro enterprises development. This training will support the effectiveness of the ecotourism operation, but there will need to be training in environmental awareness for the community guides.

Community engagement

BirdLife International has had ongoing consultation with the Nagilogilo clan. This was initiated when BirdLife undertook a bird survey on the island in 2004. Project Leader Vilikesa Masibalavu has met with the community six times since 2003 and has developed a good relationship with them. He supported them in their attempts to negotiate with agencies to highlight their ownership and management of the island and their desire to develop income generating activities.

At the community meeting attended by the feasibility team, the clan members expressed their support for the rat eradication as part of their aspiration to operate an eco tourism venture. On the one hand this will provide them with a structure and income for long term management of the island but on the other hand unless stringent measures are adopted and implemented, increased visits to the island could increase risks to the bird population through disturbance of nesting sites and re introduction of pests.

The community meeting provided an opportunity for the local people to discuss many aspects of the project such as the effect of the toxins on other animals and corals. They expressed clear support for the project and several community members were active in the site visit and keen to learn from Rob's assessment of the options for eradication.

Social and economic development

The clan is exploring two strategies which they hope will improve livelihoods for the community. One is their own eco-tourism project and the other is negotiation with tourist operators who visit Vatu I Ra to provide a levy to the clan for visits to the island. This would provide an ongoing income for the clan which might enable them

to cover the costs of regular monitoring of the island. It may also, depending on negotiations with operators, provide an opportunity for some community members to be trained as guides for the visits to Vatu I Ra.

The community received a grant from the Ministry of Tourism for the construction of a lodge for their eco tourism venture. They have developed marketing, financial, contingency and environmental management plans as part of this project.

From conversations with NGOs in Suva it was apparent that many communities had not achieved the results they had anticipated from eco tourism. In order for the clan to have the best chance of success in their venture and in their overall development they need to have access to a range of advice and support.

An organisation based in Suva called PCDF (Partners in Community Development) has been contacted to see if they are able to provide support to the clan. PCDF works with communities through a process which enables the whole community to develop a plan for their social and economic development. An initial meeting has been held and there is agreement to explore the details of the support they can offer.

The Director of Tourism has agreed to have her staff follow up with Vatu I Ra and help with negotiations with the hotels regarding the use of the island without the landowners consent.

Scaling Up

National and International

BirdLife International organised meetings with the Fijian Affairs Board in the early stages of project development in order to secure agreement to identify Vatu I Ra as a Site of National Significance. The Board was represented at our initial meeting with the community to seek their permission to survey the island, which was granted.

The government of Fiji has poverty alleviation as one of its key priorities. Therefore the connection between invasive species management and economic development needs to be highlighted. The success of rat eradication from Vatu I Ra and Viwa will provide a showcase for how such projects can be managed. They will act as leverage for other projects, which makes it even more crucial that they are effective. The messages need to reinforce the idea of community management of invasive species in the long term.

The Fiji Government is currently drafting the Tourism Act 2006 which is due to be presented later this year. Eco-tourism is an area which is being given particular attention. It is expected that with the changes in the legislation, the Department of Tourism staff will be providing more training for eco-tourism operators. This may be an opportunity to introduce awareness of invasive species and biosecurity into the curriculum.

The community has also begun to explore the process for gazetting the Island as a reserve. This will involve a detailed description of the island and the work already carried out, a confirmation of the rightful owners by the Native Land Trust Board, and agreement from all stakeholders including Birdlife International. Once the island has been gazetted people will be restricted from illegal landing and the movements of people will be monitored.

Two members of the Viwa restoration project accompanied the feasibility trip to Vatu I Ra. This provided an opportunity for them to learn more about the management of invasive species in a different environment from their own, and to see what issues need to be considered when planning rat eradication.

Regional

There are many opportunities regionally and internationally to profile this project and raise awareness of the management of invasive species. BirdLife has already written articles on the project and once the eradication has been completed, there will be many opportunities to promote it. The message in all promotions should include the community's involvement in the project and what they have learned from it.

There are many NGOs and networks in Fiji which can promote this project and raise the awareness of invasive species. FLAMA, WWF, FSPI are some who have expressed interest in the project. They will also be able to use the practical example of the project to promote to the Fiji Government at central and provincial levels to encourage more action on the management of invasive species.

Local

People at the community meeting mentioned that some villages along the coast had expressed interest in the eradication project. The people at the meeting said that they were happy to have the project profiled and to have people come to see what they had achieved with the project. BirdLife have two further islands in mind, close by, that would benefit from rat eradication.

Partners

The Pacific Invasives Initiative (PII) is a programme of the Cooperative Initiative on Invasive Alien Species. The PII is hosted by the Invasive Species Specialist Group (ISSG), an expert group of the Species Survival Commission (SSC) of The World Conservation Union (IUCN).

The goal of the PII is '*To conserve island biodiversity and enhance the sustainability of livelihoods of men, women and youth in the Pacific*'. This goal will be achieved through the objective of reducing negative impacts of invasive species primarily by managing them at selected Demonstration Projects in Pacific Island Countries and Territories. The capacity to network on a global scale is a major strength that the PII will bring to this project.

Department of Environment – BirdLife International has a Memorandum of Agreement with the Fiji Department of the Environment (DoE). DoE have supported management on Vatu I Ra, particularly since it has been listed as a Site of National Significance in the National Biodiversity Strategic Action Plan. Previously, the Fiji Government did not have adequate data to demonstrate the national and international importance of the site. This has been provided through the BirdLife IBA process.

Fijian Affairs Board – have pledged support in providing assistance in protocols and other traditional obligation that BirdLife needs to arrange within the community.

WWF – have liaised with BirdLife. Their main interests are in the marine environment and Vatu I Ra as a turtle breeding site. A notice board requesting visitors to not damage or disturb the island has been produced.

University of South Pacific - assisted BirdLife during the first survey and have done a baseline survey of marine biodiversity. A student will be selected to assist with the project and a research project developed that will contribute to a postgraduate qualification. USP is undertaking rat eradication on Viwa and have exchanged information and support with BirdLife on this project.

Partners in Community Development – PCDF have a group of qualified trainers and facilitators who work with communities at the village level and have agreed to look into the possibility of working with the clan on their overall economic development. Their vision statement is "communities achieving equitable, holistic, and sustainable livelihoods.

Foundation of the Peoples of the South Pacific. FSPI is a network of independent, like-minded affiliate NGOs who work with communities in nine Pacific countries. They provide a range of programmes including; capacity development in rural communities, research and development on technical and socio-economic aspects of coastal management, policy development governance, education and awareness and media and communications. Once the vatu I Ra project has been undertaken FSPI will be a useful medium for promotion of the project and the lessons learned from it.

Live and Learn Environmental Education This is a non- profit, non-government organisation that aims to promote greater understanding of environmental and human sustainability through education and communication.

Growing awareness of invasive species

As members of the community have more contact with people from BirdLife they have increased their understanding of environmental influences, such as invasive species. During the feasibility visit, several members of the community accompanied Rob as he identified birds and pointed out the impact of rats on the birdlife. They were very interested and several were keen to be trained in eradication techniques.

Opportunities for raising awareness include:

1 An awareness raising workshop with the community
2 An awareness session at the school – one for primary and one for secondary school age pupils
3 Articles on the project developed and offered to range of media outlets.
4 Video footage compiled into a documentary with help from USP
5 PILN (Pacific Invasives learning Network) and FSPI (Foundation of the People's of the South Pacific) networks
6 Living and Learning approached to see if they wish to include a small profile on the project in their material.

Conclusions and recommendations

The feasibility team concludes that:

1. The island of Vatu I Ra is suitable for the successful eradication of the Pacific rat population. This operation should be undertaken in July 2006.
2. A ground-based operation using Pestoff 20R manufactured baits containing the anticoagulant Brodifacoum should be employed.
3. Baits should be hand-spread over the entire island along marked lines to ensure total coverage. In addition elevated bait stations should be used in areas of high hermit crab densities as a back up to prevent crabs consuming baits intended for rats.
4. Based on similar operations elsewhere it was concluded that non-target risks to resident seabirds and lizards are negligible.
5. The Nagilogilo Clan understands and supports the project, and is willing to be involved.
6. BirdLife International has successfully engaged the local community in the project and has established access to advice and support for the development of the island.

The feasibility team recommends the following:

1. an eradication project is undertaken based on the methodology described in this report
2. the opportunity this project presents to refine rodent eradications in the presence of crabs should be taken
3. an operational plan is prepared in line with PII requirements
4. A biosecurity plan is prepared prior to the eradication and is consistently implemented.
5. A biosecurity officer is nominated by the Clan
6. A training session be designed and delivered to all those participating in the eradication to ensure safety and quality standards are employed.
7. An awareness package be developed on invasive species and delivered as a workshop with the community and as part of the training for guides for the eco- tourism project. The issue of reinvasion prevention needs to be part of this package.
8. A six-monthly monitoring Programme is scheduled by Birdlife to cover two years from the eradication.
9. Eradication of veldt grass is undertaken as soon as possible.

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