

# Species Action Plan for the Endangered Santa Cruz Ground Ground-dove *Alopecoenas sanctaecrucis*

2018–2023



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## TABLE OF ACRONYMS AND ABBREVIATIONS

|             |   |
|-------------|---|
| CEPF        | Critical Ecosystem Partnership Fund                               |
| CITES       | Convention in Trade of Endangered Species                         |
| EAZA        | European Association of Zoo and Aquaria                           |
| ECD         | Environment and Conservation Division                             |
| EO          | EcoOceania  |
| HBL and RHF | Head and body length and right hind foot length (of rodents/rats) |
| IAS         | Invasive alien species  |
| ISSG        | Invasive Species Specialist Group of IUCN                         |
| IUCN        | International Union for the Conservation of Nature                |
| LFA         | Little Fire Ant <i>Wasmannia auropunctata</i>                     |
| MAL         | Ministry of Agriculture and Livestock                             |
| OW          | OceansWatch   |
| SCGD        | Santa Cruz Ground-dove  |
| SI          | Solomon Islands   |
| WRS         | Wildlife Reserves Singapore                                       |
| YCA         | Yellow Crazy Ant <i>Anaplolepis gracilipes</i>                    |

## A. BACKGROUND

### Species description, distribution and status

#### Species description

The Vakavakatia or Santa Cruz Ground-dove *Alopecoenas (Gallicolumba) sanctaecrucis* is a medium-sized dove (c.100–150 g) historically confined to the Santa Cruz Islands and northern Vanuatu. It has a strong sexual dimorphism (Frontispiece and Fig 1) with the male having an ash-grey head and nape and brown upperparts with a distinct purple gloss, and variable pink-buff throat and breast and dark brown belly. Females are browner with a rufous-brown head, neck and most of the underparts and olive back and wings with a greenish gloss, and a dark grey belly. Both sexes have a black bill and red legs.

#### Distribution and abundance

Historically the Vakavakatia was almost certainly distributed throughout the Santa Cruz Islands (Fig 2), where there are historical records for Utupua and Tinakula and reports from Vanikoro and northern Vanuatu (del Hoyo et al 1997, Pierce 2014). There are no recent sightings of Vakavakatia in Vanuatu, but there are claims that the species has been heard on Espiritu Santo at higher altitudes (Dutson 2011). In recent surveys of some of the Santa Cruz Islands (Pierce 2014, 2016), Tinakula was the only location where the species was found. On Tinakula, the species is relatively common due to scarcity or absence of rats, cats and resident people, and the population was estimated at c.500 in 2016. Unlike most other ground-dove species, however, the Tinakula birds have been very elusive, which challenges precise population estimates. This behaviour is probably due to their being periodically hunted for food over many years and, more recently, for export. In addition, a volcanic eruption at Tinakula in October 2017 may have eliminated a substantial proportion of the population, but precise data are lacking. This action plan makes the assumptions that Tinakula probably supports the last viable population in the wild, but further surveys are needed on a suite of remote islands, including in northern Vanuatu.



Fig. 1 - Male (left) and female (right) of *Alopecoenas sanctaecrucis* taken from a hide on Tinakula in October 2016.

#### Conservation status

The IUCN status of *Alopecoenas sanctaecrucis* is currently Endangered (EN) B1ab (ii, iii, v) (BirdLife International 2018). This assessment may change given the spread and chronic impacts of invasive species in the region and the periodic impacts of people and volcanoes. The species is not currently CITES listed.

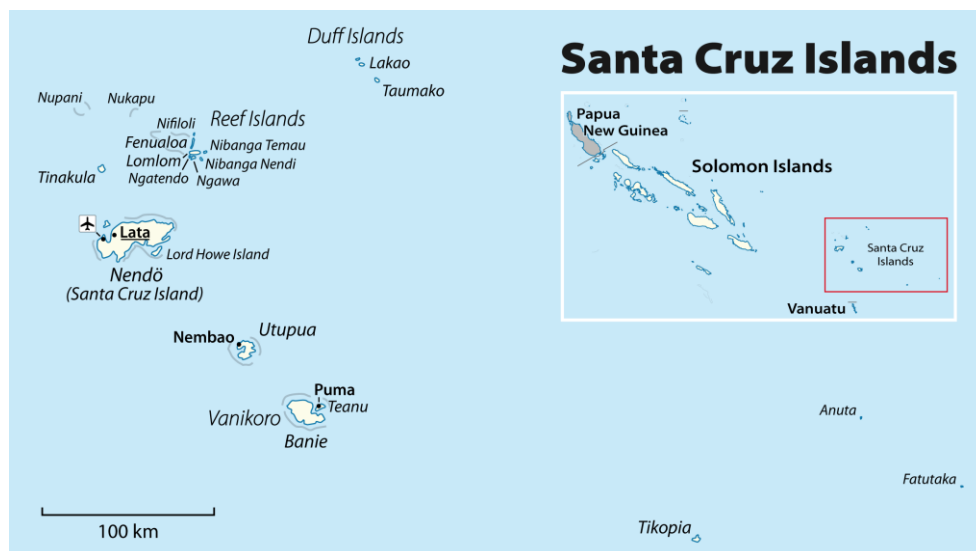


Fig 2 – Map of Santa Cruz Islands

## Ecology and habitat

### Habitat and food

The Vakavakatia is a ground-dove of forested islands. The only site where it is known to survive is the “high” (volcanic) island of Tinakula. Prior to rat invasion the neighbouring atolls were likely also home to ground-doves. It feeds mostly at ground level, but also on low shrubs and the lower reaches of trees. Natural food has been observed to comprise fruits, seeds and insects, but there are limited data on these and artificial provision of coconut attracts many birds (Pierce 2016).



Fig 3 – Tinakula at 800 m asl (left) is dissected by lava flows (right)

## Breeding

Little is known of *Vakavakatia* breeding. No nesting was observed during two October visits to Tinakula, but the several juveniles and subadults that were observed at this time suggested that breeding occurred earlier in the year and there was some recruitment (Pierce 2016). Night-time roosts are reported by a local hunter in 2016 to be within 1–2 m of the ground.

## Causes of decline and current threats

### Rats and cats

Although members of the genus *Alopecoenas* have provided food for local people for centuries, it is likely that depredations of invasive rats and cats are the key reasons for the decline of species in this genus (Baptista *et al.* 2018, Holyoak and Thibault 1984, Steadman 2007, Blanvillain *et al.* 2002, Pierce *et al.* 2015) and many other island birds (Atkinson 1985, Pierce and Blanvillain 2004). Black Rats *Rattus rattus* are now present on all major islands of the Santa Cruz Group, and cats and Pacific Rats *R. exulans* are also sometimes present (Pierce 2014, 2016, 2017). It is notable that Tinakula, the last stronghold for this species, is lacking Black Rats and probably also Pacific Rats (but see under Invasive ants below). If cats and/or rats arrived at Tinakula, it would spell the end of the local *Vakavakatia* population, along with other populations of birds. The likelihood of predator introduction is very high because of frequent boat movements from the Santa Cruz mainland and other islands to Tinakula, most, or all, of which support rats. A Tinakula biosecurity workshop was undertaken at Malo in 2016, where the community identified about 30–50 vessel movements undertaken annually mainly by local people to Tinakula, with associated high risks of rats, weeds and other invasive alien species (IAS) being accidentally introduced (Pierce 2016).

### Invasive ants

Several invasive ant species are present in the Santa Cruz Islands, including Yellow Crazy Ants (YCA) *Anoplolepis gracilipes* and, more recently, Little Fire Ant (LFA) *Wasmannia auropunctata*. Both are now present on Tinakula and on several other Santa Cruz Islands (Pierce 2016, 2017). These species have the potential to impact birds and most other fauna species, sometimes to the point of ecosystem collapse (Global Invasive Species Database 2017) and they also impact peoples' livelihoods (Fasi *et al.* 2017). The arrival of these ants has come about presumably during the frequent local visits identified above. There is a need to understand the impacts of these ants on *Vakavakatia* and other biota, and to prevent them from arriving at other islands that are potential bird sanctuaries.

### Diseases

Avian malaria and avian influenza are significant threats for ground-doves generally (Pierce *et al.* 2015, D. Bolton pers. obs.) and can be transmitted easily via domestic chickens and possibly other vectors. Furthermore, avian malaria and influenza are notifiable, zoonotic diseases. The estimated c.50 human visitations to Tinakula annually can include movements of domestic/feral chicken (*Gallus gallus*) (Pierce 2016, pers. obs.), so the threat is significant. However, more information on the status of disease in these ground-doves is still required.

### Habitat degradation and loss

Tinakula is recovering from volcanic eruptions that occurred in 1971 and 2017. Considerable pressure is likely to occur on the Vakavakatia population during and immediately following eruptions. Longer-term effects include the arrival of the highly invasive *Mikania* vine, which is likely to be an ecosystem “game changer” on Tinakula as it will greatly modify ground-dove habitat and the entire ecosystem (Pierce 2017, Fig 4).



Fig 4 – Open lava flows (left) were increasingly infested with invasive *Mikania* in 2016 (right).

### Hunting

Tinakula is visited by locals for food harvesting, which includes hunting Vakavakatia and four other native species of pigeons, plus chickens (Red Jungle Fowl, *Gallus gallus*), mainly for the local market and Honiara. For a recent period at least, this has included live-capture of Vakavakatia for export. This was first detected in 2016, and on a larger scale and for greater profit in 2017 (Pierce *et al.* 2016, 2017), with apparent markets being private collections in the Middle East. On speaking to the only known trapper, the trapping area spanned an estimated 10% of the potential Vakavakatia habitat on Tinakula. This was mainly on the gentler gradients near the former permanent village, where the buildings are now being used as a temporary village during visits by locals.

## B. RECOVERY GOAL, OBJECTIVES AND ACTIONS

### Long-term recovery goal

The long-term goal is to prevent the extinction of *Alopecoenas sanctaerucis*, and, in partnership with local communities, to establish and maintain viable and self-sustaining populations on as many islands as possible (at least two) within its natural range. Ultimately the target would be for the species to be removed entirely from the IUCN Red List of threatened species.

## Recovery objectives and actions for the 2018–2023 period

Conservation work in 2018–2023 will focus on reducing the threat from invasive species and diseases on Tinakula, establishing additional island populations in strategic locations, and maintaining a productive captive population that can act as a safety net and contribute to the wild populations. These actions and stakeholders are detailed below, with recommended lead agencies or people denoted **in bold**.

### Objective 1 – Develop and approve a Revised Santa Cruz Ground-dove Species Action Plan (this document) and develop a Steering Committee for its implementation

#### Background

A preliminary action plan for Vakavakatia was developed in late 2017 (Pierce 2017) in response to immediate needs following the Tinakula eruption and bird export incident. That plan has served its initial purpose and will be replaced with this Species Action Plan which will serve to coordinate efforts for species recovery.

Action 1.1 – Finalize this Vakavakatia Action Plan and support teams in 2018.

Action 1.2 - Meet with stakeholders in Honiara and Lata, during mid-2018, to discuss, refine and agree on progressing this action plan and steering committee, which includes agreeing on a leader, roles and timetables.

Recommended expertise needed for a Steering Committee include:

- **Staff member(s) from ECD Solomon's**
- An acknowledged pigeon researcher/conservation biologist
- An acknowledged pigeon aviculturist
- Biosecurity SI-Ministry of Agriculture & Livestock (MAL)
- An invasive species specialist
- Tinakula and community members at Lata – Neo and Minivi communities
- BirdLife representatives to help with research, communications and funding
- Community members at other islands as appropriate
- Representatives of international stakeholders and supporters, including a member of the IUCN Re-introduction Specialist Group to advise on translocations and re-introductions.

Note that some of the above roles could be collectively addressed by individuals, and others could have two or more representatives, while other potential stakeholders and contributors include Temotu Provincial Government, OceansWatch, BirdLife Pacific, other technical experts.

Timing: Meeting mid-2018.

### Objective 2 – Monitor Vakavakatia recovery on Tinakula

## Background

The volcanic eruption at Tinakula in October 2017 is believed to have impacted the Vakavakatia population but the extent of this is unknown. OceansWatch staff and others visited Tinakula in December 2017 and found evidence suggesting that many individuals had survived. A systematic survey and monitoring method is however needed for subsequent visits by OW staff and other locals and one has been prepared by RJ Pierce (2018).

Action 2.1 – Establish an observation protocol and monitor the Tinakula population of Vakavakatia

Action 2.2 – Complete a detailed scientific survey of Tinakula in mid-2018 to assess the status of Vakavakatia, its habitat and habits, identifying and communicating known and any new limiting factors for its population.

Action 2.3 – Continue regular monitoring of Tinakula to measure the recovery of Vakavakatia, likely including Action 2.1 as a basis with refinements and merge with research questions (Objective 9).

Action 2.4 – Maintain central database of monitoring and share survey data with Steering Committee and significant findings with stakeholders.

Main stakeholders – **Temotu community**, OceansWatch, EcoOceania, BirdLife, Toledo Zoo

Timing - quarterly if possible. Visit in Dec 2017.

## Objective 3 – Monitor status and abundance of IAS on Tinakula

### Background

Tinakula is free of Black Rats and cats; which explains the survival of Vakavakatia there. It is possible that other smaller rodents, e.g. *Rattus exulans*, have been present in the past, but are suppressed by invasive ants. Two of the world's worst invasive species, YCA and LFA, are present on Tinakula and their impacts on Vakavakatia need to be evaluated. *Mikania* and other invasive plants may also significantly threaten the Vakavakatia habitat and need careful monitoring.

Action 3.1 – Develop and use standardized methodology to check for presence of rats on Tinakula.

Action 3.2 – Develop and use standardized methodology to check for sign and index abundance of YCA and LFA during each field trip on Tinakula.

Action 3.3 – Monitor spread of *Mikania* on Tinakula and search for presence of other invasive plants, e.g. *Lantana* and *Wedelia*, and develop a protocol to eliminate these.

Action 3.4 – Include the above actions in the Solomon Islands Biosecurity Action Plan currently being developed.

Main stakeholders – **Temotu community, ECD, Biosecurity SI (MAL), EcoOceania,**



BirdLife

Timing – Methodology developed; visit planned mid-2018.

#### Objective 4 – Improve biosecurity in the Santa Cruz Islands

##### Background

Vakavakatia depend on islands being free of cats, rats, invasive ants, other predators and diseases and probably also invasive weeds. These IAS are present in most of the Santa Cruz Islands and we need to ensure that they do not reach key islands, some still unidentified.

Action 4.1 – Engage with key stakeholders to agree on and finalize a Biosecurity Action Plan (one already drafted by R. Pierce) targeting protection of Tinakula and other key islands.

Action 4.2 – Raise awareness of biosecurity needs and techniques amongst agencies and community. Include a biosecurity process for vessel departure points at Lata, Malo, Reef Islands etc., whereby rangers or biosecurity delegates inspect for IAS all vessels planning to travel to Tinakula and other target islands (2018 and ongoing).

Action 4.3 – Carry out epidemiological studies to determine the status (i.e. presence and prevalence) and transmission of disease in wild (and captive) populations.

Action 4.4 Create bio-material sampling protocols for disease testing (and maybe tissue/blood for population genetics study)? This should also include disease management protocols

Main stakeholders include **Biosecurity/Agriculture**, Community and Councils, SolAir, shipping, school teachers.

Timing – 2018 and ongoing.

#### Objective 5 – Evaluate and prepare potential islands for translocation

##### Background

Tinakula, as it recovers, may offer the best habitat for Vakavakatia. This island appears to be frequently thrown back into regeneration phases every 50–100 years following volcanic activity. Some atolls may offer similar habitat opportunities for Vakavakatia given that some other ground-dove species, e.g. Polynesian Ground-dove *Alopecoenas erythropterus*, favour atolls with a mix of indigenous and planted species including e.g. *Boerhavia*, *Cassytha*, *Guettarda speciosa*, *Pandanus*, *Portulaca*, *Scaevola*, *Heliotropum*, *Achyranthes* and *Digitaria*, which are all key sources of food of other ground-doves (Pierce *et al.* 2016). Low densities of coconut canopy and undergrowth are tolerated on Tinakula. The key substrates of sand, soil and rock are all utilized there. Potential translocation islands at Santa Cruz need to be free of IAS that would otherwise impact Vakavakatia, and they need effective biosecurity. They should have supportive owners/community. Island physiography is also important, i.e. islands should ideally be large enough not to be vulnerable to swamping by ocean swells. Permanent water does not appear to be an issue with ground doves given there are species

occurring on atolls with low annual rainfall (e.g. Pierce et al 2015), c.f. high annual rainfall (>2 m) with no dry season at the Santa Cruz Islands. Plans for translocation should observe the specific recommendations in the IUCN Guidelines for Re-introductions (IUCN 1998).

Action 5.1 – Desktop evaluation of potential islands in the Santa Cruz Group based on physical, biological and levels of community engagement – this task has been completed and the short list includes Niupani, Nukapu, Matema, Makalom and Pilini atolls, and potentially Temoa and Nyibanga raised atolls although both are heavily populated.

Action 5.2 – Secure permission and use standardized methods developed in Objectives 2-3 to survey potential islands on the short list above to evaluate suitability or potential for Vakavakatia introduction.

Action 5.3 – Evaluate follow-up actions with communities, e.g. agreements on IAS management, introductions, monitoring, etc.

Action 5.4 – Develop and implement eradication plans with ECD, Agriculture, etc.

Main stakeholders for Actions 1–3 – **EcoOceania, OceansWatch, Communities, ECD, Agriculture.**

Timing – Desk top exercise completed; plans for surveys mid-2018.

## Objective 6 - Evaluate more distant islands for translocation

### Background

Other more distant islands that could be considered include Tevai at Vanikoro and islands in the northern Vanuatu groups of Torres and Banks south to Espiritu Santo. Having a wider geographical spread of SCGD would provide better protection for the species from catastrophic events, e.g. eruptions, diseases, cyclones, tsunamis, etc. Preferred ecological and community scenarios are as for the previous Objective 5.

Action 6.1 – Develop criteria for identifying suitable islands and work with other agencies including Vanuatu authorities to evaluate suitability of islands elsewhere in Santa Cruz and in Vanuatu. This should be coupled with feasibility studies for eradicating rats and cats, biosecurity from ants, hunting, interspecific competition, etc.

Main stakeholders - **ECD, Solomon’s agencies, Vanuatu authorities, EcoOceania, BirdLife.**

Timing – initial evaluations to begin in 2018-19.

## Objective 7 – Maximize genetic diversity in the captive population

### Background

A captive population of Vakavakatia serves primarily as an insurance in case we lose the wild population, but it is also a key measure for re-establishing populations on available or restored islands in Santa Cruz and potentially northern Vanuatu. We are already well-placed to advance this objective because we now have a large founder population of birds in captivity

Action 7.1 – Temporarily house and provide expert care to birds currently in captivity on the Solomon Islands using technical advice from appropriate institutions. This is ongoing.

Action 7.2 – Develop a statement of cooperation between ECD, ex-situ institutions, conservation bodies and local communities for birds to be sent to foreign institution(s) for breeding with a view to (a) increase the population rapidly through breeding from as many of the wild-caught birds as possible in order to maximize their genetic diversity, (b) release birds back into the wild in appropriate locations following IUCN introduction guidelines, (c) continue to maintain a captive population as a species assurance colony (and as a conservation communication tool for Solomon’s Islands biodiversity and conservation initiatives). Wildlife Reserves Singapore will spearhead this initiative and will receive up to 25 pairs plus many additional males. All birds and subsequent progeny will remain in the ownership of the Solomon Islands Government.

Action 7.3 – Prepare appropriate ex-situ facilities and develop translocation plans to zoos.

Action 7.4 – create a framework that will facilitate the movement of captive-bred progeny back to secure island habitats in their native range.

Action 7.5 – Maintain a smaller captive population at the Biosecurity Compound, Honiara, for local breeding and capacity building and as a safe holding facility for birds returning to SI from the ex-situ captive breeding programme.

Action 7.6 – develop Best Practise Guidelines for ex-situ management, handling and transportation of Vakavakatia.

Action 7.7 – Establish and formalize a coordinated breeding program, appointing a studbook keeper and electing a species committee.

Main stakeholders – **WRS, EAZA**, ECD, BirdLife, EcoOceania, OceansWatch.

Timing – underway January 2018, ongoing.

## Objective 8 – Raise awareness and local capacity in Santa Cruz Islands

### Background

The active involvement of the communities of the Santa Cruz Islands is essential to the successful recovery of Vakavakatia in the Santa Cruz Group. By raising the profile of Vakavakatia and its predicament, along with the threatening processes, community councils/leaders, school children and the community generally will become better aware and

more effective advocates and owners for the species. Key threats (rats and invasive ants) also have a negative impact on Tinakula gardens and potential ecotourism and are a common enemy of all projects.

Action 8.1 – Continue training of rangers and other community members in general bird survey, monitoring (including Vakavakatia and Palm Lorikeet) and IAS work.

Action 8.2 – Community meetings facilitated by Temotu community to discuss and agree on prevention of poaching of Vakavakatia and other threatened birds.

Action 8.3 – Provide educational information to schools, interactive materials, photos, videos, etc. on the birds and invasive species.

Action 8.4 – Build on Actions 1-3 above to plan and initiate a livelihood program for communities to be directly involved in the protection and management of SCGD and benefiting from their conservation.

Main stakeholders – **OceansWatch**, **ECD**, EcoOceania, Temotu Provincial Council, Department of Education, BirdLife.

Timing – action 8.1 underway.

#### Objective 9 – Study Vakavakatia biology, ecology and threats in the wild

##### Background

A better knowledge of the Vakavakatia's biology - including habitat limitations, breeding and feeding ecology - and the impacts of invasive species including ants, will be vital to guiding future conservation actions more effectively.

Action 9.1 – Determine ecological impacts of YCA and LFA on breeding success. Carry out nest monitoring via observation and motion-activated cameras to determine causes of failure.

Action 9.2 – Determine key biological parameters and needs of Vakavakatia by studying population recovery and demographics (ringing as many birds as possible on Tinakula), habitat use, breeding behaviour and patterns, diet, seasonal movements, etc.

Main stakeholders – **BirdLife**, Universities and other academia, EcoOceania, Zoos, OceansWatch, local community

Timing – Mid 2018 research visit and potentially via community monitoring (cameras etc.) and a longer-term university-based research programme.

#### Objective 10 – Develop translocation plans for Vakavakatia (re)introductions

## Background

Objectives 1–9 will provide a better knowledge of potential islands that can be used for the recovery of the species. This information will be used to formulate plans to introduce or reintroduce the species to the wild.

Action 10.1 – Review outcomes of the above objectives 1-9 and outcomes for other ground-dove species and develop translocation plans for implementation. Ensure appropriate levels of monitoring (banding, telemetry, etc.) are in place to determine the progress of translocations and any issues emerging. These should be based on previous work on sibling species.

Main stakeholders –**ECD, BirdLife, Zoos, EcoOceania, OceansWatch, Community.**

Timing – As determined by above objectives.

## Objective 11 – Raise funds to achieve objectives 1–10

### Background

The actions 1–10 above all involve costs. Stakeholders need to identify costs and potential sources of funding to cover these costs.

Action 11.1 –Stakeholders to develop budgets and apply for appropriate funding or arrange for funding applications to be made. Recommended actions to cover (and suggested lead stakeholders) are: 1. Action Plan (Pierce, covered); 2. Tinakula monitoring (OW, covered); 3. IAS Tinakula (OW, EO/Pierce, covered); 4. Biosecurity (EO/Agriculture/Biosecurity); 5. Evaluate potential islands EO/OW, covered for surveys; 6. Evaluate more distant islands (EO/ECD, desktop initially); 7. Captive population (BL/Zoos covered); 8. Awareness raising (all?); 9. Research biology/threats (EO/BL, not fully covered); 10. Translocations (ECD *et al.*, not fully covered yet).

Action 2 – Stakeholders update ECD and steering committee on progress with funding applications and successes.

Stakeholders – **ECD, Temotu Provincial Council, OceansWatch, EcoOceania, BirdLife, EAZA, WRS, Toledo Zoo.**

Timing – ongoing.

## CONCLUSION

This action plan builds on initiatives begun by CEPF and supporters to identify refugia for the Vakavakatia and other threatened Santa Cruz Islands fauna. Sudden events in the form of volcanic activity and smuggling have prompted this action plan to identify a way forward for conservation and recovery of the Vakavakatia. It is hoped that this Action Plan will assist in coordinating ongoing conservation activities and succeed in obtaining funding for further work to conserve and recover this Endangered species.

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