

Australian Government

NATIONAL RECOVERY PLAN FOR THE

BUFF BANDED RAIL (COCOS (KEELING) ISLANDS)

Gallirallus philippensis andrewsi



Image R. Thorn

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Note: This recovery plan sets out the actions necessary to stop the decline of, and support the recovery of, the listed threatened species or ecological community. The Australian Government is committed to acting in accordance with the plan and to implementing the plan as it applies to Commonwealth areas.

The plan has been developed with the involvement and cooperation of a broad range of stakeholders, but individual stakeholders have not necessarily committed to undertaking specific actions. The attainment of objectives and the provision of funds may be subject to budgetary and other constraints affecting the parties involved. Proposed actions may be subject to modification over the life of the plan due to changes in knowledge.

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This recovery plan is available from the Department's web site at:

www.deh.gov.au/biodiversity/threatened/recovery, or from the Department's Community Information Unit:

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Summary

The Cocos Buff-banded Rail (Gallirallus philippensis and rewsi, CBBR) is classified as Endangered under the Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act). CBBR is a subspecies endemic to the Cocos (Keeling) Islands (CKI), an Australian External Territory in the Indian Ocean. Formerly distributed widely across the 27 islands in the group, its range and abundance contracted severely through the twentieth century, and it is now confined to North Keeling Island, the sole island comprising the Northern Atoll with 120ha of land. CBBR was recorded as being very abundant on all islands of the Southern Atoll in the 1900s, almost 80 years after human settlement. They were recorded from only three islands of the Southern Atoll by the 1940s and were suspected to only occur on one (West Island) in the 1980s. Eight species of seabirds that formerly bred in large numbers on the southern atoll no longer breed there, but persist and breed on North Keeling Island- their populations were destroyed by habitat change and direct human hunting pressure long before the CBBR declined. The last definite Southern Atoll record of CBBR was a specimen killed by a cat on West Island in 1991. Despite some sightings on West Island in the early 2000s, none of which can be fully substantiated, recent surveys (2005) have confirmed the likely local extinction of CBBR from the Southern Atoll. Habitat modification. predation by cats, rats and humans, and competition with jungle fowls (and potentially rats) have probably all contributed to this extirpation. When the Southern Atoll population became small and fragmented, it is likely that cat predation became the most potent threat.

The remaining population on North Keeling Island is estimated at 850-1000 individuals in May 2005. This represents a slight but statistically non-significant increase in density from November 1999. The geographic isolation of this CBBR population (24km from the Southern Atoll), and features of North Keeling Island that prevented easy landing by boat and human habitation, have combined to save the North Keeling Island population from the fate suffered by the Southern Atoll birds. However, the singular nature of this population over such a small area leaves the species vulnerable to stochastic genetic and demographic factors and catastrophic events (tropical cyclones, tsunamis). The recovery of the species relies on the establishment of a second population, preferably on the Southern Atoll, through an integrated threat abatement, habitat restoration and reintroduction program. A reintroduction program will provide an opportunity for the Cocos Islanders and, in particular the Cocos (Keeling) Islands. Recovery actions include: continue to protect the North Keeling Island population; eradicate cats and rats from a suitable island in the Southern Atoll; reintroduce CBBR to this island; undertake habitat restoration on this island; and monitor the success of establishment.

Species Information

Population

Only one remaining population of the endemic Cocos Buff-banded Rail (*Gallirallus philippensis andrewsi*) is believed to exist. It is confined to North Keeling Island, with an area of 120ha and the sole island in the Northern Atoll of the Cocos (Keeling) Islands (CKI) in the Indian Ocean. As such, this population is crucial to the taxon's survival. Formerly a population believed to be much larger (but never estimated), occurred over the much greater area of the Southern Atoll of the CKI. The former distribution (extent of occurrence) on the Southern Atoll measured approximately 1400ha, so the geographic range has been reduced to less than 10% of its historical extent. The population on North Keeling Island is believed to be stable, and there is no evidence for historical or recent decline (Marchant & Higgins 1993; Taylor & Perlo 1998; Reid 2000).

Eight transect counts conducted on North Keeling Island by two observers in May 2005 yielded a density estimate of 7.00 birds ha⁻¹ (s.e. 0.89). If the first count by a novice observer is removed, a

density of 7.77 birds ha⁻¹ (s.e. 0.45) is obtained. These densities translate to a population estimate of approximately 850 -1000 birds on North Keeling Island (Reid & Hill 2005).

Distribution

Located in the Indian Ocean (lat. 12° 12'S, long. 96° 54'E), the CKI are approximately 2900km north-west of Perth, 975km west-south-west of Christmas Island and 1,000km south-west of Java Head. They are an Australian Offshore Territory, comprising 27 separate islands (Fig. 1), 26 in the Southern Atoll, and North Keeling Island, located 24km to the north (lat. 11° 50'S, long. 96° 49'E). North Keeling Island, also Pulu Keeling National Park, is an internationally renowned seabird rookery and is listed as a wetland of international importance under the Ramsar Convention. A true coral atoll, North Keeling Island is low and flat with a large interior lagoon recently disconnected from the sea. Six main vegetated habitats can be recognised (after Gibson-Hill 1948; Williams 1994): tall Pisonia (*Pisonia grandis*) forest; tall Coconut (*Cocos nucifera*) open palm forest; lagoon fringing low forest of Ironwood (Cordia subcordata): patches of lagoon fringing shrub-thickets of Teabush (Pemphis acidula); a coastal, thin coralline strandline of low herbs; and patches of lagoon fringing herbland comprising grasses, sedges and Sea Purslane (Sesuvium portulacastrum), with admixtures of Pisonia-Coconut Palm and Pisonia-Ironwood forests. Octopus bush (Argusia argenta) is a common small tree of the sea coast at the edge of Pisonia-Coconut Palm stands, and Cabbage Bush (Scaevola taccada) is a patchily common shrub on forest margins. The CBBR utilises all habitats equally and occurs throughout North Keeling Island (Reid 2000), even foraging occasionally in the intertidal zone and to venture into shallow rock pools to bathe (Reid & Hill 2005). Up to 40 birds at one time have been seen foraging on the lagoon shore, and this seems to be a preferred feeding habitat (Hopton 2003; Reid & Hill 2005).

Habitat critical to survival

North Keeling Island is the habitat critical to survival of the CBBR. This island is managed as a National Park and is free of the threatening processes that led to the extirpation of this species from the Southern Atoll. Surveys have shown that CBBR uses all habitats on North Keeling Island. It is the geographic isolation of the island, naturalness of the habitats, abundance of breeding seabirds and lack of introduced predators that allow the CBBR to survive at high densities.



Figure 1: Cocos (Keeling) Islands

Threats

<u>Single, small isolated population</u> Small isolated populations are threatened by stochastic extinction through genetic or demographic failure and environmental disaster (such as cyclone, tsunami, severe drought). The current population is sufficiently high for the risk of extinction though genetic or demographic stochastic events to be low. The risk posed by environmental catastrophe (either killing the birds directly or depletion of food sources) also appears low, as the population has survived numerous such events, most recently Tropical Cyclone Walter in April 2001. Although a low risk, contingencies against environmental disaster must be considered, as extinction of small island bird populations by intense storms has occurred (Simberloff 1994).

None of the threats below may have singly led to the extirpation of the CBBR from the Southern Atoll. Rather, a combination is suggested. The North Keeling Island population is not currently exposed to any of these threats but most exist on the larger islands of the Southern Atoll.

<u>Habitat Modification</u> In the early 1800s the vegetation on the Southern Atoll was largely converted from indigenous forest to coconut plantation monoculture. The coconut plantations maintained an open understorey for ease of collecting coconuts until commercial operations ceased in the late 1970s. Since then the understorey has thickened with a large build up of fallen coconuts, young emergent plants and patches of thick cabbage bush creating dense thickets. It is unknown whether the open understorey of the managed plantations created more suitable habitat for the CBBR than current conditions. However, the dense overgrown habitats now may be habitable for rails, as it is commonly used for cover by two introduced 'rail-like' pheasant species, the Green Junglefowl (*Gallus varius*) and feral individuals of the Red Junglefowl (*G. gallus*), and by the recently self-established rail, the White-breasted Waterhen (*Amaurornis phoenicurus*) native to Indonesia – see Reid & Hill (2005).

Reid (2000) suggested that the loss of a large multi-species seabird rookery from the Southern Atoll probably would have resulted in a lower carrying capacity of the Southern Atoll and led, in part, to the eventual demise of the CBBR population. Cushman (1995) and Polis *et al.* (1997) had established that marine inputs of organic carbon and nutrients, via seabirds' use of small islands for nesting, contributed greatly to such islands' food-web budgets, with benefits (additional food and nutrition) flowing to all parts of the food chain. For detritivores and occasional predators of seabird nests, like CBBRs (Marchant & Higgins 1993), the benefits are obvious, and an association between the rails and seabird colonies has been noted before (Schodde & de Naurois 1982). This hypothesis can be tested with the planned reintroduction of CBBR, in that population densities would not be as great in the absence of breeding seabirds under the assertion. Ideally, habitat restoration though selective clearing of undesirable plants and revegetation would be implemented, with the eventual supplementary aim of restoring breeding habitat on the Southern Atoll for forest-nesting seabirds.

<u>Cats (*Felis cattus*)</u> Cats are known to prey upon CBBR. The last individual definitely found on West Island was probably killed by a domestic cat in 1991 (Stokes 1994). Cats are assumed to have been introduced by early settlers (Algar *et al.* 2002). They were not mentioned as a threat to bird populations by Gibson-Hill in the 1940s (Gibson-Hill 1949), but were noted as such in the 1970s and 1980s (e.g. Stokes *et al.* 1984). The persistence of CBBR on the Southern Atoll for approximately 150 years in the presence of cats indicates that predation by cats was not the lone factor leading to the demise of the rail. However, any undue pressure on small populations has a large effect. Increases in cat numbers often coincides with increases in human population, especially with an increases in food waste, as may have occurred with changes to land use and administrative arrangements during the 1970s (when a large mainland Australian population was established on West Island).

Cats are thought to have played a significant role in the extirpation of CBBR from West Island. Cats are currently known to occur on three islands on the SA, namely West Island, Home Island and South Island (Algar *et al.* 2002). The CKI Shire Council has been running a feral cat control program on West and Home Islands since 2000 and these efforts have considerably reduced the number of feral cats, at least for short periods. The threat has not been eliminated and the control program is continuing. Surveys conducted by Algar *et al.* (2002) found no evidence of cat presence on the other islands on the SA and no cats occur on North Keeling Island. Complete eradication of cats from any SA island targeted for reintroduction should occur prior to any translocation.

<u>Rats (*Rattus* sp.)</u> The threat posed by rats primarily is the predation of eggs and young birds, and potentially competition for invertebrate food. Although there is currently no direct evidence that rats preyed on CBBR, they are known to prey on the eggs and chicks of a wide range of smaller seabirds and land birds, and particularly on rails on isolated islands (Steadman & Martin 2003). Rats have been implicated in the extinction of five endemic forest bird species and the decline of a number of other birds on Lord Howe Island, impacted two species of seabirds and four forest species on Norfolk Island, directly impacted six species of seabirds on Macquarie Island, and have eradicated breeding populations of two species of noddy (*Anous* spp.) on Bedout Island (Anon. 2005). Rats were believed to have played a role in decline of birds on the Southern Atoll of the CKI by both Gibson-Hill (1949) and Stokes *et al.* (1984).

Black Rats (*R. rattus*) are known to be present on most islands of the Southern Atoll, but are not currently on North Keeling Island. Brown Rats *R. norwegicus*), although not listed as being present on the Southern Atoll by Gibson Hill (1948), had been recorded earlier by mammalogist, Wood-Jones (1909). In the absence of recent definitive studies, the presence of Brown Rat should not be ruled out. Complete eradication of rats from any Southern Atoll island targeted for reintroduction should occur as part of a reintroduction program and prior to translocation.

<u>Red Junglefowl (*Gallus gallus*) and Green Junglefowl (*G. varius*) (feral chickens)</u> Two species of introduced chicken occur on the Southern Atoll. The Red Junglefowl occurs on virtually all islands and is kept domestically, both free ranging and enclosed by residents. It is less common on West Island where the Green Junglefowl was introduced and has successfully established a large population. Junglefowls and the CBBR are ecologically very similar, particularly in their ground-foraging habit, dietary catholicism, food items, and manner of feeding. Combined with habitat modifications and the loss of seabirds from the Southern Atoll islands, the ecosystem may not be able to accommodate two species sharing similar niches, with the larger junglefowls likely to be the more successful competitor. The eradication of feral chickens would be required before any reintroduction of CBBR.

<u>Hunting by humans</u> In the past Cocos Malay people hunted and ate CBBR (Gibson-Hill 1949). However, CBBR were rarely taken when other seabird species such as the Red-footed Booby (*Sula sula*) were available. The CBBR is thought not to comprise a major part of the diet of the Cocos Malay people in recent decades. Hunting of the CBBR, specifically, is not considered an important Cocos Malay cultural tradition (as some community members see booby hunting), and therefore this threat is not likely to exist currently (Noor Anthony, *personal communication*). The CBBR remained on the Southern Atoll under human hunting pressure for many decades after many of the seabirds such as boobies were hunted to local breeding extinction.

Objectives, Performance Criteria and Recovery

Overall Objective

Secure two viable populations of the CBBR on the Cocos (Keeling) Islands.

Specific Objectives

- 1. Maintain a viable and secure population on North Keeling Island.
- 2. Secure abatement of all major threats on the island targeted for reintroduction in the Southern Atoll.
- 3. Establish a second viable population to prevent total extinction through a catastrophic event at North Keeling Island.
- 4. Develop community support for and involvement in the recovery of the CBBR in the CKI.
- 5. Encourage significant threat reduction over other islands in the Southern Atoll to provide additional habitat for dispersing CBBR.

Performance Criteria

- 1. Regular park surveillance by Parks Australia North (PAN) has ensured that North Keeling Island biodiversity security is not breached.
- 2. Transect-based sampling on North Keeling Island shows the population is maintained at greater than 700 individuals.
- 3. Adoption of a Translocation Proposal, after independent review, in the first 12 months.
- 4. Within 12 months all rats, cats and chickens eradicated from the island targeted for reintroduction.
- 5. 15 ha of habitat on the reintroduction island restored, revegetated and maintained within five years.
- 6. Methods for monitoring re-introduced birds using radio-telemetry established and baseline movement data collected using North Keeling Island CBBR within 18 months.
- 7. 20 CBBR reintroduced to an Island in the Southern Atoll within 2.5 years.
- 8. The CKI community are actively involved with all stages of CBBR recovery, through voluntary and paid employment activities, and an education/training component through school activities (classes and education materials); and have received information related to the program (broadsheets, informal communications). A 'CBBR Wildlife Ranger' position established within the CKI Shire Council, dedicated to implementation of the CBBR Recovery Plan, ensuring local community involvement and interest. Integration of CBBR recovery activities with any proposed eco- and culture-based tourism developments will also be a measure of greater community and Council involvement and support.
- 9. Within 5 years transect-based sampling of the reintroduced population of CBBR shows the second population has been established and is maintained at greater than 50 individuals.
- 10. No feral animals detected on the island for reintroduction, or if detected removed within 1 month.

Performance of the plan will reviewed annually, and evaluated by the Recovery Team at the end of five years of implementation.

Recovery Actions

- Action 1. Continue to protect North Keeling Island population. Surveillance actions within the park are outlined in the Pulu Keeling National Park Management Plan (Director of National Parks 2004). Protection and persistence of the CBBR population by Parks Australia North (PAN) should continue by via the actions outlined in the management plan.
- <u>Action 2.</u> Continue to monitor North Keeling Island population. Monitoring by PAN staff using nine selected transects should continue every six months for three years. After three years the data should be analysed by a statistician and presented for review by the Recovery Team.
- <u>Action 3.</u> Develop a Translocation Proposal for the reintroduction of CBBR to the Southern Atoll. The proposal should follow procedures of the WA Department for Conservation and Land Management. The proposal will consider all possible risks and scenarios, and will be formally agreed upon by all stakeholders. The proposal will outline the process for removal of potential threats on an island in the Southern Atoll, including eradication of cats and rats (if present), removal of chickens (if necessary), and habitat restoration, as well as ethical translocation procedures, performance criteria for determining success or failure and procedures required to determine for genetic viability of the translocated population. The Translocation Proposal will need to be prepared by a suitably skilled consultant ('Project Scientist') with assistance from the Wildlife Ranger, and should be independently reviewed. All relevant permit and approval processes will be addressed.
- <u>Action 4.</u> Remove potential threatening processes (cats, rats and chickens) from the Southern Atoll island proposed for reintroduction. This action should be coordinated by the Project Scientist and the Wildlife Ranger.
- <u>Action 5.</u> Conduct habitat restoration activities on island in Southern Atoll targeted for reintroduction at a rate of 3ha per year over 5 years. This action should be coordinated by the Wildlife Ranger with initial assistance from the Project Scientist.
- Action 6. Trial methods of capture, radio-telemetry and intensive study on North Keeling Island within the first 12 months, so that home-range behaviour and patterns of dispersion on North Keeling Island can be compared to the reintroduced population after establishment in the Southern Atoll. This should be conducted by the Project Scientist, the Wildlife Ranger and an additional scientific officer employed to assist with this part of the recovery program. This work would encompass a very important component of training the Wildlife Ranger in wildlife capture, handling, radio-telemetry and monitoring techniques. Collection of material to be stored for genetic analysis would also occur. The trial should be complete within 3 months, with progress dependant on weather, biological factors, equipment and transport availability.
- <u>Action 7.</u> Implement reintroduction to an island in the Southern Atoll. Following the Translocation Proposal, capture, translocation and release 20 CBBR from North Keeling Island. The capture and release should be conducted jointly by PAN staff, two scientists and the Wildlife Ranger. The immediate fate of the translocated CBBRs should be intensively monitored according to the Translocation Proposal by the Project Scientist, the Wildlife Ranger and an additional scientific officer. The length of time required for intensive monitoring will depend on trial results (Action 6) and how the CBBR settle in the new habitat. This action also includes determining the sex ratio of the reintroduced population by molecular techniques.
- <u>Action 8.</u> Develop and implement a quarterly population monitoring program of the reintroduced CBBR, including an annual capture, colour banding/marking component.
- <u>Action 9.</u> Implement annual rat, cat and chicken monitoring (and control as required) to maintain cat and rat free status of the reintroduction island each year for 5 years.

<u>Action 10.</u> Monitor and evaluate the effectiveness of the revegetation program annually and adjust subsequent years' methods accordingly. Maintain and enhance previous years' revegetation as required.

Supporting Actions

- <u>Action 11.</u> Establish a Recovery Team within six months, with representatives from key stakeholder groups to oversee and advise on implementation of the Recovery Plan. The team should be small to be effective, especially as phone link ups may be the primary mode of communication (because of likely off-island participation). The team should comprise as a minimum one representative from each of CKI Shire Council, PAN, Department of Transport and Regional Services, the Cocos Malay community and two representatives with collective scientific experience in CBBR, islands, feral animal control and re-introduction programs. Not more than one of the Recovery Team representatives should be from any one state government department.
- <u>Action 12.</u> Develop and implement an effective Communications Strategy to ensure local community engagement, education and involvement. The Project Scientist will prepare the strategy with assistance from the Wildlife Ranger. The Wildlife Ranger will have a key role in the engagement of the local community over the life of the recovery program.
- <u>Contingency Action</u> In the event of the failure of the reintroduction, establish a captive population off island. This action has not been costed as part of the recovery program.

Costs

The total cost of the recovery program is \$671,800 over 5 years, of which wages are the major component.

	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Total required	\$280,000	\$185,000	\$76,800	\$65,000	\$65,000	\$671,800

A qualified 'Project Scientist' is required part time for the first 2 years to provide expertise to train the local Wildlife Ranger, prepare the translocation proposal, develop methods and begin implementing actions 4-6, develop monitoring protocols for actions 8-10, prepare the communication strategy and band birds. The Project Scientist should continue to provide support to the Wildlife Ranger for the life of the plan. An on-island Wildlife Ranger is integral for the 5 year program, being required to implement and/or coordinate actions 4-10. Additional assistance from a qualified scientist will be required for two short term periods for intensive field work for actions 6 and 7. Due to the isolated and fragmented nature of the islands freight is an additional expense to any purchases, a boat is required for travel to and from the reintroduction island and a barge to get machinery onto the island, and North Keeling Island is only accessible by a seafaring vessel. Other costs include rodent baits for rat control and qualified contract labour to carry out eradication.

No costs are included for action 1 as it is part of the "normal" activities of PAN. Costs for travel and labour for monitoring the North Keeling Island population (\$70 000) will be provided by PAN, along with support, advice, assistance with training, in radio-telemetry and capture of birds on North Keeling Island, and the transportation of CBBR for the reintroduction (\$30 000). These costs will be covered as part of the management of North Keeling Island and are not included in the budget. Habitat restoration activities will involve the local community and it is anticipated that the local school and volunteers will make a considerable contribution, minimising costs for this action. Future costs (not included in the budget) are for the analysis of genetic diversity of the reintroduced population by molecular techniques (to be outlined in the translocation proposal).

Management Practices

Despite adequate legislative powers and protection, current quarantine measures on CKI may be inadequate for biosecurity. Therefore, existing quarantine arrangements to CKI should be reviewed and, if necessary, improved, to avoid introduction of any further predators/ competitors, weeds or diseases which could affect the CBBR.

Current cat control measures periodically undertaken by the CKI Shire Council on West and Home Islands should be maintained and, if possible, intensified, in order to lower cat numbers further and allow increased likelihood of CBBR dispersal onto other islands in the Southern Atoll. Any opportunities for rat control on other islands of the Southern Atoll would also advantage the CBBR.

The EPBC Act protects nationally-listed threatened species, which includes the CBBR. Should a person wish to pursue an action that could result in a significant impact on the species, or any other matter protected, it may require referral to the Commonwealth Environment Minister under the EPBC Act for a decision on whether assessment and approval of the action is required.

Biodiversity Benefits

Habitat restoration, particularly through revegetation, will increase vegetation diversity and naturalness in the Southern Atoll. This in turn will increase potential nesting habitat for seabirds, such as the Red Footed Booby *Sula sula*, whose breeding populations are locally extinct on the Southern Atoll. Removal of exotic vertebrates from one island will benefit native prey species and competitors. There are no biodiversity disbenefits envisaged.

Interests that will be affected by the Recovery Plan's implementation

- Australian Government Department of the Environment and Heritage
- Australian Government Department of Transport and Regional Services
- Parks Australia North
- Cocos (Keeling) Island Shire Council
- CKI Tourism Association
- Western Australian Department of Conservation and Land Management
- Australian Federal Police
- Cocos (Keeling) Islands High School
- Junglejuice Farm
- Cocos (Keeling) Islands local community

Social and economic impacts

No negative social or economic impacts are predicted from implementation of the recovery plan. Social and economic benefits of implementation of the recovery plan include:

- an opportunity for the Cocos Malay community to develop a sense of ownership over a program to recover a species endemic to the Cocos (Keeling) Islands;
- short-term employment for the Cocos Malay community assisting with preparation of the island for reintroduction (habitat restoration, feral animal control and eradication);
- opportunities for a special interest tourism business that could be incorporated into eco-cultural tours; and
- introduction of a wildlife protection and monitoring role to the general operations of the Cocos (Keeling) Shire Council.

Ideally the recovery program should be administered though the CKI Council, who would employ a full time Wildlife Ranger for the life of the program. This position would be dedicated full time to CBBR recovery for the first two years, 75% in the third year and 67% for the last two years. The Ranger would receive training from the Coordinator and PAN in: monitoring CBBR, habitat restoration, feral animal detection and eradication, and communication activities. The implication is

that other sources of funding would be required to maintain a fulltime position, and allow for a broader scope of Council wildlife monitoring activities in these last three years, which would ideally lead on to a permanent fulltime position.

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