

## RECOVERY OUTLINE

# Abbott's Booby

1	Family	Sulidae
2	Scientific name	<i>Papasula abbotti</i> (Ridgway, 1893)
3	Common name	Abbott's Booby
4	Conservation status	Critically Endangered: A2ce, B1+2bce

### 5 Reasons for listing

A decrease in population size of more than 80% over the next three generations (120 years) is projected in area of occupancy (Critically Endangered: A2c) on the basis of a decline in habitat quality (c) and the current rate of spread of introduced ants (e). The already tiny area of occupancy is restricted to one location (B1), which may be further reduced in area (2b), quality (c) and number of mature individuals in occupation (e)

	Estimate	Reliability
Extent of occurrence	680,000 km <sup>2</sup>	high
trend	stable	high
Area of occupancy	25 km <sup>2</sup>	high
trend	decreasing	high
No. of breeding birds	6,000	medium
trend	decreasing	medium
No. of sub-populations	1	high
Generation time	40 years	low

### 6 Intraspecific taxa

None described.

### 7 Past range and abundance

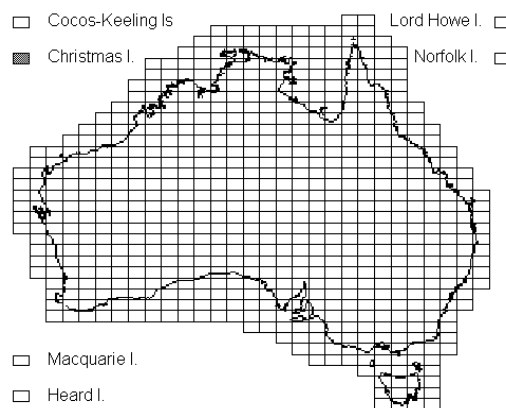
Breeding on Christmas I., Indian Ocean, and, prehistorically, on many other islands in the Indian and Pacific Oceans (Bourne, 1976, Stoddart, 1981, 1984, Steadman *et al.*, 1988). A partial survey found 2,300 active breeding pairs in 1967 (Nelson, 1971). Subsequent population estimates have ranged between 5,000 and 10,000 individuals.

### 8 Present range and abundance

Eliminated from all but Christmas I. by human activities over the last few thousand years. Breeding on central and western areas of plateau and in upper terrace forest of north coast (Yorkston and Green, 1997). Foraging apparently concentrated north and west of Christmas I., especially along an up-welling sea current off Java, 350 km away (Becking, 1976). Recent records from Banda Sea indicate either an extensive foraging range or another breeding colony nearby (van Balen, 1996). Most recent estimate of 2,500 active pairs in 1992 (Yorkston and Green, 1997), although only 1,900 pairs within the area surveyed by Nelson in 1967 (Reville *et al.*, 1990a).

### 9 Ecology

Abbott's Booby nests in tall rainforest trees, mostly in uneven canopy containing emergent trees. Nesting density is highest along crests of gullies and slopes that can easily be approached from the north-west (Nelson and Powell, 1986). Productivity is extremely low, with a pair needing nearly 30 years to replace themselves (Marchant and Higgins, 1990). The species feeds in warm, low salinity waters, taking squid and fish (Pocklington, 1979).



### 10 Threats

During 1965-87, clearance for large-scale phosphate extraction resulted in the destruction of approximately one-third of the species' nesting habitat (Reville *et al.*, 1987). Many nest sites and birds were destroyed, particularly during the 1960s and 1970s (Nelson, 1977). In addition, a mosaic of cleared and uncleared areas was created, allowing wind to enter the rainforest canopy. Trees in remaining isolated stands and along the margins of standing forest rapidly degenerated (Hicks and Powell, 1983), and the breeding success of the remaining boobies was reduced. In the wind-affected areas, increased turbulence caused higher adult mortality and reduced fledging success. Particularly badly affected was the forest to the north-west of cleared areas. Because of the pattern of clearance, over 40% of all nests found between 1983 and 1989 occurred within 300 m of the north-west of a clearing, and were subject to adverse effects from those clearings (Reville *et al.*, 1987). In the most recent survey, 36% of nests are close enough to clearings to be adversely affected (Yorkston and Green, 1997). Crowding by displaced breeding pairs also reduced productivity at other breeding sites. In 1987, these

problems were exacerbated by the destructive effects of a cyclone (Reville *et al.*, 1990a, b). Mined areas remain as mostly bare rock, on which vegetation is slow to recover, and remains sparse, unless the forest is actively rehabilitated (Nelson, 1977). The latest, and possibly most serious, threat is from the introduced Yellow Crazy Ant *Anoplolepis gracilipes*, which, after a slow start, is spreading rapidly, now occupying 15-18% of the island (D. Slip). These ants are not only likely to prey directly on nestlings, but may alter the whole ecology of the island by killing the dominant life-form, the Red Crab *Gecaroidea natalis*, and by farming scale insects which damage the trees (O'Dowd *et al.*, 1999). The ants occupy the entire forest from below ground level to the canopy where the boobies nest (A. Anderson). Abbott's Booby could also be threatened in its marine habitat by overfishing and entanglement in longline fishing gear.

#### 11 Information required

- 11.1 Refine techniques for controlling Yellow Crazy Ants.
- 11.2 Develop techniques for monitoring population size and breeding success.
- 11.3 Identify feeding habitat of breeding adults.
- 11.4 Assess impact of longline fishing.

#### 12 Recovery objectives

- 12.1 To involve all stakeholders in recovery.
- 12.2 To protect all breeding habitat of this species from clearing and degradation.
- 12.3 To control Yellow Crazy Ant.
- 12.4 To produce a timetable for rehabilitating priority minefields and commencement of rehabilitation using that timetable.
- 12.5 To implement bird-safe fishing practices in the Christmas I. and Cocos-Keeling Is Exclusive Economic Zone (covered under albatrosses and giant-petrels).

#### 13 Actions completed or under way

- 13.1 A National Park was created particularly for Abbott's Booby which includes 63% of Christmas I., including most breeding areas.
- 13.2 A lease agreement has been established with the mining company that prevents clearance

of primary rainforest and the requirement for permits to clear regrowth.

- 13.3 A detailed monitoring program was run from 1982-1993.
- 13.4 Rehabilitation has been attempted in some mined areas (Carew-Reid, 1987, Hopkins *et al.*, 1996) and is continuing.
- 13.5 Ongoing negotiation is occurring with landowners, including Christmas Island Phosphates Pty Ltd to ensure protection of all known and new breeding habitat and of appropriate buffers around nesting habitat.
- 13.6 A three year research program has been initiated and staff have been dedicated to ant control.
- 13.7 A Recovery Plan has been prepared (Dunn and Hill, 1997).

#### 14 Management actions required

- 14.1 Monitor the impact of rehabilitation efforts on breeding population size and distribution in areas affected by wind turbulence.
- 14.2 Implement education program amongst Christmas Island community.
- 14.3 Rehabilitate rainforest, with priority on minefields.
- 14.4 Control the abundance and spread of the Yellow Crazy Ant.
- 14.5 If necessary, implement management in feeding habitat.
- 14.6 Form a Recovery Team and implement the Recovery Plan.

#### 15 Organisations responsible for conservation

Environment Australia (including Wildlife Australia Branch; Parks Australia North; Christmas Island Rainforest Rehabilitation Program).

#### 16 Other organisations involved

Australian Fisheries Management Authority (AFMA), Birds Australia, Christmas Island Phosphates Pty. Ltd., Christmas Island Shire Council, Bureau of Resource Sciences, Latrobe University, Murdoch University, Monash University.

## 17 Staff and financial resources required for recovery to be carried out<sup>1</sup>

<i>Staff resources required 2001-2005</i>	0.2	<i>Project Officer (monitoring)</i>
	1.0	<i>Project Officer (rehabilitation)<sup>2</sup></i>
	1.0	<i>PhD student (rehabilitation)<sup>2</sup></i>
	0.1	<i>Project Officer (foraging)<sup>3</sup></i>
	0.8	<i>Project Officer (crazy ants)<sup>4</sup></i>
	0.2	<i>Technical Officer (monitoring)</i>
	1.0	<i>Technical Officers (fisheries observers)<sup>3</sup></i>
	4.0	<i>Technical Officer (crazy ants)<sup>4</sup></i>
	0.1	<i>Education officer<sup>2</sup></i>

### *Financial resources required 2001-2005*

<i>Action</i>	<i>Conservation agencies</i>	<i>Other funding sources</i>	<i>Total</i>
<i>Develop survey methodology</i>	\$20,000	\$0	\$20,000
<i>Survey effects of rehabilitation</i>	\$97,200	\$0	\$97,200
<i>Rehabilitate vegetation<sup>2,5</sup></i>	\$81,400	\$940,000	\$1,021,400
<i>Institute education program<sup>2</sup></i>	\$10,000	\$0	\$10,000
<i>Locate and manage of feeding areas<sup>3</sup></i>	\$47,000	\$0	\$47,000
<i>Monitor longlining<sup>3</sup></i>	\$70,000	\$0	\$70,000
<i>Control crazy ants<sup>4</sup></i>	\$250,000	\$12,000	\$262,000
<i>Recovery Team<sup>2</sup></i>	\$3,500	\$0	\$3,500
<b><i>Total</i></b>	<b>\$579,100</b>	<b>\$952,000</b>	<b>\$1,531,100</b>

1 Based largely on Dunn and Hill (1997)

2 Costs shared among Abbott's Booby, Christmas Island Frigatebird, Christmas Island Owl and Christmas Island Goshawk

3 Annual costs may vary following the first year's monitoring of the longline fishery; costs shared among Abbott's Booby, Masked Booby (eastern Indian Ocean) and Christmas Island Frigatebird

4 Costs shared with all 10 threatened Christmas Island taxa

5 Major funding derived from levy which varies from year to year depending on amount of phosphate exported

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#### Comments received from

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