

RED-TAILED BLACK-COCKATOO RECOVERY PLAN

Calyptorhynchus banksii graptogyne

(South-eastern Subspecies)

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SUMMARY

Current Taxon Status:

Endangered in South Australia (Schedule 7, National Parks and Wildlife Act, 1972) and Endangered in Victoria (DNRE 1995); Listed in CITES Appendix 2; subspecies is Endangered under proposed IUCN criteria ($N_e < 500$, possibly declining at $>10\%$ per generation for last 2 generations; Garnett 1992); listed as Critically Endangered under IUCN Red List categories (IUCN SSC 1994) Category C2b.

The subspecies is restricted to remnant habitat in south-eastern South Australia and south-western Victoria. The population does not exceed 1,000 individuals of which fewer than 200 are thought to breed each year. The annual recruitment rate is low, and the population may be declining.

Habitat Requirements and Limiting Factors:

The south-eastern subspecies of Red-tailed Black-Cockatoo requires Brown Stringybark Eucalyptus arenacea/baxteri and, possibly, Buloke Allocasuarina luehmannii woodland for foraging and large hollow-bearing eucalypts for nesting. Few nest sites are known and both feeding habitat and nest hollow abundance may be limiting as a result of past land clearance, firewood collection and as a result of fire management of feeding trees.

Recovery Plan Objectives:

- (1) To ensure that a viable breeding population persists in south-eastern Australia.
- (2) To shift from Endangered to Conservation Dependent within 20 years.

Recovery Criteria:

- (1) Census data over 5 consecutive years demonstrating a stable or increasing population exceeding 1000 mature individuals [the minimum required for a sustainable population].

Actions Needed:

- (1) Study factors affecting breeding initiation and success
- (2) Erect nest boxes and maintain existing nesting sites
- (3) Determine ways to accelerate natural hollow formation
- (4) Conduct an annual population census, model demographic trends, and establish a central database for records
- (5) Clarify patterns of movement
- (6) Determine the effects of fire on food abundance
- (7) Determine and implement ways to minimise the clearance of breeding habitat
- (8) Map habitat and prepare management guidelines
- (9) Ensure habitat regeneration
- (10) Maintain and expand community involvement
- (11) Compare genetic relationships among populations of the Red-tailed Black-Cockatoo
- (12) Manage the recovery process through a recovery team

Estimated Costs of Recovery (in \$000's/year; OA = Other Agencies):

A c t i o n :	1		2		3		4		5		6		7	
	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S
1 9 9 7	1 5 . 0	2 9 . 0	2 9 . 0	2 1 . 0	5 0 . 0	-	3 5 . 8	1 . 0	1 9 2 . 0	-	6 0 . 0	9 . 0	8 . 0	5 . 0
1 9 9 8	1 0 . 0	2 4 . 0	1 9 . 0	3 1 . 0	5 0 . 0	-	2 2 . 4	1 4 . 4	2 . 0	1 9 . 0	6 2 . 0	7 . 0	-	1 0 . 0
1 9 9 9	1 0 . 0	2 4 . 0	1 9 . 0	3 1 . 0	4 4 . 0	-	2 2 . 4	1 4 . 4	2 . 0	1 9 . 0	6 2 . 0	7 . 0	-	1 0 . 0
2 0 0 0	-	-	1 0 . 0	3 1 . 0	-	-	2 2 . 4	1 4 . 4	2 . 0	1 9 . 0	-	-	-	5 . 0
2 0 0 1	-	-	1 0 . 0	3 1 . 0	-	-	2 2 . 4	1 4 . 4	-	-	-	-	-	5 . 0
T o t a l s :	3 5 . 0	7 7 . 0	8 7 . 0	1 4 5 . 0	1 4 4 . 0	0 . 0	1 2 5 . 4	5 8 . 6	1 9 8 . 0	5 7 . 0	1 8 4 . 0	2 3 . 0	8 . 0	3 5 . 0

A c t i o n :	8		9		10		11		12		T o t a l s	
	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S	O A	T S C S
1 9 9 7	6 . 9	-	4 5 . 0	4 . 0	3 4 . 0	1 0 . 0	3 . 2	3 . 0	1 . 2	0 . 3	4 8 . 0	8 2 . 3

											1	
1 9 9 8	-	-	4 5 .0	4 .0	3 0 .0	1 4 .0	-	-	1 .2	0 .3	2 4 1 .6	1 2 3 .7
1 9 9 9	-	-	2 0 .0	-	3 0 .0	1 4 .0	-	-	1 .2	0 .3	2 1 0 .6	1 1 9 .7
2 0 0 0	-	-	2 0 .0	-	3 0 .0	1 4 .0	-	-	1 .2	0 .3	8 5 .6	8 3 .7
2 0 0 1	2 0 .0	2 8 .0	2 0 .0	-	3 0 .0	1 4 .0	-	-	1 .2	0 .3	1 0 3 .6	9 2 .7
T o t a l s :	2 6 .9	2 8 .0	1 5 0 .0	8 .0	1 5 4 .0	6 6 .0	3 .2	3 .0	6 .0	1 .5	1 1 2 1 .5	5 0 2 .1

Biodiversity Benefits: The Red-tailed Black-Cockatoo is a flagship species for the protection of the once-extensive forests of south-western Victoria and south-eastern South Australia on which a range of threatened flora and fauna are critically dependent.

INTRODUCTION

Description of species and subspecies

The Red-tailed Black-Cockatoo *Calyptorhynchus banksii* is the largest member of the endemic Australian genus that includes most of the Black-Cockatoos. Males are all black with red panels in their tails. Females resemble males but have yellow spots on the head and belly and black bars across the red tail panels. This Recovery Plan is for the endangered south-eastern subspecies *C.b. graptogyne*, as described by Schodde (1988). The relationship between this subspecies and the nearest population of *C.banksii* to the north is yet to be determined (L.Christidis in litt., see Action 11).

Population Size

Estimates are imprecise but it is currently thought that there are no more than 1000 individuals remaining (Caldow 1995) with fewer than 200 breeding (Joseph et al. 1991). This estimate has remained at a similar order of magnitude since the early 1980s but has never been sufficiently precise to allow an assessment of population trends.

Distribution and movements

The subspecies is confined to a small area straddling the border between south-western Victoria and south-eastern South Australia. Birds occur throughout the year within 60 km of Edenhope, Victoria and in the Bangham-Frances area of South Australia but occur seasonally in an area bounded in the east by Wonwondah and the Black Range, in the north by the Little Desert, in the south by the Lower Glenelg National Park near Nelson and in the west in the Naracoorte-Bangham area (Joseph 1982, Caldow 1995, Venn pers. comm.). There is some evidence that they may have occurred further east last century (Joseph 1982), and north [D Venn pers. comm.] but there have been no recent records of significant numbers beyond the range described above (Joseph et al. 1991).

During late spring and summer most Red-tailed Black-Cockatoos from south of Casterton appear to move into the Bangham-Edenhope region, returning to the south in April. This movement may be in response to food availability (Joseph 1982, 1989).

Habitat

This subspecies nests in large hollows mostly in River Red Gum *Eucalyptus camaldulensis* or Yellow/South Australian Blue Gum *E.leucoxylon*. Nearly all nests have been found in dead trees. The birds feed primarily in Brown Stringybark *E.arenacea/baxteri* woodland, many apparently moving to Buloke *Allocasuarina luehmannii* woodland in the later summer and early autumn. Nearly all food is taken from trees with only a few records of feeding in shrubs or from the ground (Joseph 1989, Caldow 1995, D Venn pers. comm.).

Diet and Foraging Ecology

The principal food from late-April to early January is seed of the Brown Stringybark (*E.arenacea* in most of the range, *E.baxteri* in the south). From late January to early April it appears that many, though not all, the cockatoos feed on the seeds of Buloke (Joseph 1982, Caldow 1995). There are isolated records of the cockatoos feeding on *Banksia* spp. and possibly on wild geranium *Erodium* sp. (Caldow 1995, D Venn pers comm.).

Flowering, and subsequent fruiting, of the Brown Stringybark varies between years, possibly on a four-year cycle. The extent of flowering may determine the intensity of nesting effort in the subsequent breeding season (Caldow 1995). Though stringybark seed is available all year, it is not known whether the seed varies in quality or whether the cockatoos are selective. The division of Brown Stringybark into two species, *E.arenacea* and *E.baxteri* (Marginson and Ladiges 1988), could also be reflected in quantity and quality of the seed they produce.

The seed of Buloke is available from late January to early April each year (Caldow 1995). It is possible that seed quality in Buloke is affected by soil and topography. Though Buloke itself occurs over an extensive area in western Victoria, early indications are that cockatoos feed on it only where the groundwater is fresh (G.M.Crowley and S.T.Garnett pers.comm.).

Reproductive biology

Red-tailed Black-Cockatoos attain adult plumage at about 4 years and breed in pairs. A clutch usually consists of a single egg. On the rare occasions when two eggs are laid only one young is raised (Forshaw 1981). Eggs are laid on a base of wood shavings inside hollows in trees. Most eggs of the south-eastern subspecies of Red-tailed Black-Cockatoo are laid in October or November with chicks fledging in February or March. Failed nests are sometimes replaced during autumn with fledging in late April or May (Emison et al. 1995). Only two out of 35 nests found 1988-1992 failed. In 1992/3, however seven out of 16 nests failed at the first attempt though one out of seven presumed renestings were successful. Nests in the trunks of trees were more successful than those in the ends of broken limbs. South-eastern Red-tailed Black-Cockatoos are thought to use the same nesting area for consecutive nesting attempts (Emison et al. 1995). In Western Australia the race *C.b.samueli* often moves between nesting attempts (Saunders 1990).

Current threats

Nest hollow shortage

It has been proposed that the failure, despite searching, to find many nests and the rapid adoption of artificial nest boxes is evidence that there is a shortage of nest hollows. A shortage of nest hollows is thought to limit the number of cockatoos attempting to breed.

Actions 1,

2, 3 & 10

Nest hollow competition

Yellow-tailed Black-Cockatoos *C.funereus*, Long-billed Corellas *C.tenuirostris*, Sulphur-crested Cockatoos *C.galerita* and Galahs *C.roseicapilla* all nest in the same area as the South-eastern Red-tailed Black-Cockatoo and use hollows. Yellow-tailed Black-Cockatoos have a similar breeding season and have been recorded occupying hollows used in the previous year by Red-tailed Black-Cockatoos (Joseph et al. 1991). The two other cockatoo species nest earlier in the spring but may have young in the nest at the time the Red-tailed Black-Cockatoos start to search for hollows (Joseph et al. 1991). Feral bees *Apis mellifera* also occupy hollows that may otherwise be used by cockatoos. Common Brush-tailed Possums *Trichosaurus vulpecula* and several species of glider may also compete for hollows.

Actions 1, 2, 3 & 10.

Nest predation

Recorded nest success is high but this could be masked by a failure to find nests early in the breeding season that are subsequently lost to predators. On Kangaroo Island, where a shortage of hollows was once considered the major threat to the Glossy Black-Cockatoo *C.lathami halmaturinus* (Pepper 1992), predation by Common Brush-tailed Possums *Trichosaurus vulpecula*

now appears to be the principal cause of low recruitment (Garnett et al. 1996). Similarly Feral Cats *Felis catus* are considered a major predator of nests of the *C.b.samueli* (Saunders 1990). The effects of possums or other predators therefore warrants investigation.

Actions 1, 2 & 10

Food limitation

The abundance of stringybark seed may be reduced by fire (see below) and much habitat has been cleared for agriculture. The apparently small number of nesting attempts may be as a result of a shortage of stringybark seed rather than nesting opportunities.

Much Buloke has been cleared and many of the major stands are now confined to roadsides. Buloke seed may be particularly important for newly-fledged birds and a shortage of seed of sufficient quality may limit recruitment of fledglings to the adult population.

Actions 1, 5, 6, 8, 9 & 10

Fire

The availability of stringybark seed appears to be reduced by burning and the birds rarely visit patches of stringybark that have been burnt frequently. If too much of the habitat is burnt over a short period the cockatoos may suffer a shortage of stringybark seed.

Actions 1, 5 & 6

Clearance of breeding habitat

Much of the firewood for Adelaide and Melbourne is taken from within the range of the south-eastern subspecies of Red-tailed Black-Cockatoo. Dead hollow-bearing trees of the type favoured for nesting are vulnerable to felling for firewood. Dead trees on private land are not protected by legislation in either state.

Increasing use of centre-pivot irrigation is likely to accelerate the rate of tree loss, and in conjunction with the spread of feed lots, will affect the quantity and quality of ground and surface water. In addition extensive areas south and west of Horsham contain mineral sands that may be mined in future. If mining proceeds, and if strip mining is the method of extraction, then loss of breeding and feeding habitat could be expected, as well as changes to hydrological regimes.

Actions 2, 7 & 8

Nest robbing

Nest robbing for the pet trade is considered a threat to many endangered parrots, including Australian cockatoos. Some attempts have been made to rob nests of the south-eastern Red-tailed Black-Cockatoo. If repeatedly successful these could affect the viability of the population.

Action 10

Existing conservation measures

Recent conservation actions include the following:

- . Surveys of the distribution and population size
- . Study of the conservation biology 1988-1994.
- . Erection of artificial nest hollows (1992:4; 1993:18; 1994:12).
- . Creation of an observer network in south-western Victoria
- . Imposition of a moratorium on block burning of Brown Stringybark on crown land [Vic].

RECOVERY OBJECTIVES AND CRITERIA

Objectives:

- (1) To ensure that a viable breeding population persists in south-eastern Australia.
- (2) To shift from Endangered to Conservation Dependent within 20 years.

Recovery Criteria:

- (1) Census data over 5 consecutive years demonstrating a stable or increasing population exceeding 1000 mature individuals.

RECOVERY ACTIONS

Action 1: Study factors affecting breeding initiation and success

Aims

To determine why so few Red-tailed Black-Cockatoos breed each year and how this low breeding rate can be increased.

Justification

The surprisingly small number of nest attempts recorded each year, especially when contrasted to the twice yearly breeding among *C.b.samueli* (Saunders 1977), suggests a failure to breed is a major constraint on population growth. Lack of nest hollows may be the main problem but, if that were the case, it is surprising that there is no evidence of competition for hollows between pairs and that hollows are not re-used every year. Alternatively many pairs may not be initiating breeding behaviour for lack of sufficient food, as suggested by the increase in the number of nests found after years of heavy fruiting in stringybarks (Caldow 1995), or many failed nests are not found.

Methods

Search for nests and monitor cockatoos for behaviour associated with breeding (see also Action 5). Nests found should be mapped (Action 7) and monitored (Action 2) to build on existing data on nesting success and causes of nesting failure. Data from the World Parrot Trust/DNRE project on the subspecies will also need to be analysed. Determine whether food shortages are likely by studying diet and time budgets immediately before and during the breeding season (combine with Action 6). If suitable technology has been developed, capture then mark and/or radio-track individuals to determine the relationship between patterns of habitat use and breeding or non-breeding behaviour. Funds are needed for the salary of a biologist during the breeding season and for data analysis, for radio-transmitters and for travel expenses. Radio-tracking equipment would be borrowed from state agencies.

Responsibility: administration: Birds Australia; fieldwork/analysis: Birds Australia (Project Officer); radio-tracking equipment: DENR/DNRE.

Budget

Costs (\$'000: 1997)	BA	DNRE	DENR	TSCS	<u>Total</u>
Salaries		5.0			23.0
28.0					
Materials + misc		5.0	5.0	4.0	14.0
Travel				2.0	2.0
<u>Total</u>	5.0	5.0	5.0	29.0	44.0

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	29.0	24.0	24.0			77.0
<u>Total</u>	44.0	34.0	34.0			132.0

Action 2: Erect nest boxes and maintain existing nesting sites

Aims

To maximise breeding productivity so that rates of recruitment are likely to exceed rates of mortality.

Justification

Since Red-tailed Black-Cockatoos are known to use nest boxes, erection of nest boxes should help alleviate any shortage should it exist, at least until remedies are available that will maintain recruitment in a less intensive manner. Nest boxes can also be placed in sites that are less likely to be predated. Most existing nest sites are in dead trees. These are vulnerable to clearance for agriculture or firewood, since they are not protected under any legislation. Maintenance of such sites must therefore involve liaison with landholders on whose land the trees exist.

Methods

A variety of nest box types have been developed for black-cockatoos and will continue to be erected in trees, both live and dead, or on second-hand electricity poles. Most will be erected in areas where cockatoos are known to have bred in the past and on properties where landholders are known to be interested and sympathetic to cockatoo conservation. If considered necessary (see Action 1), they will be protected from terrestrial predators by collars of tin. Protection of existing nest sites against clearance will be principally by negotiation with landholders. Where land is to be cleared of dead trees to make way for irrigation, attempts will be made to persuade landholders to erect replacement nests in other parts of the property. As has been the practice, nest sites must also be identified for landholders to ensure they are not inadvertently cut for firewood, especially since the best firewood is obtained from solid dead trees, which do not develop hollows. Landholders will themselves be encouraged to be involved in the maintenance of nest boxes (see Action 9). Funds are required for the biologist (see Action 1) to undertake and coordinate nest monitoring, for an extension officer to liaise with landholders [see Action 7&9], for the building and erection of nest boxes, for nest box materials, equipment hire including cherry-pickers to gain access to trees too fragile to climb, and travel.

Responsibility: administration: Birds Australia; co-ordinate nest monitoring: Birds Australia (Project Officer) and community volunteers; liaison/erection nest boxes: Extension Officer (BirdsAustralia/DNRE ?); materials and equipment: DNRE/DENR.

Budget

<u>Costs (\$'000: 1997)</u>	<u>Vols.</u>	<u>BA</u>	<u>DNRE</u>	<u>DENR</u>	<u>TSCS</u>	<u>Total</u>
Salaries		5.0	6.0			12.0
23.0						
Materials + misc			3.0	3.0	5.0	11.0
Equipment Hire			3.0	3.0		6.0
Travel	2.0	4.0			4.0	10.0
<u>Total</u>	7.0	10.0	6.0	6.0	21.0	50.0

Summary of Annual Costs:

<u>Year</u>	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	21.0	31.0	31.0	31.0	31.0	145.0
<u>Total</u>	50.0	50.0	50.0	41.0	41.0	232.0

Action 3: Determine ways to accelerate natural hollow formation

Aims

To accelerate the formation of natural hollows to facilitate continuity of supply after existing hollows collapse.

Justification

A lack of hollows has been identified as a threatening process for many taxa. The erection of artificial hollows offers a short-term, expensive, solution. Long-term conservation must rely on an adequate supply of natural hollows. There is an impression that most large hollows are currently to be found in dead trees, which will collapse in the next few decades, and that most hollows in live trees are still too small, if they have formed at all. The research proposed would attempt to accelerate the process of hollow formation and growth.

Methods

Using published literature, examination of known age trees and experimentation determine the processes involved in hollow formation, particularly in Red Gums, and means by which they can be accelerated. At chosen locations near existing nests treat a sample of trees in a manner that will induce hollow formation. The results of this treatment are unlikely to be evident during the project and provision should be made for long-term monitoring of the results. The project should attract a PhD student, preferably from one of the Departments of Forestry. Supplementary funds are required for travel and hire or purchase of climbing equipment/cherry-pickers.

Budget

Responsibility: administration: Birds Australia; research/fieldwork/analysis: DEET (PhD student); Equipment/materials: DNRE/DENR.

Costs (\$'000: 1997)	DEET	BA	DNRE	DENR	<u>Total</u>
Salaries	30.0				30.0
Equipment hire			3.0	3.0	6.0
Materials + misc	5.0		3.0	3.0	11.0
Travel	2.5		0.3	0.2	3.0
<u>Total</u>	37.5		6.3	6.2	50.0

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	-	-	-	-	-	-
<u>Total</u>	50.0	50.0	44.0	-	-	144.0

Action 4: Conduct an annual population census

Aims

To establish a baseline population and central database of records of cockatoos to determine trends against which the effects of conservation management can be compared. The census will also be used to determine the annual production of young.

Justification

The current status is based partly on assumed population trends. Though a census will necessarily have a margin of error, repeated censuses over a five year period should provide an adequate picture of trends. As juvenile plumage and behaviour differ from those of adults it will be possible to determine annual breeding success at the time of the census.

Methods

Locate and count as many flocks as possible, recording the number of each sex and the number of juveniles in each flock. The best time to conduct the census will be mid-winter. From September to June an unknown proportion of the birds are likely to be breeding, thus diminishing the accuracy of counts. Both local and imported volunteers will be essential for the census. Locations will be used in Action 7. Funds are required for the salary of an extension officer and for travel.

Budget

Responsibility: administration: Birds Australia; fieldwork: Birds Australia/DNRE ? and community volunteers.

<u>Costs</u> (\$'000: 1997)	Vols.	NHT	BA	DNRE	DENR	TSCS	<u>Total</u>
Salaries		12.0	13.1				
25.1							
Travel	10.4		0.3			1.0	11.7
<u>Total</u>	22.4	13.1	0.3			1.0	36.8

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	1.0	14.4	14.4	14.4	14.4	58.6
<u>Total</u>	36.8	36.8	36.8	36.8	36.8	184.0

Action 5: Clarify patterns of movement

Aims

To establish the extent and causes of seasonal north-south movements during summer.

Justification

The annual vacation of habitat south of Casterton suggests either some aspect of the northern habitat, such as the presence of Buloke, is more attractive at this time or there are seasonal inadequacies in the southern habitat. The reasons for the movement may have consequences for conservation management, particularly as a gauge of the importance of the Buloke woodland.

Methods

In the first year conduct surveys throughout the habitat with the help of volunteers at monthly intervals for which funding has been sought for an extension officer (see Action 4). If necessary in subsequent years clarify patterns of resource use, particularly among the southern population, using radiotransmitters (see Action 1). Compare resource use with regional availability to determine whether resource limitation is causing movement. Funding is required to employ the biologist (see Action 1), to trap and follow birds as well as for travel and aircraft hire should the birds move long distances.

Responsibility: administration: Birds Australia; fieldwork/analysis: Birds Australia (Project Officer), Birds Australia/DNRE (Extension Officer), and community volunteers.

Budget

Costs (\$'000: 1997)	Vols.	NHT	BA	TSCS	<u>Total</u>
Salaries		84.0	20.0		
104.0					
Travel	83.2		2.8		86.0
<u>Total</u>	167.2	20.0	2.8		192.0

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	-	19.0	19.0	19.0	-	57.0
<u>Total</u>	192.0	21.0	21.0	21.0	-	255.0

Action 6: Determine the effects of fire on food abundance

Aims

To determine the effects of fire on seed production by stringybarks and develop, in co-operation with local land managers, a practical fire management strategy for stringybark habitat.

Justification

Anecdotal information on the effects of fire on stringybark seed production needs to be tested so the current moratorium on burning in Victorian forest blocks on crown land can either be justified or modified and a considered fire management strategy developed that will favour an adequate supply of seed for the cockatoos.

Methods

Using fire histories, beekeeper observations and experimental burns, the effects of fire on seed supply for the cockatoos will be determined. In addition the seed supply and fire history of all major feeding areas will be assessed to determine future fire management options for each area. The project should attract a PhD student from either Melbourne or Adelaide. Funding will be required for travel and nutritional analyses. State agencies will provide assistance in the field and access to available data on fire histories and management as well as input into the fire management plan. A trial spring burn of the understorey in selected locations will be a priority.

Budget

Responsibility: administration: Birds Australia; research/fieldwork/analysis: DEET (PhD student); fire management and data access: DNRE/DENR.

<u>Costs</u> (\$'000: 1997)	DEET	BA	DNRE	DENR	TSCS	<u>Total</u>
Salaries		30.0		19.0	4.0	
53.0						
Materials + misc	2.0		1.0	1.0	1.0	5.0
Analyses					4.0	4.0
Travel	3.0				4.0	7.0
<u>Total</u>	35.0		20.0	5.0	9.0	69.0

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	9.0	7.0	7.0	-	-	23.0
<u>Total</u>	69.0	69.0	69.0	-	-	207.0

Action 7: Determine and implement ways to minimise the effects of clearing of breeding habitat

Aims

To establish a protocol within the breeding habitat of the cockatoos that will ensure existing or potential nest trees are not cleared for firewood, intensive agricultural practices or mining.

Justification

Although solid dead trees, which do not develop hollows, make the best firewood, many hollow-bearing trees are cut down for the little solid wood they contain. Firewood collection also threatens a range of other wildlife in the grassy woodlands of south-eastern Australia and this action should be used to address the problems of firewood collection as part of a Threat Abatement Program under the Endangered Species Program.

Intensive agricultural practices, such as centre-pivot irrigation and viticulture, require the removal of dead trees and have the potential, if current trends continue, to significantly reduce hollow availability. Strip mining would also pose a threat to nest trees.

Methods

In co-operation with others considering this problem, work at several levels to reduce the extent of firewood collection within the cockatoos habitat and from grassy woodlands generally. Work with landowners known to have nest trees to ensure that hollow-bearing trees are not cut down inadvertently. Encourage landowners to remove only those dead trees which lack hollows and, if clearing of large, living, potential nest trees is permitted, ensure that there is no net loss of breeding habitat by stipulating the provision of nest boxes on existing trees or on poles. In addition provide written advice to the Native vegetation Council [NVC] in South Australia regarding the importance of scattered live and dead, large, hollow-bearing species within the breeding range of the Red-tailed Black-Cockatoo. [Maps of potential breeding habitat to be made available to the NVC for this purpose - see Action 8].

Funding is needed at the local level for the salary and travel expenses of the community liaison officer (see Action 4) to work with local landholders on the need to minimise the impact of firewood collection, intensive agriculture and mining.

Budget

Responsibility: administration: Birds Australia; landholder liaison: Birds Australia/DNRE ? (Extension Officer).

Costs (\$'000: 1997)	BA	DNRE	DENR	TSCS	<u>Total</u>
Salaries - local co-ordinator		8.0			4.0
12.0					
Travel				1.0	1.0
<u>Total</u>	8.0			5.0	13.0

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	5.0	10.0	10.0	5.0	5.0	35.0
<u>Total</u>	13.0	10.0	10.0	5.0	5.0	43.0

Action 8: Map habitat and prepare management guidelines

Aims

To document the extent of suitable habitat and attempt to ensure that management of those areas is consistent with conservation of the cockatoos.

Justification

Management of the cockatoo population will require accurate information on the location of the cockatoos and the land tenure. Conservation management will also be enhanced by a set of guidelines for each habitat and tenure type.

Methods

The work will proceed in two stages. In the first year important sites will be identified in Actions 1 and 4 for listing on the register of the National Estate and mapped onto paper maps. Secondly, at the end of the project, the results of Actions 1, 4 and 5 will be used to incorporate all information on the cockatoo's habitat and distribution onto a GIS system. In this case it is hoped to use base maps already available in the states from which it is hoped cadastral information will also be available. Recommendations on management will be prepared from the results of Actions 1, 2, 3, 6 and 7. Funding will be required for the salary of a biologist to map habitat and prepare management guidelines, for use of computer software and hardware and for travel.

Budget

Responsibility: administration: Birds Australia; habitat mapping and preparation of management guidelines: Birds Australia.

<u>Costs</u> (\$'000: 1997)	BA	TSCS	<u>Total</u>
Salaries		2.2	
2.2			
Materials + misc.	4.7		4.7
<u>Total</u>	6.9		6.9

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	-	-	-	-	28.0	28.0
<u>Total</u>	6.9	-	-	-	48.0	54.9

Action 9: Ensure habitat regeneration

Aims

To ensure an adequate area of suitable habitat is established to maintain a viable population in the long term.

Justification

Many habitats of the cockatoo have been reduced greatly in area, particularly the area covered by Buloke which, in most areas, is regenerating only along roadsides. If food shortage is limiting recruitment habitat regeneration may be required.

Methods

Work with local Landcare and other groups involved in regeneration to ensure cockatoo habitat is a focus for their efforts. In addition, conduct work and liaise with the EA/DNRE/UoB team to determine the optimal locations, sequences and techniques for the regeneration of Buloke. The officer will investigate funding sources with a view to encouraging fencing of remnant foraging and breeding vegetation, as well as the creation of shelterbelts and woodlots that include the appropriate food and hollow-forming species. Additional duties will be the provision of a list of available, suitable species to landholders for revegetation, and monitoring of revegetation works, in conjunction with the NVC and DNRE, to ensure that there is no net loss of cockatoo habitat. Funding is required for the community liaison officer (see Action 4) to work with community revegetation groups. Studies on Buloke regeneration may attract an Honours or Masters student. Funding will be required to assist this student with travel expenses.

Budget

Responsibility: administration: Birds Australia; community liaison (revegetation): Extension Officer and community volunteers (Birds Australia/DNRE ?); research: university (Hons. or Masters student).

Costs (\$'000: 1997)	Vols.	Uni	BA	DNRE	DENR	TSCS	<u>Total</u>
Salaries		20.0	20.0				2.0
42.0							
Travel + living expense		5.0				2.0	7.0
<u>Total</u>	20.0	25.0				4.0	49.0

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	4.0	4.0	-	-	-	8.0
<u>Total</u>	49.0	49.0	20.0	20.0	20.0	158.0

Action 10: Maintain and expand community involvement

Aims

To maintain the current level of community interest in the birds to ensure conservation management of the project is locally owned and, in the long term, conducted from entirely within the community. Also involve the local tourism industry in promotion of the species and its conservation requirements.

Justification

Long-term conservation of the cockatoos will not be achieved without the continuing interest of local land managers. This is best achieved by involving local people throughout the recovery process. The existing observer network provides a strong foundation for local involvement and needs to be maintained and expanded. Observers will also be the most effective means for countering poaching. The observers are an essential part of Actions 2, 4, 5, 7 and 8 and will be involved in Action 10. The local tourism industry should also be involved in promotion of the species and its requirements as a means of increasing the value of the species to the community.

Methods

The observer network is best maintained by frequent personal contact. It should be backed up by a regular bulletin and publicity about the progress of the Recovery Plan in the local media. The community liaison officer should try to develop a team of volunteers, possibly a friends group, who can take over management of the project after five years. The liaison officer will also establish contact with local and regional groups involved in tourist promotion, such as the Greater Green Triangle. Funding will be required for a part-time community liaison officer (see Action 4), travel and the production of a newsletter.

Budget

Responsibility: administration: Birds Australia; community involvement: Extension Officer (Birds Australia/DNRE ?).

<u>Costs</u> (\$'000: 1997)	<u>Vols.</u>	<u>BA</u>	<u>DNRE</u>	<u>DENR</u>	<u>TSCS</u>	<u>Total</u>
Salaries		20.0	4.0			4.0
28.0						
Materials + misc					2.0	2.0
Travel	10.0				4.0	14.0
<u>Total</u>	30.0	4.0			10.0	44.0

Summary of Annual Costs:

<u>Year</u>	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	10.0	14.0	14.0	14.0	14.0	66.0
<u>Total</u>	44.0	44.0	44.0	44.0	44.0	220.0

Action 11: Compare genetic relationships among populations of the Red-tailed Black-Cockatoo

Aims

To determine the genetic characteristics of the south-eastern subspecies of the Red-tailed Black-Cockatoo, particularly in comparison to the populations along the Darling River, New South Wales and in south-western Queensland.

Justification

The genetic relationship between the different populations of Red-tailed Black-Cockatoos needs to be determined to clarify their status. This research should also identify fragments of the Red-tailed Black-Cockatoo genetic code that are unique to the south-eastern subspecies. This knowledge can then be applied to genetic material of any captive birds or eggs that are suspected to have been taken illegally.

Methods

Dr Les Christidis of the Victorian Museum is currently attempting to develop genetic markers for use in black-cockatoos. If he is successful he will be able to use them to analyse the genetic variability in the Red-tailed Black-Cockatoo. Genetic material of all populations is available at the CSIRO Division of Wildlife and Ecology. Spending will be contingent upon finding effective genetic markers.

Budget

Responsibility: administration: Birds Australia; genetic analysis: Museum of Victoria.

<u>Costs</u> (\$'000: 1996)	Vic.Mus.	TSCS	<u>Total</u>
Salaries	3.0		1.5
4.5			
Materials + misc		1.5	1.5
Report prep.	0.2		0.2
<u>Total</u>	3.2	3.0	6.2

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	3.0	-	-	-	-	3.0
<u>Total</u>	6.2	-	-	-	-	6.2

Action 12: Manage the recovery process through a recovery team

Aims

To ensure the Recovery Plan is undertaken

Justification

The recovery process will need review and modification at regular intervals. The Recovery Team is also a means by which major stakeholders in the conservation of the taxon can feel ownership of the recovery process.

Methods

Conduct meetings of major stakeholders twice a year within the region occupied by the cockatoos. Agencies and other participants should fund their own participation provided they do not have to travel to one of the capital cities for the meeting but employees of the project should be paid to attend. They would also prepare and distribute minutes and reports relating to the meetings.

Budget

Responsibility: administration: Birds Australia.

<u>Costs</u> (\$'000: 1997)	Vols.	BA	DNRE	DENR	TSCS	<u>Total</u>
Salaries		1.0				0.2
1.2						
Materials + misc			0.1	0.1	0.1	0.3
<u>Total</u>	1.0		0.1	0.1	0.3	1.5

Summary of Annual Costs:

Year	1997	1998	1999	2000	2001	<u>Total</u>
TSCS	0.3	0.3	0.3	0.3	0.3	1.5
<u>Total</u>	1.5	1.5	1.5	1.5	1.5	7.5

IMPLEMENTATION SCHEDULE

To be completed when drafting finalised and funding sources clarified.

AGENCIES:

DEET - Dept. of Employment, Education and Training (Universities)

DENR - Department of Environment and Natural Resources (SA)

DNRE - Department of Natural Resources and Environment (Vic.)

TSCS - Threatened Species and Communities Section (Biodiversity Group, Environment Australia)

NHT - Natural Heritage Trust

BA - Birds Australia

Vic.Mus. - Museum of Victoria

Vols. - Volunteers

UoB - University of Ballarat

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