

# South-eastern Red-tailed Black-Cockatoo Recovery Plan Review

Rachel Pritchard<sup>1</sup> and Tim Burnard<sup>2</sup>

June 2012

DRAFT

<sup>1</sup> Department of Sustainability and Environment 12 Murray St., Heywood, VIC 3304<sup>2</sup> BirdLife  
Australia Suite 2-05, 60 Leicester Street, Carlton VIC 3053

## Contents

Acknowledgements .....	2
Summary .....	2
Review methods.....	3
Evaluation of Recovery Plan Feasibility and Effectiveness.....	4
Recommendations for the next Recovery Plan .....	8
Evaluation of Action Implementation.....	9
Acronyms .....	24
References .....	24

DRAFT



## Acknowledgements

This review was supported by BirdLife Australia and the Victorian Department of Sustainability and Environment. Funding was provided by the Glenelg Hopkins Catchment Management Authority and the Wimmera Catchment Management Authority, with funds from the Australian Government Caring for our Country Program and the Victorian Government Victorian Investment Framework.

The authors would like to thank the many people who provided input at the November 2011 recovery plan review meeting and individual interviews in early 2012. They include; Andrew Bradey (Kowree Farm Tree Group), Peter Copley (DENR), Kerry Gilkes (Zoos SA), Richard Hill (DSE), Paul Koch (Greening Australia), Melissa Land (WCMA), Martine Maron (University of Queensland), Becky McCann (DENR), Jim McGuire (Community Representative), Sue Mudford (Trust for Nature), Bronwyn Perryman (BirdLife Australia), Tania Rajic (Community Representative), Evan Roberts (Community Representative), Vicki-Jo Russell (Zoos SA), Aggie Stevenson (GHCMA), Oisín Sweeney (DENR) and David Williams (DSE).

## Summary

The overall objective of the National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo *Calyptrorhynchus banksii graptogyne* (2007) was not completely achieved in the period 2007-2012. Whilst the program did "initiate longer-term measures designed to ensure the persistence of a viable breeding population" it was unable to "demonstrate within five years a reversal of recent population declines". The main reason for this short-coming is that this component of the objective was not achievable for a long-lived species in a five-year timeframe.

One of four specific objectives contained in the Plan was fully achieved and the other three were partially achieved. These objectives related to improving the management of key sites and habitat, and increasing community awareness and participation in the recovery program. Significant achievements during the period 2007-2012 include:

- Detailed mapping of habitat, including a thorough analysis of the current distribution of Buloke habitat and recent rates of Buloke loss
- Improved statutory protection of habitat values, in part informed by the above analyses
- Increased knowledge and capacity for agency staff to manage habitats and make decisions that reflect the needs of South-eastern Red-tailed Black-Cockatoo (SeRtBC)
- Increased access to information by the community through newsletters and the Red-tail website
- Increased community participation in on-ground habitat conservation through programs that specifically address the interests of farmers.

Two specific objectives were not fully achieved because they specifically aimed to meet the component of the overall objective relating to an increase in population size, which was not achievable within five years. This review identifies achievements and short-comings, and makes recommendations for the next Recovery Plan.

## Review methods

This review assesses the feasibility and effectiveness of implementation of the National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii graptogyne* (2007) for the period 2007-2012. The review aims to meet the requirements for recovery plan reviews under the *Environment Protection and Biodiversity Conservation Act 1999*. The review commenced with an assessment of the plan's objectives, actions and performance criteria at a National Recovery Team meeting in November 2011. Further information was gathered through one-to-one interviews between the authors and Recovery Team members with specific knowledge of, or responsibility for, plan implementation. A draft of the review was provided to the Recovery Team for comment to capture further relevant information.

The authors have made efforts to include all relevant information in this review. However, because some actions may be delivered by a range of organisations (e.g. habitat protection and restoration), it is likely that some information has not been captured.

Objectives and performance criteria were assessed as Achieved, Partially Achieved, Not Achieved or Unknown. To reach the objectives the Plan included 15 actions (numbered for example 1) with a total of 59 sub-actions (numbered for example 1a). An additional two actions and five sub-actions were included as supporting actions. As part of the performance evaluation each sub-action contributing to the objectives was assessed and scored from 0-3 using the following guidelines:

- 0 no progress/cannot be assessed
- 1 insufficient action to meet action description and/or associated objectives or criteria
- 2 action underway – most elements of action met or it is anticipated that they will be
- 3 action completed – further action may or may not be required

A performance score for each objective was calculated by:

Scores for all sub-actions summed = A

Total score possible (if all sub-actions received a maximum score of 3) summed = B

Objective score as a percentage =  $A/B \times 100\%$

## Evaluation of Recovery Plan Feasibility and Effectiveness

The Recovery Plan identified one overall objective and four specific objectives to be achieved within five years, with performance criteria to measure achievement of the specific objectives (Table 1).

Table 1. Evaluation of Recovery Plan objectives and performance criteria for the period 2007-2012.

Overall Objective	Results
To demonstrate within five years a reversal of recent population declines, and to initiate longer-term measures designed to ensure the persistence of a viable breeding population.	Partially achieved.  Population declines are inferred by continued habitat loss and low recruitment of young in some years. Whilst the program did "initiate longer-term measures designed to ensure the persistence of a viable breeding population" it was unable to "demonstrate within five years a reversal of recent population declines". The main reason for this short-coming is that the objective was not achievable in a five-year timeframe.
Specific Objectives	Results
To improve the status of the South-eastern Red-tailed Black-Cockatoo within five years by:	
1. Increasing the total population size and maintaining its extent of occurrence by implementing threat abatement strategies to deal with shortages of food.	<b>Partially achieved.</b>  Whilst the extent of occurrence was maintained, the population size did not increase despite implementation of many sub-actions to address food shortages.  One of five performance criteria partially achieved, two unable to be assessed, two not achieved.  <b>Action implementation score 64%</b>  (29 sub-actions in total)
	<b>Performance Criteria</b>
1. No net loss of existing feeding habitat from clearing.	<b>Unknown.</b> Not practically assessable with current data sources.  Monitoring programs for vegetation loss are not consistent across the range, and fail to capture all vegetation losses (e.g. illegal clearances, clearances exempt from requiring a planning permit). Offset monitoring is limited.
2. At least 500ha of stringybark woodland and 50ha of Buloke woodland protected or revegetated each year.	<b>Partially achieved.</b>  There is no single source from which to collect these data because the organisations delivering on this objective have no requirement to report to a central database. While many hectares are known to have been protected or revegetated each year it is unlikely that the targets were

		fully achieved.
	3. A 15% increase in seed availability in stringybark woodland from 2005 levels resulting from improved fire management.	<b>Not achieved.</b> Improved fire management guidelines have been implemented in South Australia and Victoria. However, fire management in Victoria is aimed at maintaining seed availability, not increasing availability. Similar management occurred on some of the public land estate in South Australia, but with less specific targets. An increase in seed availability through fire management is likely to be very difficult to achieve.
	4. A 20% reduction in pine infestation of stringybark woodland from 2005 levels.	<b>Unknown.</b> Not practically assessable with current data sources.  There are no broad-scale baseline data for pine infestation levels in 2005, and no broad-scale monitoring data to measure change. However, pine wildling control in public land in both South Australia and Victoria means it is likely that there has been a reduction in infestation levels.
	5. Annual count of at least 900 birds recorded across range in last ten years, of which not more than 39% are adult males (c.700 adults and 200 juveniles).	<b>Not achieved.</b>  While the annual count and flock counts have been conducted each year, the target of 900 was only achieved in 2008 and 2012, and over 39% was recorded each year. Current information suggests that these targets failed to take into account expected inter-annual variation and inability for such counts to be used as reliable population index.
	2. Increasing the total population size by implementing strategies to address impacts on nest sites and reproductive output.	<b>Partially achieved.</b>  The population size did not increase despite implementation of many sub-actions. Note that this was thought to be due to a restriction in food availability not nest sites.  One of four performance criteria achieved, one partially achieved, one unable to be assessed, one not achieved.  <b>Action implementation score 52%</b>  (14 sub-actions in total)
	Performance Criteria	
	6. Statutory protection of large dead trees with hollows across the range.	<b>Achieved.</b>  State-wide protection now exists for large dead trees with hollows in Victoria and South Australia.

	7. The number of nest sites increased to allow for current rates of natural decline and illegal clearing.	<p><b>Unknown.</b> Not practically assessable with current data sources.</p> <p>The current rate of decline of SeRtBC nest trees is unknown but is thought to be declining.</p>
	8. All known nest trees, and potential nest trees in colonies, protected from ground predators.	<p><b>Partially achieved.</b></p> <p>Known nest trees have been routinely collared and a major effort is underway in 2012 to record all known nest trees and ensure priority trees are effectively collared.</p>
	9. The magnitude of the illegal trade determined and controlled.	<p><b>Not achieved.</b></p> <p>Available information has not allowed a determination of the scale of the problem, nor has it yielded any prosecutions to date.</p>
3. Improving management of newly identified colonies and key woodlands.		<p><b>Partially achieved.</b></p> <p>No new colonies have been identified. Management has improved in key woodlands through implementation of some sub-actions.</p> <p>One of two performance criteria achieved, one partially achieved.</p> <p><b>Action implementation score 28%</b></p> <p>(6 sub-actions in total)</p>
	Performance Criteria	
	10. Improve management of new colonies and key woodlands located.	<p><b>Partially achieved.</b></p> <p>No new colonies have been identified during the life of this plan. Several programs have led to the purchase, protection or improved management of woodland areas in the SeRtBC range.</p>
	11. New information on Buloke management obtained and implemented.	<p><b>Achieved</b></p> <p>Production of the fact sheet 'How to grow buloke, from scratch.' to achieve maximum seed production (i.e. fastest growth rates) is used to guide revegetation. However undertaking roadside thinning trials of dense Buloke regrowth and comparison of seed production of suckers versus seedlings and subsequent on-ground activities did not occur, partly due to an assessment of this activity as being medium to low priority.</p>
4. Increasing community awareness and involvement in the conservation of the South-eastern Red-tailed Black-Cockatoo		<p><b>Achieved</b></p> <p>Increasing community participation and awareness as a</p>

and its habitats.	<p>result of several completed sub-actions.</p> <p>One of two performance criteria achieved, one partially achieved.</p> <p><b>Action implementation score 67%</b></p> <p>(10 sub-actions in total)</p>	
	Performance Criteria	
	12. The number of people involved in and aware of the recovery program increased.	<p><b>Achieved.</b></p> <p>Consistent increase in the number of people on the mailing list for recovery program news and web site visits.</p>
	13. Structures in place to ensure ongoing support for recovery actions in the long term	<p><b>Partially achieved</b></p> <p>The Recovery Team has implemented an induction package including 'Terms of Reference' and has maintained membership with high stakeholder representation. Obtaining consistent funding for operations has continued to be time consuming and agency support has been variable. Notable exceptions are the ongoing support of the Wimmera and Glenelg Hopkins CMAs.</p>

The limited achievement of several objectives and poor performance relative to many performance criteria is due to one or more of the following:

- Objectives aiming for an increase in population size were unrealistic for the five-year timeframe of the review and the plan,
- The actions listed under some objectives were insufficient to achieve the objective, for example, the objectives seeking an increase in population size were unlikely to be met even if all actions were completed,
- Performance criteria to measure an increase in population size set unrealistic targets given the inability to detect population trends with short-term data and expected inter-annual variation,
- Performance criteria to measure an increase in food availability as a result of fire management set unrealistic targets given the competing pressures for fire management throughout the SeRtBC range,
- Many performance criteria measured parameters for which there are no existing easily accessible data sources, and there were no associated actions to highlight the need to collect data to report against these criteria,
- Many actions were very detailed, and either quickly outdated or forgotten by Recovery Team members; some team members reported surprise when asked to report against some of the 64 sub-actions in the plan, and
- Many actions that were not completed were associated with the need to prioritise work to respond to resource limitations; however the prioritisation process that was followed was not always clear.



We do note that where performance criteria set more realistic targets for delivery over five-years, and where data were collected to report against the criteria, most criteria were achieved or partially achieved. Where actions were considered by the Recovery Team to be high priority, many were completed with the available resources.

## Recommendations for the next Recovery Plan

Many of the limitations of this Recovery Plan are likely to be typical of recovery plans written at that time. Important lessons to take into the next planning process are:

1. Identify a long-term objective or vision to create a context for achievable five-year objectives
2. Ensure that performance criteria are practically measurable, and that realistic and achievable actions are included to facilitate the collection of information required to report against the criteria
3. Ensure five-year objectives are likely to be met if all actions associated with each objective are completed
4. Ensure that the plan is simple and adaptive enough to be useful to the Recovery Team and recovery program partners throughout the implementation phase (approximately five years)
5. Identify a framework for setting priorities for threats and actions and a process for managing changes to priorities during the implementation phase – allocate limited resources to high priority activities or identify where they can be sourced. Annual work plans can be developed and used to clearly identify current priorities, and can be adapted following annual reviews of progress against the Recovery Plan.

## Evaluation of Action Implementation

Table 2. A summary of progress against each recovery sub-action, including scores following the method described previously.

Objective 1. Implement threat abatement strategies to deal with shortages of food.			
Action	Identify and protect feeding habitat from clearing: revise feeding area maps, train relevant staff to identify feeding habitat, and monitor clearing 'offsets'		Score
1a	Revise feeding area maps with Buloke (3% left) and Desert Stringybark (28%) as priorities for remnant protection and enhancement.	<p>Completed.</p> <p>Maron et al. (2008) identified Buloke areas and Stringybark areas from detailed GIS and aerial photography analyses. The report identifies priority areas for planting. The Buloke planting model prioritised revegetation in higher rainfall parts of the range to increase the likelihood of long-term success under climate change scenarios. The Stringybark planting recommendations highlighted the opportunity to gain habitat values from planting paddock trees and shelter belts due to the higher productivity of isolated stringybark trees.</p>	3
1b	Train Catchment Management Authorities /Natural Resource Management agency and local government staff to identify and understand the values of feeding habitat which includes both intact remnants and scattered trees.	<p>Partially completed.</p> <p>Linkages between the recovery team and agency representatives have produced some good results. DSE and DENR staff members have a good understanding of the key values of SeRtBC habitats. The importance of scattered trees is likely to be less well understood as it is counterintuitive.</p> <p>Knowledge of key habitat values within CMAs, NRMs and LGAs is more variable, and likely limited to staff with most exposure to the recovery program through recovery team correspondence.</p> <p>Because baseline knowledge in 2007 was already adequate, limited additional resources were allocated to this task during the period of interest of this review. Continued effort to maintain this knowledge will be required.</p>	2
1c	Where clearing of feeding habitat is permitted, ensure 'offset' works meet the States' net gain objectives and take into	<p>No progress.</p> <p>Whilst there have been improvements in offsets, there are variable approaches to monitoring vegetation clearance and offsets across South Australia and Victoria, influenced</p>	0

	account guidelines issued by the Recovery Team.	by state policy and available resources.  Continued attention to ensure offsets meet the requirements of the species will remain important; however capacity to undertake this work is likely to remain limited. Maron et al. (2008) and Maron et al. (2010) outline considerations for setting suitable offset objectives for removal of SeRtBC habitats.	
1d	Monitor and document habitat loss, offset works compliance and success.	Partially completed.  This activity is influenced by the limitations noted above for action 1c. Maron et al. (2008) measured habitat loss of Bulokes using an exhaustive aerial imagery analysis for the period up to 2004. No further specific work occurred to measure changes in the amount of habitat during the period 2007-2012.  A one-off study to specifically look at the success of offsets in SeRtBC habitats may inform future approaches.	1
Action 2.	Link and reserve feeding habitat	Comments	Score
2a	Support a landscape approach to habitat protection which replicates in the Glenelg-Hopkins CMA the Conservation Management Network (ECC 2000) partnership between private and public land managers for the Wimmera CMA and Trust for Nature.	Completed.  The Recovery Team has been a consistent supporter of partners utilising a landscape approach to habitat conservation including projects managed by TFN, CVA, KFTG, Greening Australia, Wimmera and Glenelg Hopkins CMAs, DSE, DENR and Zoos SA.	3
2b	Promote the concept of a 'Biolink' of habitat stepping stones comprised of remnants on public and private land, guided by a Conservation Management Network, in south-east South Australia (Naracoorte Range to Lucindale, Padthaway to Penola), and assess similar proposals in Victoria (e.g. Ryan 2004).	Completed.  In South Australia the Zoos SA project 'Cockies helping Cockies helping Cockies' has targeted private land in the Naracoorte to Lucindale area. The project has managed habitat at 55 sites, with 390ha remnant habitat protected and 35.4ha new plantings. DENR has acquired a grazing property adjacent to Naracoorte Caves National Park that will receive 70 ha of Stringybark plantings.  In Victoria, Greening Australia's Habitat 141 project has planned corridors between the Little Desert National Park and Dergholm. Greening Australia and Trust for Nature have enhanced and revegetated habitats on a number of properties in that area.	3

2c	Support a review of uncommitted public land within the bird's Victorian range, as listed as an action in the FFG Action Statement (Venn and Fisher 1993).	Partially completed.  The Victorian Environmental Assessment Council's Remnant Native Vegetation Investigation (2011) identified the southern Wimmera and Glenelg Plain as areas with inadequate protected area systems. The investigation recommended a review of these areas as a high priority.	1
2d	Support organisations such as the Australian Bush Heritage Fund, Trust for Nature, Parks Victoria and Department for Environment and Heritage (SA) that purchase and protect higher quality remnants on private land.	Completed.  In Victoria, Recovery Team partners encourage private landholders with habitat to work with Trust for Nature to permanently protect habitat. In South Australia, DENR undertook a spatial analysis to identify all large blocks of habitat, across land tenures. Many private blocks identified by this process are now under Heritage Agreements for their management and protection.	3
2e	Support Trust for Nature and Department for Environment and Heritage (SA) efforts to covenant remnants on private land, and promote their programs of rate relief and financial assistance for covenanted land.	Completed.  See action 2d.	3
Action 3	Encourage fencing of feeding habitat to protect it from stock		
3a	Distribute information on stringybark and Buloke feeding habitat establishment that advocates fencing to control grazing as one of the most effective and cheapest ways to improve tree health.	Completed.  The Recovery Team have published information sheets on the SeRtBC web site, and actively promote this information at field days. Recovery program partners, such as DENR, Kowree Tree Farm Group, and the Zoos SA project 'Cockies helping Cockies helping Cockies' have also produced and actively distribute information.	3
3b	Promote natural tree regeneration, and assist Red-tailed Black-Cockatoos protection on private land.	Completed.  The Zoos SA project 'Cockies helping Cockies helping Cockies' has targeted private land in the area from Naracoorte to Lucindale, working on 55 sites, protecting 390ha remnant habitat and planting 35.4ha. Kowree Farm Tree Group is made up mostly of farmers and has close association with mecu and Trust for Nature, buying and protecting 800ha Red-tail habitat since 2007. DENR	3

		managed a landholder incentive program called 'Bucks for Bush'. Some landholders involved in the program protected and enhanced SeRtBC habitat. CVA has assisted several private landholders in SeRtBC range with weed control and fencing.	
Action 4	Replant feeding habitat		
4a	Support Greening Australia's project to have unused plantation land revegetated.	No progress.  Greening Australia have advocated for revegetation of harvested plantations that will not be replanted with plantation timber for economic reasons. Implementation of this concept has been limited by a lack of resources to fully implement projects such as Habitat 141.	0
4b	Support planting of native species in critical areas, but only where fencing and natural regeneration cannot take place.	Partially completed.  Recovery Team community engagement promotes revegetation as part of the strategy to address feeding habitat shortages. Recovery program partner projects actively promote and implement planting in priority areas. Examples include DENR's 'Bucks for Bush' program, the Kowree Tree Farm Group, the Zoos SA project 'Cockies helping Cockies helping Cockies' project, and work undertaken by Conservation Volunteers Australia.	2
4c	Encourage local governments to develop roadside management strategies that promote feeding habitat, particularly in areas with Buloke.	Partially completed.  Naracoorte Lucindale Council actively prioritise plantings of Buloke on their roadsides as offsets for Native Vegetation clearance. Wimmera Shire Council has a roadside management strategy (2007) but this does not specifically aim at Buloke protection/enhancement.	1
4d	Promote a Buloke replanting program using established guidelines (Hill et al. 2003) and new information.	Completed.  The Recovery Team have produced and published several specific publications on protection and revegetation of Buloke. Kowree Tree Farm Group is also very active in developing Buloke revegetation techniques and sharing this information among landholders in the region. Maron et al. (2008) identify priority areas for Buloke replanting.	3
Action 5	Identify and reduce threats from fire		
5a	Produce maps of Victorian stringybark feeding habitat by 'age-since-fire' classifications to inform managers and	Completed.  This activity has been superseded by methods to measure and monitor the area of stringybark habitat on public land in Victoria that is crown scorched in any 10 year period. This information is used to determine the amount of	3

	underpin monitoring.	planned burning that will be undertaken in stringybark habitats each year.	
5b	Assess the age of seed crops well in advance of planned burns on public land to ensure that better quality crops of buds, flowers and newly matured seed crops are not burnt, and prescribed burns are directed towards areas with older or poorer seed crops.	Partially Completed.  DSE undertake seed crop assessments of planned burns to identify areas with exceptionally high value seed crops. SeRtBC project staff, biodiversity staff, and fire managers then negotiate for deferrals of burns in high production areas and substitution with burns with lesser crops. DENR are beginning to apply this approach to their planned burning program. Forestry SA does not undertake seed crop assessments to inform their burning program.	2
5c	Produce guidelines for burning stringybark woodlands and distribute to public and private land managers of Red-tailed Black-Cockatoo feeding habitats.	Partially completed.  In South Australia, new Fire Management Guidelines for SeRtBC have been published on the DENR website. Development of these guidelines involved consultation with the Recovery Team.  In Victoria DSE is developing a new project to look at fire management in SeRtBC habitats aiming to improve fire management and monitoring practices to optimise fire protection and habitat protection outcomes.  There has been little work done to progress improved fire management on private land due to limited resources.	2
5d	Negotiate agreements with public land managers in South Australia to retain the majority of Red-tailed Black-Cockatoo stringybark feeding habitat as long-unburnt.	Partially completed.  Fire management on public land in South Australia is undertaken by DENR and Forestry SA. Fire Management Guidelines for SeRtBC exist for DENR which acknowledge the concept of retaining long-unburnt feeding habitat. Forestry SA also undertakes fire planning with an aim to retain long-unburnt feeding habitat, although no specific SeRtBC guidelines are in place. Negotiations for improved fire management in South Australia have received less SeRtBC Project staff time because the area of habitat in public management is far less than Victoria.	1
5e	Liaise with Department for Environment and Heritage (SA) fire management officer on ecological burning.	Completed.  Recovery Team staff liaise with DENR Fire Management staff to have input into Fire Management Guidelines and their application to SeRtBC habitats.	3
5f	Continue to support trials of 'cool' burns with reduced canopy scorch as a means of achieving	Partially completed.  The trial of 'cool' or 'low scorch' burning was completed in the Wimmera district of Victoria, and demonstrated that	2

	both fire protection outcomes and improved food availability.	<p>there are burning techniques that can produce a patchy burn, with limited crown scorch. Where the understory was burnt, the crown was often scorched, but the patchy nature of these burns allowed for areas of unscorched crowns.</p> <p>Both DSE and DENR are seeking to further develop and apply the techniques as they allow for more burns to be completed in SeRtBC habitats while limiting impacts on SeRtBC. Further work is required to develop burning methods suitable throughout the species range and to establish the fire protection outcomes of patchy, low scorch burns.</p>	
5g	Use GIS data for both canopy scorch area and prescribed burns directed away from newly matured seed crops, supplied by DSE in Victoria annually, to determine the percentage change in seed availability.	<p>No progress.</p> <p>This analysis has not been undertaken due to limited resources. The priority was given to monitoring the area scorched in any 10 year period, and negotiating to the appropriate placement and technique of planned burns. Continued monitoring and management of crown scorch will be important.</p>	0
5h	Promote the desirability of increasing fire intervals, together with perimeter burns or reduced canopy scorch burns, on private land, as a means of improving food availability.	<p>No progress.</p> <p>There is very little private land burnt in South Australia, so this action provides little opportunity for gains in that state. Future work will need to engage with private burning programs in Victoria, where the likelihood that gains can be made through appropriate management is greater.</p> <p>Limited work on this action to date results from limited resources, and priority being given to activities that can achieve the greatest gain – improving fire management on public land in Victoria.</p>	0
Action 6	Reduce threats from weed invasion in feeding habitat		
6a	Enforce existing planning permit conditions that require plantation owners to control wildling pines	<p>No progress.</p> <p>This activity was not considered a high priority because not all plantations have such planning permit conditions, and enforcement activities such as this receive little resources.</p> <p>A greater opportunity to influence the management of habitat near plantations would be through the Forestry Stewardship Certification scheme, which requires</p>	0

		plantations to care for high value native forests. Greening Australia is working with some plantation companies to advise them on management of high value native forests in the SeRtBC range.	
6b	Encourage and assist agencies to increase control of pine infestations in stringybark woodlands.	<p>Completed.</p> <p>In South Australia, community and agency (DENR and Forestry SA) pine management projects have been active throughout much of the public land estate in the region since 1997. While there is no 2005 baseline (as mentioned in the performance criteria for the Recovery Plan), it is likely that management has achieved a 20% reduction in pine wildlings on public land within the South Australian range.</p> <p>In Victoria, DSE and Parks Victoria actively manage some pine infestations on public land, including manual removal and removal through the use of planned burns. In addition, Conservation Volunteers Australia has undertaken work to remove pine wildlings from public land in Victoria as part of their SeRtBC Wild Futures project.</p>	3
Action 7	Monitor the population, range and area of occupancy: conduct an annual count, expanded flock counts and analyses, and map location records		
7a	Conduct an annual count to determine minimum population size, range and area of occupancy.	<p>Completed.</p> <p>The annual count provides an excellent community education/engagement opportunity, but data have proven unsuitable to measure changes in population size. A new approach will be trialled in 2012 in an attempt to gather data suitable for analysis.</p>	3
7b	Expand to the north the annual flock counts in autumn to determine the proportion of adult males and other birds in flocks as an index of recruitment.	<p>Completed.</p> <p>Flock counts are undertaken annually in May/June following the Annual Count, which identifies areas with large flocks. The proportion of males in flocks has been counted annually. The flock counts have expanded to all parts of the range, with larger flocks preferable for ease of gathering data.</p>	3
7c	Map annual location records showing separately (i) nesting season locations, (ii)	<p>Partially completed.</p> <p>Locations are recorded in a database managed by the BirdLife Australia Project Coordinator but due to time</p>	1



	post-fledging locations, and (iii) winter roost locations	restraints the data have not been presented as a map. The value of presenting annual changes in the specific measures noted here (e.g. nest and fledging records) is questionable because there are so few data reported each year. There may be value in presenting annual maps of all sightings to observe different preferred feeding locations.	
7d	Analyse flock count data and compare results with food availability information	Partially completed.  An analysis comparing flock count data to food availability is underway. Early results demonstrate that there is a relationship between food availability in the preceding three years and the proportion of males in flocks. Higher food availability is associated with a lower proportion of males, which is assumed to indicate higher numbers of juveniles in the population.	2

Objective 2. Implement threat abatement strategies for nest sites and reproductive output.

Action 8	Expand nest site statutory protection		
8a	Expand the coverage of the Environmental Significance Overlays of West Wimmera and Glenelg Shires to provide legal protection for both living and dead trees that have suitable nest hollows or the potential to develop such hollows.	Completed.  ESO schedules have been included in the planning schemes for both Shires to protect standing dead trees that may provide nesting habitat. This protection, however, has been superseded by state-wide measures in the Victorian Planning Scheme for the protection of standing dead trees above 40cm DBH.  The West Wimmera Shire ESO schedule for SeRtBC has been expanded to include protection of feeding habitats.	3
8b	Extend Environmental Significance Overlays to include relevant parts of Horsham and Southern Grampians Shires.	No progress.  This action has not been a priority for limited resources due to the limited area of SeRtBC habitats in both shires.	0
Action 9	Reduce the threat from reductions in nest sites		
9a	Distribute information on how to identify and protect nest trees, noting the very high conservation value of large living and dead trees with hollows	Completed.  The Recovery Team has produced two specific publications 'Protection of Red-tail Nest Trees' and 'Information about the protection of dead trees with hollows' as well as including the information in many more general publications. These publications are distributed at field days and available on the website. Further information	3

		is provided in relevant media releases and community engagement materials distributed by partner organisations (e.g. DENR).	
9b	Promote natural regeneration of trees after fencing and the cessation of grazing as the main long-term solution for future nest tree needs.	Completed.  The Recovery Team has produced two specific publications 'What trees to plant and where to plant them to protect Red-tailed Black-Cockatoos Revegetation', and 'Information on Red-tail food, nests, what you can do to help and a map of the bird's range' as well as including the information in many more general publications. These publications are distributed at field days and available on the website. Some of these documents require updating to reflect current knowledge.	3
9c	Encourage Victorian agencies to ensure that firewood collectors operating in woodlands on public land are under regular supervision (see Venn and Fisher 1993).	Partially completed.  DSE monitors use of designated firewood collection areas and commercial firewood collectors. DSE also undertakes compliance activities where collection is detected outside designated firewood collection areas.	2
9d	Encourage the Victorian and South Australian governments to finalise and implement their draft firewood strategies.	Partially completed.  In Victoria, the 2010 Firewood Strategy has become out of date with a change in government. DSE is developing new plans in line with new government policy.  The authors were unable to identify a South Australian strategy. In South Australia firewood collection is illegal on public land, and roadside firewood collection requires a permit from local governments.	1
9e	Reduce the impacts of the firewood collection industry on nest sites, and encourage the use of alternatives such as plantation timber or smaller trees (< 30 cm DBH) such as those in dense stands of regrowth which can accommodate thinning.	No progress.  The Recovery Team made submissions during the development of firewood strategies to identify mechanisms to limit habitat losses to SeRtBC. In Victoria, DSE selects areas of dense regrowth as firewood coops and where available, old plantations are used as designated firewood collection areas.	2
Action 10	Maintain existing artificial nests and monitor their use		
10a	Maintain existing artificial nests,	Partially completed.	2

	monitor and report on their use.	Artificial nests have been routinely monitored. All artificial nests are being checked in 2012 for maintenance requirements. All known cases of artificial nests in use are reported to the Recovery Team. Recently the Recovery Team determined the need to specifically check all plastic artificial nests to ensure they do not become 'traps' to breeding birds if internal ladders fail (as was reported from the Glossy Black Cockatoo Recovery Program).	
Action 11	Identify and protect nest sites from ground predators		
11a	Continue to seek nest locality information from the community and conduct volunteer-based searches for nests.	Completed.  Locating new nests each year has proved costly. Each year the Recovery Team has asked for information from the public on nest sites with varying results. In 2011 a Nest Incentive Scheme was implemented to pay the public for reports of new nests, resulting in five new nests located. However, three of these were located by a Recovery Team member. The scheme is very good at raising community awareness and received considerable publicity.	3
11b	Collar all known nest trees to exclude ground predators, using volunteers wherever possible	Partially completed.  Many nest trees are collared. Efforts have been focused on private land where the risk of predation is higher (greater density of possums), and the risk of poaching is lower (illegal activities are more visible).  The SeRtBC Project Officer is working with Conservation Volunteers Australia in 2012 to conduct an audit of all known nest trees to record accurate GPS locations, instances of tree loss, and whether or not trees are collared. When complete this data will be included on the Recovery Team Asset Register. Where resources and location permit, uncollared trees will be collared during this exercise.	2
11c	Collar all potential nest trees in known nesting colonies	No progress.  This medium priority activity has not been undertaken due to limited resources. Part of the rationale of this activity is to create decoy nest trees for poachers, rather than protecting nests that have not yet been detected.	0

11d	Provide landholders who do not wish to reveal nest sites on their land with information and materials for protecting nests.	No progress.  This activity was not undertaken due to limited resources. The action is now redundant because the Nest Incentive Scheme is considered to have overcome reporting reluctance.	0
Action 12	Assess and reduce illegal trade		
12a	Determine the level of illegal trade in the species from Australian and overseas aviculturalists and agencies, and the number of South-east Red-tailed Black-Cockatoos held in captivity.	Partially completed. DSE actively includes SeRtBC in their Wildlife Compliance program. Intelligence suggests illegal trade does occur, and there are some SeRtBC in captivity, but the magnitude of the problem is very difficult to measure.	1
12b	Should the illegal trade in live birds and eggs be biologically significant, liaise with landholders in known breeding areas, and carry out targeted operations to detect and prosecute offenders.	Partially completed. DSE undertakes intelligence gathering operations when reports of suspicious activity are received. Despite these efforts, the available information has not led to any prosecutions. DSE also regularly audits licensed holders of RtBC to check the legality of their collections and accuracy of their records.	1
Objective 3. Improve management of new colonies and key woodlands.			
Action 13	Locate new nest colonies and identify key blocks of private land		
13a	Locate new nest colonies so that they can be managed appropriately, and communicate relevant information to land managers.	Partially completed.  New nests have been reported in low numbers each year. Specific efforts to locate new nesting areas are very time consuming and often unsuccessful. Where nests have been located land managers have been informed of the importance of preserving this habitat and permitted the team to attach collars to protect from nest predation by possums.	2
13b	Identify key blocks of private land so that financial and management assistance can be provided if required.	Partially completed.  All known nest colonies on private land (at Powers Creek, Tallageira and Yallakar) have been recorded and protected with collars. The Recovery Team assisted Bush Heritage to identify blocks for potential purchase. However this activity has not remained a focus for the entire period of interest due to limited resources.	2

Action 14	Collect information on Buloke use and management		
14a	Identify management strategies to increase Buloke seed production.	Partially completed.  Production of the fact sheet 'How to grow Buloke, from scratch' aimed at best practice to achieve maximum seed production (i.e. fastest growth rates). No work has been done to assess value of thinning or sucker removal to achieve greater seed production due to resource limitations.	1
14b	Collect time budget data for cockatoos foraging in Buloke to compare with stringybark.	No progress.  This activity has not been a high priority for limited resources. However, this remains an opportunity for a research student to undertake work that will complement the recovery program. Some preliminary data were collected prior to 2007.	0
14c	Undertaking roadside thinning trials of dense Buloke regrowth to promote the health and growth rates of remaining trees.	No progress.  This activity has not been a high priority for limited resources. There is likely only limited gain in food supply to be made through this activity.	0
14d	Compare seed production of suckers versus seedlings will inform revegetation and regeneration projects.	No progress.  This activity has not been a high priority for limited resources.	0

Objective 4. Increase community awareness and involvement in the conservation of the South-eastern Red-tailed Black-Cockatoo and its habitats.

Action 15	Produce and implement a communication strategy		
15a	Produce a communication strategy and monitor its effectiveness by reviewing annually the numbers of: 1800 calls, participants in the annual count, website visits, revegetation projects, and vegetation clearance permits issued.	Partially completed.  A communication strategy was completed in 2007. Monitoring the effectiveness of the strategy has not occurred annually, and data are only available for some measures. Accessible data is limited to more recent records of calls to the 1800 number (which appear to be stable at about 45 calls a month) and website visits which grew from 3297 in August 2010 to 11,273 in March 2012. The mailing list had 997 addresses in July 2007 and 1076 in March 2012	1

15b	During development of the strategy determine the level of community engagement required to engender long-term support for the recovery program.	Completed.  The Communication strategy identifies a large list of activities to engender long-term (and short-term) support for the recovery program.	3
15c	Guided by the communication strategy, establish effective tools (e.g. 'Red-tail News') for communication with key stakeholders including land managers, State and local government, CMA/NRM personnel and volunteers	Completed.  The Recovery Team has established many effective tools for communication with key stakeholders. They include the Red-tail newsletter sent out three times a year to over 1000 addresses, the website, bumper stickers, fridge magnets, posters and pamphlets. Some of this material is outdated and will require review and upgrade.	3
15d	Maintain the network of volunteer observers, 1800 number and web site.	Completed.  Recently the website has been updated fortnightly with news stories. Regular updates not only add interest for website followers but help keep the site at the top of the search engine lists and result in higher traffic.	3
15e	Attend field days, Landcare meetings, schools, and other relevant events.	Completed.  The Recovery Team regularly has a presence at the Lucindale (South East) Field Days, Sheepvention and various smaller events like Threatened Species Day. This has often occurred within a site occupied by other agencies (CMAs, DENR, DSE, and SENRMB) but a recent trial at the Lucindale Field Day (2012) in a SeRtBC dedicated site proved very successful and cost effective.	3
15f	Conduct a community survey every five years to determine the effectiveness of extension work and the direction of future activities.	No progress.  This activity was not progressed due to the high expense and limited resources. A more cost effective approach for the future may be to include a survey on the website.	0
15g	Develop marketing strategies linked to the selection of the Red-tailed Black-Cockatoo as the official mascot for the Melbourne 2006 Commonwealth Games.	No progress.  This action quickly became outdated.	0
15h	Encourage education about Red-tailed Black-Cockatoo	Partially completed.  There have been numerous small scale attempts	1

	conservation in the region's schools and farm management training programs at tertiary institutions	to have input into education programs including discussions with Department of Education staff and delivering talks at several schools. Resource limitations prevented more work in this area. There is the potential for far greater outcomes if more resources were available. A good example of school interaction was the Kalangadoo school project, funded by a community grant. There was no interaction with tertiary institutions.	
15i	Develop promotional material for farmers in consultation with the Farmer's Federation and Landcare groups, to emphasize improved farm productivity and conservation.	Completed.  There have been several productions of promotional material specifically tailored to farmers with input from South Australian Farmers Federation and Landcare representatives.	3
15j	Develop a good understanding of the legislative and conservation requirements of the Red-tailed Black-Cockatoo among agency and conservation extension staff who liaise with landholders.	Completed.  Both DENR and DSE staff have a good, basic knowledge of the key components of SeRtBC habitats.	3

#### Supporting Actions

Action 16	Seek additional sponsorship partners		
16a	Supervise the recovery program and manage its budget.	Completed.  The recovery program has been managed by a recovery team, with an independent chair or chairs during the life of this plan. In recent months the team has moved towards a more strategic approach to budget planning, making projections and planning for longer-term budgets. Staff working for the recovery program require clearer management structures above them to ensure effective time management and delivery of priority work.	3
16b	Ensure the recovery team functions efficiently and communicates well.	Partially completed.  Progress is being made. The recovery team chairs, program staff and their employers are working to review heavy workloads. The current chairs are working on improved communication and management structures to support effective delivery of the program. Meeting agendas have not traditionally been linked to Recovery Plan objectives; this will need to be improved to	2

		ensure the team stays on track for delivery of the next plan.	
16c	Report on progress against objectives and performance criteria yearly.	<p>No progress.</p> <p>The recovery team, and staff members of the recovery program, did not annually report against the objectives and performance criteria of this plan. Many details of the plan were surprising to members of the team when asked to comment on them during this review. This will need to be improved for effective delivery of the next plan.</p>	0
16d	Undertake a review of the recovery program after four years.	<p>Partially completed.</p> <p>A review is occurring in year five. The delay was due to resource limitations.</p>	2
Action 17	Operate the recovery program		
17a	Coordinate implementation actions identified as a high and medium priority.	<p>Partially completed.</p> <p>Priority actions are discussed at recovery team meetings. However, meetings do not systematically review priorities by looking back at the recovery plan and applying new information to review priorities. More defined performance criteria would help focus the team when undertaking priority reviews.</p>	2



## Acronyms

CMA – Catchment Management Authority (Victoria)  
CVA – Conservation Volunteers Australia  
DBH – Diameter at Breast Height  
DENR – Department of Environment and Natural Resources (South Australia)  
DSE – Department of Sustainability and Environment (Victoria)  
ESO – Environmental Significance Overlay  
GHCMA – Glenelg Hopkins Catchment Management Authority (Victoria)  
KFTG – Kowree Farm Tree Group  
LGAs – Local Government Areas  
mecu – Members Equity Credit Union  
NRM – Natural Resource Management  
SeRtBC – South-eastern Red-tailed Black-Cockatoo  
SENRM – South-east Natural Resource Management Board (South Australia)  
TFN – Trust for Nature  
WCMA – Wimmera Catchment Management Authority (Victoria)

## References

- Commonwealth of Australia. 2007. National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii graptogyne*. Department of Environment and Water Resources.
- Maron, M., Koch, P., Freeman, J., Schultz, S., Dunn, P., and A. Apan. 2008. Modelling and planning to increase future habitat of the Red-tailed Black-Cockatoo. Unpublished report Wimmera Catchment Management Authority.
- Maron, M., Dunn, P. K., McAlpine, C. A., and A. Apan. 2010. Can offsets really compensate for habitat removal? The case of the endangered red-tailed black-cockatoo. *Journal of Applied Ecology* 47: 348-355.