# National Recovery Plan for the **Superb Parrot** Polytelis swainsonii

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## **Summary**

The Superb Parrot *Polytelis swainsonii* is a large, mostly green parrot endemic to inland south-eastern Australia, where it occurs through the inland slopes and plains of New South Wales (including the Australian Capital Territory) to northern Victoria.

The Superb Parrot has suffered a decline in range and abundance over the last 100 years. Major threats include clearing and degradation of nesting and foraging habitat, disturbance around nesting sites, competition for nest hollows, trapping for the pet trade and road kills. The population is estimated to contain 5,000–8,000 birds.

The Superb Parrot is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* It is also listed as Vulnerable in New South Wales (*Threatened Species Conservation Act* 1995) and the Australian Capital Territory (*Nature Conservation Act* 1980), and Threatened in Victoria (*Flora and Fauna Guarantee Act* 1988).

This national Recovery Plan for the Superb Parrot is the first national recovery plan prepared for the species. The Plan details the species' distribution and biology, conservation status, threats, and recovery objectives and actions necessary to ensure its long-term survival.

## **Species Information**

## Description

The Superb Parrot is a medium-sized (36–42 cm long; 133–157 g weight) slender, long-tailed, green parrot. Adult males are bright green above and below, with a bright yellow forehead, throat and cheeks, and a narrow red band separating the yellow throat from the green breast. Adult females are green all over, somewhat duller than the males, and lacking the male's yellow and red head and throat markings. Immature birds are similar to females, with young males being a slightly brighter green (description from Forshaw & Cooper 1981; Pizzey & Knight 1997; Higgins 1999).

## **Biology and Ecology**

The Superb Parrot nests between September and December (Forshaw & Cooper 1981; Webster 1988, 1991, 1993a). Before nesting, birds congregate in small flocks (Forshaw & Cooper 1981), then females leave these flocks to begin nesting and do not return to the flocks until their chicks are well-developed (DECCW in prep.). Superb Parrots nest singly or in loose colonies of up to nine pairs (Webster 1988), with pairs usually nesting in separate trees, although occasionally two or more active nests can be found in hollows in the same tree (Keartland 1903; Higgins 1999). Over the nesting period, flocks of males feed together and travel to and from foraging sites where they collect food for the brooding females. These journeys occur 2–3 times a day over the first four weeks of the breeding season, during which time the females do not leave the nest other than to be fed by the male (Forshaw & Cooper 1981). Male birds will forage at least 9 km from their nesting colonies (Webster 1997).

Superb Parrots lay 4–6 eggs that are incubated by the female and hatch in about 22 days (Higgins 1999). The hatchlings are then fed by both parents until fledged - approximately 40 days after hatching (Forshaw & Cooper 1981). Survival rate to

fledgling stage is variable, with 1–5 young birds leaving the nest (DECCW in prep.). Anecdotal information suggests that some Superb Parrots may live for 25 years or more (DECCW in prep.), although like most birds (Ford 1989), probably few make it through their first year. There may be about five years between generations (Garnett & Crowley 2000).

The Superb Parrot has been considered nomadic (Sharrock 1981), resident (Schrader 1980), dispersive (Webster 1988; Webster & Ahern 1992), migratory (Schrader 1980), or partly migratory (Higgins 1999). Most birds undertake regular seasonal movements between breeding and non-breeding areas, although some birds remain in the breeding range throughout the year (Blakers *et al.* 1984; Webster 1988). Movements have been attributed to changes in food supply between the breeding and non-breeding seasons. In central New South Wales, movements are said to occur when eucalypts flower, and when food becomes scarce due to drought and birds seek alternative sources of food (Higgins 1999). When making local foraging movements, birds usually move along wooded corridors, rarely crossing large areas of open ground.

Superb Parrots feed on a range of plant species, mostly on the ground, but also in trees. Diet includes seeds of Ringed Wallaby-grass *Austrodanthonia caespitosa*, barley-grasses *Critesion* spp., wheat *Triticum aestivum*, oats *Avena sativa*, numerous wattle species (eg. Gold-dust Wattle *Acacia acinacea*, Silver Wattle *A. dealbata* and Deane's Wattle *A. deanei*), flowers, fruits and nectar of a variety of *Eucalyptus* species, fruit of Box Mistletoe *Amyema miquelii*, Grey Mistletoe *A. quandang* and Dwarf Cherry *Exocarpos strictus* and lerps taken from eucalypt foliage (Keartland 1903; Webster 1988, 1991, 1998). Birds drink in the early morning and again in the evening (Frith & Calaby 1953).

## Distribution

The Superb Parrot is endemic to inland south-eastern Australia, where it occurs from south-eastern Queensland through the inland slopes and plains of New South Wales (including the Australian Capital Territory) to northern Victoria (Blakers *et al.* 1984; Barrett *et al.* 2003) (Figure 1). There are several records from southern Queensland (Barrett *et al.* 2003) although the species is considered a vagrant there.

In NSW, the species is widespread west of the Great Dividing Range, mostly in the inland slopes and central plains, in the Darling Riverina Plains, Brigalow Belt South, Cobar Peneplain, Riverina and NSW South Western Slopes bioregions. It occurs east of a line linking Mathoura, Boorooban, Goolgowi, Yalgogrin and Narromine, and from Tottenham, through Quambone to Baradine and Wee Waa. The range extends east to Canberra and Bathurst, south to the Murray River near Cobram, and north to Coonabarabran and Narrabri. There are occasional records from locations well outside this range, including Bourke, Nyngan, Lightning Ridge and Walgett (Blakers *et al.* 1984; Webster 1988; Webster & Ahern 1992; Higgins 1999; Barrett *et al* 2003). In northern NSW, most sightings occur from June to August (Wheeler 1969; Kaveney 1979; Schrader 1980; Lindsey 1984; Webster 1988), when the species appears to be scarce or absent from the southern part of its range (Webster 1988; Davey 1997).

In Victoria, Superb Parrots occur mainly between Cobram and Echuca, centred on the Barmah forest area, in the Riverina bioregion. Birds occasionally range further east to Wangaratta and south to Shepparton (Emison *et al.* 1987; Webster 1988).

The breeding range of the Superb Parrot is mostly in the NSW South Western Slopes (NSW) and Riverina (NSW & Vic) bioregions. The three main breeding areas are: (1) bounded by Molong, Rye Park, Yass, Coolac, Cootamundra and Young (NSW); (2) along the Murrumbidgee River, between Wagga Wagga and Toganmain Station (near Bringagee), and farther north at Goolgowi (NSW); and (3) along the Murray and Edward Rivers, from east of Barmah and Millewa State Forest to south of Taylors Bridge (NSW & Vic) (Blakers *et al.* 1984; Emison *et al.* 1987; Webster 1988; Davidson & Chambers 1991; Webster & Ahern 1992). There are also scattered records of birds breeding outside this range.



Figure 1. Distribution of the Superb Parrot

## **Population Information**

The total population of Superb Parrots has been estimated at 5,000–8,000 birds (DECCW in prep.) and 6,500 adult birds (Garnett & Crowley 2000). Regional estimates include 1,000 birds in the Goolgowi district (NSW), 'several thousand' along the Murrumbidgee River, 200–400 along the Edward River (NSW), 200 along the Murray River (Vic) and 'several thousand' in the South-west Slopes (NSW) including 50–100 birds in the ACT (DECCW in prep.).

The most recent data on nest numbers is summarized as follows:

## Victoria

30-40 nest trees in the Barmah region (Webster 1997b; DECCW in prep.)

## <u>NSW</u>

136 nests in the Cuba State Forest and along the Edward River (Webster 2002, 2004, 2008)

106 nest trees on the South-west Slopes (Manning et al. 2004)

11 nests (and more suspected) in the Cowra area (Christie 2004)

## ACT

eight nests in the Canberra district (Davey 1997)

## Habitat

The habitat critical to the survival of the Superb Parrot can be divided into breeding and foraging habitat, as described below:

<u>Breeding habitat:</u> Across its range, the Superb Parrot uses two distinct habitat types for breeding: riverine forests in the Riverina, and box-gum woodlands in the tablelands and slopes (Webster 1988). In the Riverina of Victoria and New South Wales, Superb Parrots nest in loose colonies along the Murrumbidgee, Edward and Murray Rivers in areas of mature River Red Gum *Eucalyptus camaldulensis* forest. Within this forest type, the majority of Superb Parrot nests are in large, living trees with many hollow branches, typically located close to a watercourse. Birds also occasionally nest in large standing dead trees. Nest sites are usually located within 10 km of box-gum woodland, primarily Black Box *E. largiflorens*, Yellow Box *E. melliodora* and Grey Box *E. microcarpa*, or box-pine *Callitris* woodland (Webster 1988, 1993c, 1997b).

Forests and woodlands used for nesting on the inland slopes and tablelands comprise at least six species of *Eucalyptus* including River Red Gum, Blakely's Red Gum *E. blakelyi*, Apple Box *E. bridgesiana*, Grey Box, White Box *E. albens* and Red Box *E. polyanthemos* (Webster 1998). Characteristics of living and dead nest trees are similar to those in the Riverina (Webster 1988). Nest sites are almost always located within 10 km of extensive tracts of suitable foraging habitat (Webster 1988), and may occur within foraging habitat (box-gum woodland).

The Superb Parrot usually nests in hollow limbs or holes in the trunk of large eucalypts, mainly near water. In the Riverina, nest trees include River Red Gum, Blakely's Red Gum, Grey Box, Red Box and Inland Red Box E. intertexta, with the average distance between the nest tree and a watercourse being 25 m (Webster 1988; Manning *et al* 2004). In the inland slopes, most nests are in large Blakely's Red Gums, with many nest trees either dead or suffering from dieback (Manning et al. 2004). The entrance to the nesting cavity ranges from 7–34 m above the ground for nest trees along the Murrumbidgee, Edward and Murray Rivers, and 5-13 m above the ground for nest trees on the inland slopes (Webster 1991; Webster & Ahern 1992; Manning et al. 2004). Birds nest deep within the tree hollow, sometimes even at ground level (North 1911). The same nest hollows are used in successive years, although it is not known if it is always by the same pair (Webster & Ahern 1992; Davey 1997; Manning et al. 2004). Occasionally a different hollow in the same tree is used, and nest trees may continue to be used even after the tree has died (DECCW in prep.). Much of the breeding habitat in the Riverina is on public land, while most breeding habitat in the South-west Slopes is on private land (Webster 1988; Manning et al. 2004).

<u>Foraging habitat:</u> After breeding, Superb Parrots generally move away from their breeding habitat in mid-January (Webster 1988, 1997). Part of the population moves

into the scattered Boree *Acacia pendula* woodlands between the Murrumbidgee and Murray Rivers (Webster 1988), but the distribution and habitat use of other birds from mid-January to early April is unclear. Between April and August, birds use River Red Gum forest and box-pine woodland in north-central NSW, whilst in the Riverina, birds use River Red Gum, box-pine, box, pine and Boree woodland (Webster 1988). Between May and August birds return to riverine forests of the Riverina, and to the surrounding box and White Cypress Pine *Callitris glaucophylla* woodlands. Large flocks of adult and immature birds roam widely in search of food, and may be observed in various habitats at this time (Webster 1988; DECCW in prep.). Superb Parrots are rarely observed on the inland slopes during winter, with the few birds seen usually being breeding pairs (Webster 1988). Most of the breeding population from the inland slopes appears to move to the eucalypt-pine woodlands on the plains of west-central and north-central New South Wales (Webster 1988; DECCW in prep.). Most of the foraging habitat is on private land (Webster 1988; Manning *et al.* 2004).

## **Decline and Threats**

The Superb Parrot still occurs throughout much of its historical range, although there has been a reduction in range, and numbers of birds have declined. There has been a marked range contraction in the south, where birds once occurred well into western and southern Victoria, including near Melbourne (Wheelwright 1861; Keartland 1903; Batey 1907; Museum Victoria records). Breeding range has also contracted in the south, as birds formerly bred as far east as Rutherglen (Vic) and as far south as Mooroopna (Vic) in the late 1950s (McEvey 1965). Range has also contracted in the inland slopes (Webster 2001), and breeding has largely ceased in the northern ACT since urban development there in the late 1960s (Taylor & COG 1992).

Historical evidence suggests that, within New South Wales, numbers of Superb Parrots declined to 'alarmingly scarce' levels when poisoning of Rabbits *Oryctolagus cuniculus* and Galahs *Eolophus roseicapilla* was commonplace (Le Souef 1923, 1924). Once this practice declined, numbers of birds apparently increased (Le Souef 1924; Chisholm 1935), although not to previous population levels. Recent declines have been recorded in some areas of the inland slopes (Higgins 1999; Webster 2001).

Population size is primarily limited by past clearing of woodland foraging habitat within 10 km of nesting colonies (Webster 1988). Much remaining habitat has also had essential treed flight corridors removed or degraded (Webster 1988; Webster & Ahern 1992). Nesting habitat has also been destroyed, and its regeneration prevented through logging for timber, ring-barking, firewood gathering, grazing, dieback, salinisation and waterlogging (Webster 1988; DECCW in prep.). Illegal trapping occurs, and may be the principal source of birds for the avicultural trade (Webster 1988). Feeding on spilled grain along roads exposes birds to collisions with vehicles (Webster 1988).

Several elements of the Superb Parrot's biology make it particularly vulnerable to a range of threats. It feeds in flocks, breeds in colonies, requires foraging habitat within 10 km of nest sites, and requires vegetated corridors to move between breeding and foraging habitat. Degradation and destruction of foraging habitat and movement corridors are key factors implicated in its decline (Webster 1988). Large trees of the types preferred for nesting have been targeted for timber and firewood in some areas (Webster & Ahern 1992).

Feeding in flocks makes the Superb Parrot vulnerable to poisoning and road-kills, and large numbers of birds are thought to have been killed by eating poisoned baits intended for rabbit control, and others killed by vehicles while feeding on spilled grain along roadsides (Higgins 1999). Flocking and returning to traditional nest sites makes the birds vulnerable to trapping for the avicultural trade (Webster & Ahern 1992), and ground-foraging makes them vulnerable to introduced predators such as feral Cat *Felis catus* and Red Fox *Vulpes vulpes*.

Major threats to the Superb Parrot are summarized as follows:

#### Loss and degradation of habitat

The major threat to the Superb Parrot is the widespread clearing of box-dominated woodland (Webster 1988), and extensive agricultural development has resulted in the clearing of large tracts of habitat over much of its range (Seddon *et al.* 2001). In particular, large areas of box-gum woodland within its winter range in northern NSW have been cleared for cotton-growing during the past 20 years, or degraded by thinning and continual grazing. Over 90% of the NSW South Western Slopes bioregion has been cleared (Benson 1999), and the White Box-Yellow Box-Blakely's Red Gum woodland is now listed as an Endangered Ecological Community (NPWS 2002b). Remaining habitat now largely exists only along roadsides and in small, scattered remnant patches on private land. Clearing of box-gum woodland foraging habitat has been followed by the abandonment of nearby traditional breeding areas, even where suitable nest trees remain (Webster 1988). In areas that still contain breeding habitat, but now having little or no box-gum woodland within 10 km, (eg. along the Murray River between Tocumwal and Yarrawonga), nesting no longer occurs.

Box-gum woodland foraging areas are linked to riverine breeding habitat by regularly-used flight paths which, in most cases, follow tracts of natural woodland and only briefly cross open ground (Webster 1988). Clearance of these movement corridors is also considered a major threat to the species (Webster 1988; Webster & Ahern 1992; Garnett & Crowley 2000).

Much of the remaining woodland habitat (on both public and private land) throughout the range of the Superb Parrot is grazed by livestock, and there is now virtually no eucalypt regeneration throughout much of the agricultural zone in south-eastern Australia (Robinson & Traill 1996; Reid & Landsberg 2000). Grazing can also reduce food availability for Superb Parrots. For example, along the Murray River, the fruit of Dwarf Cherry *Exocarpos strictus* is used extensively by Superb Parrots to feed their fledglings. During dry years, when grass cover within the forest is patchy, Dwarf Cherry bushes are grazed heavily by stock (DECCW in prep.). At such times the survival of Superb Parrots' fledglings may be influenced by their dependence on this resource.

Many nest trees used by Superb Parrots were growing before the introduction of domestic grazing animals into Australia, and many are near the end of their lifespan (Gibbons & Lindenmayer 2002; Manning *et al.* 2004). Given that hollows do not develop in eucalypts until they are over 120 years old, and trees containing larger hollows used by Superb Parrots are likely to be over 220 years old (Gibbons & Lindenmayer 2002; Manning *et al* 2004), the lack of woodland regeneration is likely to result in a serious shortfall in hollow-bearing trees in the decades to come.

#### Irrigation and regulated flows

Irrigation, drainage schemes and rising water tables in the Murrumbidgee and Murray valleys are placing remnant stands of trees, particularly box species and Cypress Pine, under stress, often resulting in tree deaths (Porteners 1993; Marcar 1995; Raven 1997). This loss of trees is particularly important in areas used as foraging sites for Superb Parrots. This is particularly important in the Murray Irrigation Region east of Deniliquin where the majority of the tree cover has been cleared (Webster 1997b). These remnants are important for the Superb Parrot as they are used each winter as foraging and roosting sites. The loss of these sites could have an impact on the Superb Parrot population in the southern Riverina (DECCW in prep.).

Continual high flows during summer and autumn along the Edward River were placing at least half of known nest trees under threat (Webster 1997a). River Red Gums can withstand continuous flooding for about three years, after which they begin to show signs of stress (DECCW in prep.). There was a significant decline in the health of known Superb Parrot nest trees between 1985 and 1996 (Webster 1997b), although health of nest trees had significantly improved by 2003, possibly because of recent reductions in river levels (Webster 2004).

#### Firewood collection

Box-gum woodlands (mainly Black, Yellow and Grey Box) within the breeding range of the Superb Parrot are extensively used as fencing and firewood timbers (FC NSW 1985, 1986). Over a five year period, the average distance to places where firewood was harvested for the Canberra market doubled to 600 km (Maxwell 2000), suggesting that harvesting is not sustainable. Much of the firewood market is completely unregulated, as established wood merchants account for only 25% of this market (Driscoll et al. 2000). Considerable firewood collecting occurs along roadsides and in crown reserves, several of which are important for Superb Parrots (Webster 1988) and other threatened species (Seddon et al 2001). Firewood collection, particularly the removal of dead hollow-bearing trees, will reduce the number of suitable nest trees available to Superb Parrots, and will also lead to increased competition for nest hollows (DECCW in prep.). The removal of dead trees and logs has recently been proposed as a threatening process under the NSW Threatened Species Conservation Act 1995 (NSW Scientific Committee 2002). Firewood collection is an issue that requires detailed studies of its impacts on threatened woodland fauna (Gibbons & Lindenmayer 2002).

#### Timber production

The River Red Gum forests where many Superb Parrot nesting colonies occur are also important for timber production, which impacts on conservation of the species. Nest trees are typically large and old, with numerous hollows and therefore generally low commercial timber value (Weber & Ahern 1992). However, nearby trees may be merchantable and hence logged. Silvicultural operations such as thinning and ringbarking also occur, and at least six River Red Gum nest trees used by another threatened bird, the Regent Parrot *Polytelis anthopeplus*, have been ring-barked in recent years during such operations (NPWS 2003). The successive removal of large trees that were approaching a size suitable for nesting has been taking place over many decades, and, as a result, most River Red Gum forests are regrowth forests, with few trees pre-dating European settlement (Donovan 1997). Some protection of nest trees occurs on public land along the Edward River (Webster 2004), although nest trees on private land have little protection (DECCW in prep.), and so nest sites there are more likely to be lost, particularly on the Murrumbidgee River where there is substantial potential nesting habitat (Webster 1988).

#### **Disturbance**

At several locations throughout the River Red Gum forests of the Murrumbidgee and Murray River, picnic and camping sites coincide with Superb Parrot nest sites, and birds become agitated and avoid entering the nest hollow when people are near the nest tree (DECCW in prep.). Timber production within nesting colonies also poses the risk of disturbance to nesting birds. A 100 m buffer is applied to known colonies in Victoria (Weber & Ahern 1992) and in the Murray Management Area in New South Wales (DECCW in prep.).

#### Illegal removal of wild birds

There are about 20,000 Superb Parrots held in captivity in Australia (Garnett 1992), more than twice the estimated total adult wild population. Many thousands of wildcaught birds have illegally entered the aviculture trade during the past decade, with a high percentage of birds traded through bird shops being wild-caught (DECCW in prep.). Trapping occurs mainly from October to January, when females are on nests incubating eggs or brooding young. At this time, breeding males form foraging flocks and are easily trapped, and removal of males from the wild population forces nesting females to desert their nests or starve. Mature male birds appear in the aviculture trade in October and November, and immature birds predominate in January (DECCW in prep.). Removal of large numbers of Superb Parrots from the wild, especially during the breeding season, threatens the survival of local populations and, ultimately, the species. There has also been removal of eggs and chicks from nests, but the current scale of this activity is not known (DECCW in prep.). Poachers often destroy the nest hollow in the removal process, the impact of which far exceeds the loss of one year's brood.

#### Road-kills

Road-kills of Superb Parrots occur sporadically throughout the species' range. Up to 27 birds have been killed by vehicles along one roadside as they fed on spilled grain (DECCW in prep.), and the actual mortality level is likely to be much higher. Such mortality may exert some influence upon the local status of the species in parts of its range.

## Poisoning

In New South Wales Superb Parrot numbers declined markedly when poisoning of Rabbits and Galahs was commonplace (Le Souef 1923, 1924), but once this practice declined numbers of the Superb Parrot increased (Le Souef 1924; Chisholm 1935). Some Superb Parrots are probably still inadvertently killed in pest poisoning programs, and there is concern that insecticide spraying of beetles in crops in New South Wales may be affecting the breeding success of the Superb Parrot (DECCW in prep.).

#### Competition for nest hollows

There may be competition from introduced and native birds including the Common Starling *Sturnus vulgaris*, Galah, Long-billed Corella *Cacatua tenuirostris* and Little Corella *C. sanguinea* for nest hollows (Webster 1988). The Galah and corellas have increased in numbers in grain-growing areas, and may be serious nest site

competitors, especially as Superb Parrots often use hollows with entrances large enough to permit access by cockatoos (Manning *et al.* 2004). There are anecdotal reports of feral honey bees taking over Superb Parrot nesting hollows, although the significance and level of impact on the species is not known.

## **Recovery Information**

The Superb Parrot has benefited from a range of actions such as native vegetation clearance controls in Victoria, NSW and the ACT. This has been particularly important for the retention of box-gum woodlands (in which the majority of foraging takes place) within 10 km of nesting sites in River Red Gum forests in the Riverina and woodlands on the South-west Slopes (Webster 1988). A range of other measures such as 'Codes of Forest Practice', controls on the use of poisoned grain, improved grain handling, and wildlife education programs have all benefited Superb Parrots, though often not specifically targeted at them. A number of reserves and national parks have been established to provide biodiversity and community benefits within the range of the Superb Parrot. Important recent work includes:

- Establishment of a multi-agency Superb Parrot Steering Committee in 1985 to oversee an investigation into the ecology and threats to the species.
- Investigation over two breeding seasons in 1985 and 1986 (Webster 1988) that defined important aspects of breeding biology and ecology, identified some threats and highlighted the decline in numbers and reduction in breeding range, particularly in Victoria.
- Surveys of nesting birds, nesting and foraging habitat in NSW (Schrader 1980; Webster 1991, 1993a, 1993b, 1993c, 1997a, 2001, 2002, 2004; Christie 2004; Davey & Purchase 2004; Manning *et al.* 2004), the ACT (Davey 1997) and Victoria (Bye 1990; Davidson & Chambers 1991) and the production of management recommendations from these studies.
- Production of Management Plans for the Murray (FC NSW 1985) and Murrumbidgee (FC NSW 1986) Forest Management Areas that included prescriptions to protect nest trees and foraging habitat.
- Provision of 100 m buffers from logging for nest sites along the Murray and Edward Rivers (Webster & Ahern 1992), and fencing of some foraging habitat in Gulpa Island State Forest.
- Production of a management plan for NSW and Victoria (Webster & Ahern 1992), Action Statement for Victoria (Weber & Ahern 1992) and Recovery Plan for NSW (DECCW in prep.).
- Considerable volunteer and landholder action to enhance and restore foraging and flight corridor habitats, and involvement in surveys and monitoring.
- Production of an educational booklet by Cathay Pacific and Greening Australia in 1994, with involvement of schools, and sponsorship of the community-based 'Flightpaths of Green' project that aimed to restore flight corridor habitat.

## **Strategy for Recovery**

This Recovery Plan contains actions that should, within five years, reverse recent population declines, and initiate longer-term measures designed to ensure the

persistence of a viable breeding population in south-eastern Australia. This can be achieved by: locating and protecting actual and potential nesting colonies and treed corridors to foraging areas, improving foraging habitat quality through reductions in total grazing pressure, timber harvesting, firewood gathering, irrigation and other degrading impacts, controlling recreational impacts near nesting colonies, preventing illegal trapping, reducing numbers killed by vehicles, and involving the community in the recovery program. The Plan also aims to gain information on the impact of grazing on non-breeding foraging habitat, fire regimes, firewood collecting and timber harvesting on Superb Parrots. Information gained on ecology, such as selection and use of nest sites, foraging habitat and flight corridors will help more effectively target management action.

The draft New South Wales Recovery Plan for the Superb Parrot (DECCW in prep.) accords with and complements this national Recovery Plan. Recovery Plans for other threatened woodland birds such as the Regent Honeyeater (Menkhorst 1997), Swift Parrot (Brereton 1998), and Bush Stone-curlew (NPWS 2002a) contain actions that supplement this Recovery Plan.

## **Recovery Objectives**

The **Long-term Objective** of recovery is to minimise the probability of extinction of the Superb Parrot in the wild, and to increase the probability of important populations becoming self-sustaining in the long term, ideally to meet the IUCN Red List criteria for conservation assessment as Least Concern (IUCN 2002).

Within the life span of this Recovery Plan, the Specific Objectives of recovery are to:

- 1. Determine population trends in the Superb Parrot.
- 2. Increase the level of knowledge of the Superb Parrot's ecological requirements.
- 3. Develop and implement threat abatement strategies
- 4. Increase community involvement in and awareness of the Superb Parrot recovery program.

## **Program Implementation**

The Recovery Plan will run for five years from the time of adoption of a Final Plan, and will be managed by a national Recovery Team.

## **Program Evaluation**

The Recovery Team will be responsible for annual assessments of progress towards recovery. This Recovery Plan will be reviewed within five years of the date of its adoption under the EPBC Act.

#### **Objective 1: Determine population trends in the Superb Parrot.**

*Performance criterion:* Population changes are identified with sufficient precision to determine overall population trends.

<u>Action 1.1:</u> Map and monitor known nesting colonies and survey for new nesting sites

<u>Action 1.2:</u> Monitor the population to determine trends in the proportion of juvenile birds.

## **Objective 2:** Increase the level of knowledge of the Superb Parrot's ecological requirements.

*Performance criterion:* Key ecological information collected, allowing potential colony sites, foraging sites and flight corridors to be identified, mapped and protected.

<u>Action 2.1:</u> Survey and map areas of River Red Gum forest in the Riverina and woodlands on the NSW/ACT slopes and tablelands with high potential to support breeding colonies.

Action 2.2: Investigate the foraging ecology of Superb Parrots.

<u>Action 2.3</u>: Identify and map all areas with high potential to be used for foraging during the breeding season, and areas used for foraging during the non-breeding season.

<u>Action 2.4:</u> Identify and map potential flight corridors between breeding colonies and potential or known foraging areas, and corridors used in the non-breeding season.

#### **Objective 3: Develop and implement threat abatement strategies.**

*Performance criterion:* The decline in abundance is reversed and there is an overall increase in population size.

<u>Action 3.1:</u> Develop and implement a Superb Parrot 'Habitat Retention and Enhancement' policy which uses all administrative avenues (e.g. native vegetation retention Acts), to protect box-gum woodland from clearing and degradation within the range of the Superb Parrot, with special emphasis on woodlands within 10 km of colonies. This policy must enshrine a net gain for Superb Parrots from any proposed development.

<u>Action 3.2</u>: Identify and protect all breeding season foraging habitat within 20 km of colonies.

<u>Action 3.3</u>: Identify and secure the management of high priority habitat for Superb Parrots on private land through voluntary cooperative agreements under the relevant legislation.

<u>Action 3.4:</u> Use all available legal instruments, together with education, assistance and incentives, to protect known and potential nest sites on private land.

<u>Action 3.5:</u> Develop a set of guidelines for land managers to improve the management of remnant woodlands used by Superb Parrots in irrigation districts. These guidelines should address issues of supply of water, development of surface drains, and development of irrigation using deep bores.

<u>Action 3.6:</u> Encourage Local Governments to include in their local environment plans the protection of known and potential Superb Parrot habitat.

<u>Action 3.7</u>: Ensure that relevant resource management staff in all Government agencies, NRM bodies etc are aware of Superb Parrot habitat within or near their region.

Action 3.8: Manage recreational activity near known nest sites.

<u>Action 3.9</u>: Work with relevant Local Governments (Farrier *et al.* 1999) to prescribe 'Environmental Planning Overlays' so that standing dead hollow-bearing trees over 60 cm diameter (DBH) are protected on private land and may not be felled for firewood. Similar planning scheme overlays have been implemented by Shires in western Victoria and eastern South Australia for large, dead, hollow-bearing trees with potential to be used as nest sites by Red-tailed Black-Cockatoos *Calyptorhynchos banksii* on private land.

Action 3.10: Identify and revegetate critical breaks in flight corridors.

<u>Action 3.11:</u> Prevent harvesting operations in areas of box-gum woodland thought or known to be used by Superb Parrots for foraging at any time (except in accordance with the Habitat Retention and Enhancement policy).

<u>Action 3.12:</u> Place a 100 m buffer around all known nest trees and colonies, together with those areas with 'high potential' to be nest trees on public land, and exempt them from harvesting operations (eg. commercial logging, firewood collecting). This should include both living and dead hollow-bearing trees, and allow for the recruitment of such trees.

<u>Action 3.13:</u> Negotiate with forestry managers and other land management agencies a biologically meaningful outcome for the number and distribution of 'high potential' nest trees, and for the ongoing recruitment of these trees.

<u>Action 3.14</u>: Ensure that details of locations of nest sites and colonies, and the prescriptions to protect them, are included in forest and woodland management policies and plans.

<u>Action 3.15:</u> Exclude firewood collection from all Travelling Stock and Camping Reserves, and roadside reserves known to be used or with the potential to be used by Superb Parrots on the South-west Slopes.

<u>Action 3.16</u>: Determine the impact of firewood gathering on nesting and foraging habitat and develop appropriate management responses.

<u>Action 3.17</u>: Assess the impact of total grazing pressure on woodland foraging habitat quality.

<u>Action 3.18:</u> Encourage the removal of grazing stock from box-gum woodlands on public land that still have an understorey dominated by native plants, and are known or are likely to be used by Superb Parrots, and provide incentives for private landholders to do likewise.

<u>Action 3.19:</u> Prepare and implement Fire Management Strategies for all nesting colonies, including avoiding planned burns within 100 m of nest trees.

<u>Action 3.20:</u> Undertake any fuel reduction burns in box-gum woodlands within 10 km of nest sites between 1 May and 31 July.

Action 3.21: Ascertain the fire history of nest sites and foraging areas, and collate relevant information on the effects of fire on Superb Parrot habitat.

<u>Action 3.22:</u> Implement measures to ensure protection of known and potential nesting colonies from destruction and disturbance, and sufficient long-term recruitment of nest trees is occurring.

<u>Action 3.23</u>: Examine the use of known Superb Parrot nest hollows by introduced and native species to ascertain the level of competition and potential impacts.

<u>Action 3.24:</u> Prepare and implement a 'Superb Parrot Grain Spill' strategy to reduce the incidence of accidental deaths from road-kills at grain spills.

<u>Action 3.25:</u> Target enforcement resources towards preventing illegal trapping of adult birds and removal of young from the wild during the breeding season.

<u>Action 3.26</u>: Develop an extension program to raise community awareness of the plight of the Superb Parrot and the avoidable impacts of illegal poaching and road-kills.

#### **Objective 4: Increase community involvement in and awareness of the Superb Parrot recovery program**

**Criteria:** Increased community involvement in reporting of sightings and population monitoring.

<u>Action 4.1:</u> Train and involve community volunteers and landholders in the location and identification of birds, participation in the recovery program, and encourage community reporting of Superb Parrots.

Action 4.2: Regularly report recovery program results to the local community.

<u>Action 4.3:</u> Provide information to Landcare groups and landholders concerning the need to link currently isolated and unavailable habitat, and to restore habitat.

<u>Action 4.4</u>: Promote incentives such as rate rebates for landholders who participate in habitat protection programs, and help secure incentives for them for fencing and planting or regenerating native species.

<u>Action 4.5:</u> Where possible, secure the management of high priority lands through voluntary cooperative agreements under the relevant legislation.

<u>Action 4.6:</u> Conduct a survey of community awareness of and involvement in the Superb Parrot recovery program, modelled on previous informative surveys of community attitudes to programs such as Landcare and the Red-tailed Black-Cockatoo recovery program (Jenkins 1998; Beumer 2003).

<u>Action 4.7:</u> Collate information on the value and management of retained River Red Gum and box-gum woodlands, including dead and hollow-bearing trees, for Superb Parrots, and provide to landholders, managers and Landcare groups.

## **Cost of the Recovery Plan**

The estimated cost of the recovery program is \$1,285,000 over five years.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Totals	\$217,000	\$347,000	\$267,000	\$257,000	\$197,000	\$1,285,000

## **Affected Interests**

- Murray-Darling Basin Authority;
- Forests NSW;
- NSW Department of Environment, Climate Change and Water;
- NSW Livestock Health and Pest Authorities;
- Vic Department of Sustainability and Environment;
- Parks Victoria;
- ACT Parks and Conservation;
- Catchment Management Authorities;
- Local Governments;
- Private landholders, leaseholders and Landcare Groups with blocks of box-gum woodland or treed flight corridors within 10km of nest sites;
- Non-government organisations such as bird clubs and field naturalists clubs;
- Research organisations such as universities.

## **Biodiversity Benefits**

The implementation of this Recovery Plan will have benefits for a wide range of riverine and woodland species and habitats. Within the range of the Superb Parrot there are a large number of nationally threatened and declining woodland birds (Garnett & Crowley 2000) that, like Superb Parrots, require large areas of intact habitat (Table 1). Threatened arboreal mammals such as the Brush-tailed Phascogale *Phascogale tapoatafa* and Squirrel Glider *Petaurus norfolcensis* occupy the same habitat as Superb Parrots and also require large hollow-bearing trees (Gibbons & Lindenmayer 2002).

Common name	Scientific name	Status		
		G&C	EPBC	
Emu	Dromaius novaehollandiae novaehollandiae	LC		
Bush Stone-curlew	Burhinus grallarius	NT		
Major Mitchell's Cockatoo	Cacatua leadbeateri leadbeateri	NT		
Swift Parrot	Lathamus discolor	EN	EN	
Turquoise Parrot	Neophema pulchella	NT		
Barking Owl	Ninox connivens connivens	NT		

Table 1. Nationally threatened and declining birds within the range of the Superb Parrot.

Brown Treecreeper	Climacteris picumnus victoriae	NT	
White-browed Treecreeper	Climacteris affinis superciliosa	NT	
Speckled Warbler	Chthonicola sagittata	NT	
Southern Whiteface	Aphelocephala leucopis leucopis	LC	
Regent Honeyeater	Xanthomyza phrygia	EN	EN
Painted Honeyeater	Grantiella picta	NT	
Hooded Robin	Melanodryas cucullata cucullata	NT	
Grey-crowned Babbler	Pomatostomus temporalis temporalis	NT	
Crested Bellbird	Oreoica gutturalis gutturalis	NT	
Diamond Firetail	Stagonopleura guttata	NT	

G&C = Garnett&Crowley (2000). EPBC = Environment Protection & Biodiversity Conservation Act 1999. EN = Endangered; NT = Near Threatened; LC = Least Concern

Actions proposed in this Recovery Plan (section 8) such as: protecting colony sites, revegetating flight corridors, fencing foraging habitat, addressing firewood issues, implementing fire management strategies, and involving the community in surveys are all likely to assist a large number of other native species. Indeed, agencies working on threatened species in New South Wales and Victoria should consider combining their recovery efforts for a number of threatened and declining woodland birds into a more cohesive whole, and the Superb Parrot Recovery Plan could be a catalyst for that work (see Action 8.4.1.b).

Similarly, actions for endangered species such as the Regent Honeyeater *Xanthomyza phrygia* and Swift Parrot *Lathamus discolor* (Menkhorst 1997, Brereton 1998) have assisted the Superb Parrot. For example, these endangered birds preferentially seek out large (>60 cm dbh) trees in box-ironbark forests and woodlands because they provide reliable and fairly predictable nectar flows (Menkhorst 1997). Key inland tree species for these species include: White Box, Yellow Box, Mugga Ironbark *E. sideroxylon*, Yellow Gum *E. leucoxylon*, Grey Box, River Red Gum, and Blakely's Red Gum (Menkhorst 1997, Brereton 1998), indicating considerable overlap with the Superb Parrot. A lot of effort has gone into protecting and enhancing these habitats by the Regent Honeyeater and Swift Parrot Recovery Teams, wildlife agencies, community groups, and landholders (Menkhorst 1997, Brereton 1998).

## **Role and Interests of Indigenous People**

Indigenous communities on whose traditional lands the Superb Parrot occurs have been advised, through the relevant regional Indigenous facilitator, of this Recovery Plan and invited to comment and be involved in the implementation of the Plan.

## **Social and Economic impacts**

There will be only minor social and economic impacts with the implementation of this recovery plan. The main potential impacts on landholders are covered by existing legislation for native vegetation retention in all range States, or concern the offering of incentives to landholders for fencing and restoration of flight corridors and remnants. Protection of Superb Parrot habitat when considering clearing applications could result in economic impacts on individuals by restricting the development of areas for cropping. However, the long-term economic and environmental benefits gained by such decisions will far outweigh any short term economic benefits.

Restrictions on timber harvesting (logging, firewood) within known Superb Parrot nesting colonies will have a range of economic impacts. Within the Riverina, the impact on either side of the Murray River and along the Edward River will be nil as all known nesting colonies are currently excluded from harvesting. However, within the Murrumbidgee Management Area, known nesting areas are not excluded from logging. The economic impact within this area is unknown as the reduction in hardwood volumes available from these nesting areas is not known. Exclusion of harvesting of firewood from known Superb Parrot habitat on public land on the inland slopes will possibly also have an economic impact on local communities.

The exclusion of grazing from known foraging areas of Superb Parrots within State Forests will possibly result in a loss of revenue for agencies. However, if these areas are fenced to exclude grazing then it is likely that any economic loss will be minimal as most areas will still be available for grazing. Fencing will also allow areas to recover from continual grazing resulting in an increase in plant and structural diversity. Fencing areas on private land to exclude grazing may also result in some economic impact, however, the benefits gained from structurally and floristically diverse woodlands would outweigh any losses. Improved box-gum woodland management may result in small economic losses for individual irrigators, but better management of these areas will increase the environmental health of the districts and therefore improve long-term economic conditions.

Opportunities exist for the Australian Government's *Caring for Our Country* initiative and other regional sources of funding such as Catchment Management Authorities to be used to fence remnant vegetation on private land. Management agreements between State agencies and landholders, where agencies provide funding for fencing materials and landholders erect the fences, have been put in place to protect and enhance native vegetation in the past. Fencing incentives will benefit a wide range of threatened and declining woodland species.

## **Management Practices**

#### Actions required for recovery of Superb Parrot

The biggest challenge for effective conservation of the Superb Parrot is landscapescale retention and regeneration of woodland habitat. There is a need for improved conservation of the remaining trees, both dead and alive, as large, dead trees have a vital ecological role to play in the conservation of many fauna species (Groves 2002). While management guidelines for grazing of River Red Gum forests on public land take into account environmental values (FC NSW 1985, 1986; Weber & Ahern 1992), there is still a need for clearer identification of important local Superb Parrot foraging areas where grazing should be controlled. Replanting the required scattered trees in the landscape would be logistically impossible and prohibitively expensive (Reid & Landsberg 2000). Natural regeneration of trees after the cessation of grazing, often facilitated by fencing (Spooner et al 2002), seems to be the only long-term solution for the Superb Parrot's future nest trees requirements in box-gum woodlands.

Both current and potential nest sites need to be maintained if Superb Parrots are to reestablish or expand their colonies. Where several breeding colonies occur in close proximity (eg. in Gulpa Island State Forest), this argument is particularly compelling, since a program of improved management of associated box-gum woodland foraging areas (such as occur on roadsides and private land to the west of Gulpa Island State Forest) could lead to the occupation of additional trees within or between existing colonies. In such circumstances, recovery of the Superb Parrot could be aided by rationalising timber harvesting exclusion boundaries around clustered colonies so that a continuum of suitable habitat was retained both between and around each colony.

The community needs to be involved in the recovery program, especially as much of the foraging habitat is on private land. Incentives need to be provided for landholders who undertake works to protect Superb Parrots and their habitat.

#### Acknowledgements

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## **Priority, Feasibility and Estimated Costs of Recovery Actions**

Action	Description	Priority	Feasibility	Cost estimate					
				Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	Population trends								
1.1	Map, monitor nesting colonies	1	100%	\$60,000	\$0	\$60,000	\$0	\$60,000	\$180,000
1.2	Monitor population	1	100%	\$0	\$10,000	\$0	\$10,000	\$0	\$20,000
2	Ecological requirements								
2.1	Survey, map potential breeding sites	1	100%	\$0	\$30,000	\$0	\$30,000	\$0	\$60,000
2.2	Investigate foraging ecology	1	90%	\$0	\$50,000	\$50,000	\$0	\$0	\$100,000
2.3	Identify, map potential foraging areas	1	90%	\$0	\$50,000	\$0	\$50,000	\$0	\$100,000
2.4	Identify, map potential flight corridors	1	75%	\$0	\$50,000	\$0	\$50,000	\$0	\$100,000
3	Threat abatement								
3.1	Develop clearing & habitat policy	1	75%	\$0	\$0	\$0	\$0	\$0	\$0
3.2	Identify, protect breeding foraging habitat	1	75%	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$200,000
3.3	Identify, protect private land habitat	1	50%	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$200,000
3.4	Identify, protect nest trees	1	75%	\$0	\$0	\$10,000	\$10,000	\$10,000	\$30,000
3.5	Manage habitat in irrigation districts	1	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.6	Include habitat protection in planning	1	75%	\$0	\$0	\$0	\$0	\$0	\$0
3.7	Inform agencies on Superb Parrots	1	100%	\$0	\$0	\$0	\$0	\$0	\$0
3.8	Manage recreational activities	2	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.9	Prescribe Environmental Planning Overlays	1	75%	\$0	\$0	\$0	\$0	\$0	\$0
3.10	Identify, revegetate flights paths	2	50%	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
3.11	Prevent harvesting in foraging habitat	1	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.12	Place buffer zone around nest trees	1	75%	\$0	\$0	\$0	\$0	\$0	\$0
3.13	Negotiate nest tree recruitment	2	50%	\$0	\$10,000	\$0	\$0	\$0	\$10,000
3.14	Include nesting details in forest mgt plans	1	100%	\$0	\$0	\$0	\$0	\$0	\$0
3.15	Manage firewood collection	2	75%	\$0	\$0	\$0	\$0	\$0	\$0

3.16	Determine impact of firewood collection	2	50%	\$50,000	\$0	\$0	\$0	\$0	\$50,000
3.17	Assess grazing impact on foraging habitat	2	50%	\$0	\$40,000	\$40,000	\$0	\$0	\$80,000
3.18	Encourage stock removal from habitat	2	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.19	Prepare, implement fire mgt strategy	3	75%	\$0	\$0	\$0	\$0	\$0	\$0
3.20	Manage burning in foraging habitat	3	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.21	Ascertain fire history	3	100%	\$0	\$0	\$0	\$0	\$0	\$0
3.22	Implement protection of nesting sites	1	75%	\$0	\$0	\$0	\$0	\$0	\$0
3.23	Examine nest hollow competition	3	75%	\$0	\$0	\$10,000	\$10,000	\$10,000	\$30,000
3.24	Prepare, implement grain spill strategy	2	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.25	Prevent illegal trapping	3	50%	\$0	\$0	\$0	\$0	\$0	\$0
3.26	Develop extension program	3	100%	\$10,000	\$10,000	\$0	\$0	\$0	\$20,000
4	Community participation								
4.1	Train & involve community volunteers	2	100%	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
4.2	Report recovery program results	3	100%	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
4.3	Provide habitat information to community	2	100%	\$0	\$0	\$0	\$0	\$0	\$0
4.4	Promote habitat incentives	3	100%	\$0	\$0	\$0	\$0	\$0	\$0
4.5	Encourage habitat protection	2	50%	\$0	\$0	\$0	\$0	\$0	\$0
4.6	Conduct community awareness survey	3	100%	\$0	\$0	\$0	\$0	\$10,000	\$10,000
4.7	Collate and provide habitat information	2	100%	\$0	\$0	\$0	\$0	\$10,000	\$10,000
	Totals			\$217,000	\$347,000	\$267,000	\$257,000	\$197,000	\$1,285,000