Threatened Species Assessment

Antigone rubicunda
Brolga

Taxonomy

Antigone rubicunda (Perry, 1810)

The taxon was previously known as *Grus rubicunda*. The genus *Antigone* has been split from *Grus*.

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* as *Grus rubicunda* (SAC 1991).

Categorised as Vulnerable in the 2013 Advisory list of threatened vertebrate fauna in Victoria (DSE 2013).

Proposed conservation status

Endangered in Victoria

Criterion C2a(ii)

Species Information

Description and Life History

The Brolga is a light-grey coloured crane, standing about 1.8 metres high. It has a long, straight bill, long dark coloured legs and a wingspan of about 2 metres. Appearance changes with age. Immature birds (up to 10 months of age) have a grey, fully feathered head. Juveniles (11 to 22 months) gradually lose their head feathering and attain a pale orange-red head colouring. Adults have a conspicuous orange-red head, which contrasts with the bare crown of greenish-grey skin and have a black dewlap under the chin. Adult males and females appear similar, although males are larger.

Brolgas are wetland birds, needing water every day to drink and bathe. They breed as isolated pairs in swamps, dams and floodplains in winter-spring in southern Australia. The dry non-breeding period is known as the 'flocking' season, when (at least for a significant part of the population) pairs and their (one or two) young, and immature individuals, form feeding and roosting flocks.

Brolgas feed in a wide variety of wetlands and dryland habitats. They are omnivorous, consuming a variety of plant and animal material on a seasonal basis including insects, spiders, molluscs, amphibians, small mammals and wetland plants. In Victoria, where large portions of traditional foraging habitats have been converted to agriculture, Brolgas now rely substantially on food resources from agricultural operations. The residual cereal grain in post-harvest stubble fields is considered to be a particularly important food resource for the Victorian Brolga (King 2008).

Brolga nesting is well-known from studies on the south eastern population (Herring 2001, Herring 2005, Myers 2001). Brolgas pair at 3-4 years, and first breed successfully when they are 5 years old. The brolgas form long-term pair bonds. Each pair defends a nesting territory up to 452 ha (Harding 2001), containing one or several wetlands. Both sexes build the nest. It may be just a scrape in the ground but it is more commonly a platform of grasses and other vegetation as wide as 142cm across, with a water 'moat' to 50cm deep. There are 1-3 (mostly 2) eggs, 95mm x 60mm, weighing 170-195g. Both sexes incubate and hatching is in about 30 days. Chicks leave the nest and can swim at only 1-2 days old.

Both parents feed, brood and guard the young, which are fully-feathered at around 13 weeks and fledge at 12-14 weeks (Arnol et al. 1984, Marchant and Higgins 1993). The young stay with their parents for up to 11 months until the next breeding season and develop full head and leg colouring over 2-3 years.

Little is known about breeding success, however Hill (1992) estimates it to be about one chick per nesting attempt, and this varies between seasons. Fledging success is unknown, however, losses of immature birds are attributed to predation by the Red Fox, entanglement in wire fencing (Arnol et al. 1984) and powerline collision (White 1987).

Generation Length

The generation length of the Brolga is estimated to be 15 years, a generation length that has been used for other long-lived non-migratory cranes.

Distribution

The populations in Victoria and South Australia may be isolated from the northern populations as there appear to be only scattered birds in New South Wales. In Victoria, birds are currently found in the south-west, the Northern Plains and adjacent parts of the Murray River (Victorian Biodiversity Atlas, VBA). The taxon was formerly more widely distributed and common, having been recorded from the Melbourne area, Gippsland and North-eastern Victoria (White 1987). However, the core distribution of the south-eastern Australian population is now largely restricted to South-West Victoria and lower South-East South Australia.

There are two core Brolga areas in south-eastern Australia. The south-western Victorian group, which includes the far southeast of South Australia, supports around 550-650 birds. In this region, annual flock surveys to estimate proportion of juvenile birds have been carried out since 2009. It has also attempted to estimate total population size in two of those years by counting all known sites on a single day.

The Riverina group of northern Victoria and southern NSW supports fewer than 250 birds. Core breeding areas in the NSW Murray Catchment include the Urana, Jerilderie, Boree Creek, Lockhart, The Rock, Walbundrie, Oaklands, Savernake, Berrigan, Balldale, Corowa and Barooga regions. Most of these birds seem to use the Leeton and Colleambally flocking sites to the north each year.

In Victoria, the former distribution included coastal plains of East Gippsland, plains round Melbourne and Port Phillip Bay, French Island and Westernport, and Rutherglen in the north-east. It was once common on the plains north of Bendigo but only a few remained by 1927. There are historical records for Wilsons Promontory (Marchant and Higgins 1993).

Habitat

In south-eastern Australia, populations generally use different habitats during breeding and non-breeding seasons. The breeding season (July-December) in Victoria occur largely in ephemeral wetlands (most of the area continuously flooded for 2-6 months, up to 50 cm deep). The only other breeding records were in semi-permanent wetlands (most of the area continuously flooded for 6-12 months) with a smaller ephemeral area. Brolgas rarely used permanent wetlands (Myers 2001). The ephemeral wetlands typically had larger, healthier stands of water plants, particularly Eleocharis (Spike-rush) species. The tubers provide Brolgas with an important food source.

Brolgas feed in a wide variety of wetlands and dryland habitats. They are omnivorous, consuming a variety of plant and animal material on a seasonal basis including insects, spiders, molluscs, amphibians, small mammals, and wetland plants. In Victoria, where large portions of traditional foraging habitats have been converted to agriculture, Brolgas now rely substantially on food resources from agricultural operations. The residual cereal grain in post-harvest stubble fields is a particularly important food resource (e.g. King 2008).

Threats

Brolgas are considered at risk from modification and disappearance of breeding wetlands by drainage works, and the subtle influence of salinity on freshwater wetlands (Codd 1992, Kevin 1992), which may contribute to the loss of suitable habitat through secondary salinisation and may impact on food source. In addition, there has been extensive planting of pine trees and blue gums in some rural areas that may impact on shallow freshwater wetlands in the vicinity by intercepting water that normally would flow into them.

In SW Victoria, wind farm development has dramatically increased in districts with important Brolga breeding and flocking wetlands, leading to fears that turbine impact or other effects could further threaten the population.

It is unknown the extent to which immature birds are preyed on by the Red Fox.

IUCN Criteria

Criterion A. Population size reduction.
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [*(a) cannot be used for A3*]

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 45 years is estimated to be 24 to 31%, based on (a), (b) and (c) above.

This is based on comparison of past population estimates with contemporary count data from the past decade.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 45 years is projected to be 30 to 40%, based on (b) and (c) above.

The future population size is projected using the rate of decline from past to current population size (27%) and then magnified to the rate due to inferred amplification of threats over next 45 years.

Eligible under Criterion A4 as Vulnerable

The population reduction over any 45 year period, including both past and future, is estimated to be 24 to 40%, based on (b) and (c) above.

This is based on a consideration of past decline and future effects of limited availability of habitat, as most of habitat is now drained for agriculture, river regulation, reclamation of land, flood mitigation, etc.

Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 181,723 km² and the Area of Occupancy (AoO) is estimated to be 8,756 km², both of which exceed the thresholds for criterion B.

Criterion C. Small Population size and decline				
		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals				

Evidence:

Eligible under Criterion C2 as Endangered

It is estimated that there are 550 to 650 mature individuals. The current population estimate is based on the annual regional Brolga surveys, conducted over a number of years since 2008 by DELWP in south west Victoria and lower south-east South Australia.

The number of mature individuals is estimated to continue to decline, due to reducing breeding habitat, resulting from drainage, cropping, disturbance and degradation of suitable freshwater wetlands, and prolonged drought.

The percentage of mature individuals in one subpopulation is 95-100%.

Criterion D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)	<50	<250	<1,000
D2 Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.	-	-	D2. Typically: AoO <20 km2 or number of locations ≤5

Evidence:

Eligible under Criterion D as Vulnerable

It is estimated that there are 550 to 650 mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

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