



The Minister approved this conservation advice on 25/06/2015 and transferred this species from the Vulnerable to the Critically Endangered category, effective from 08/07/2015

## Conservation Advice

### *Pedionomus torquatus*

plains-wanderer

#### **Taxonomy**

Conventionally accepted as *Pedionomus torquatus* (plains-wanderer) Gould, 1840.

#### **Summary of assessment**

##### **Conservation status**

Critically endangered: Criterion 1 A2 (a)

*Pedionomus torquatus* has been found to be eligible for listing under the following listing categories:

Criterion 1: A2 (a): Critically Endangered

Criterion 2: B2 (a),(b)(ii)(v),(c)(iv): Endangered

Criterion 3: C2 (a)(ii),(b): Endangered

Criterion 4: Vulnerable

The highest category for which *Pedionomus torquatus* is eligible to be listed is Critically Endangered.

Species can be listed as threatened under state and territory legislation. For information on the listing status of this species under relevant state or territory legislation, see <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

##### **Reason for conservation assessment by the Threatened Species Scientific Committee**

This advice follows assessment of new information provided to the Committee to change the listing status of *Pedionomus torquatus*.

##### **Public Consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for > 30 business days between 17 November 2014 and 9 January 2015. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

#### **Species Information**

##### **Description**

The plains-wanderer is a small, quail-like bird that, when fully grown, measures 15-19 cm in length, has a wing-span of 28-36 cm, and has a mass of 40-80 g in males and 55-95 g in females (Marchant and Higgins, 1993). In adult plumage, the sexes differ in appearance. The females are distinguishable by their rufous breastband and white-spotted black collar, while males are plainer in plumage with light brown colouration above, covered in brown rosettes, and fawn to white colouration below, covered in blackish crescents (Pizzey and Knight, 1997). Both sexes have a cream-coloured iris, a cream to pale yellow bill and cream to pale yellow legs and feet, though females are again more brightly coloured (Marchant and Higgins, 1993). Juveniles

are similar in appearance to adult males, but can be distinguished by the dark-brown spots on the breast, flanks and under-tail coverts (Marchant and Higgins, 1993).

Adult males and juveniles are similar in appearance to little button-quail (*Turnix velox*) and red-chested button-quail (*Turnix pyrrothorax*) (Marchant and Higgins, 1993). However, these button-quails are slightly smaller and differentiated by their stout greyish bills, shorter pinkish legs and more restricted markings on the underparts (Marchant and Higgins, 1993).

Plains-wanderers have a call comprising of low, resonant 'moo' or 'oo' sounds and soft clucks (Pizzey and Knight, 1997).

### **Distribution**

Plains-wanderers are distributed across north-central Victoria, southern New South Wales (NSW) around the Riverina region, eastern South Australia and west-central Queensland (Baker-Gabb, 2002a; Barrett et al., 2003). The species was historically recorded in south-east South Australia, eastern NSW and south-east Queensland, however they are possibly no longer extant in these locations (Baker-Gabb, 2002a).

### **Cultural Significance**

On Carlo Station, between Bush Heritage's Ethabuka and Cravens Peak Station reserves, on the eastern edge of the Simpson Desert, there is a series of Aboriginal pictographs, one of which is reported to be a female plains-wanderer (Baker-Gabb, pers comm., 2015). This information would suggest that the species holds cultural importance for at least some Indigenous Australians. However, the Office of Environment and Heritage in NSW consulted extensively on plains-wanderer conservation with several local Aboriginal groups and did not find any significant connection between Indigenous Australians and the species (OEH, 2015).

### **Relevant Biology/Ecology**

Plains-wanderers inhabit sparse grasslands with c.50% bare ground, with most vegetation less than 5 cm in height and some widely spaced plants up to 30 cm high (Garnett et al., 2011). The species may occasionally use lower-quality habitat including cereal stubble, but cannot persist in an agricultural landscape (Garnett et al., 2011). Plains-wanderers are sedentary for as long as the habitat remains suitable (Garnett et al., 2011).

Plains-wanderers are capable of breeding in their first year and they breed in solitary pairs (Baker-Gabb et al., 1990). Evidence suggests that the species may have a polyandrous mating system in which individual females may mate with more than one male (Baker-Gabb et al., 1990). The nest is a hollow or 'scrape' that is scratched into the ground and lined with grass (Harrington et al., 1988). In some instances nearby grasses may be pulled over the nest to form a concealing cone or tent (Harrington et al., 1988; Marchant and Higgins, 1993). The nests are placed amongst native grasses and herbs, or sometimes amongst crops (Harrington et al., 1988). Clutch-size is usually four eggs, but can range from two to five (Bennett, 1983). The male does most of the incubation during the 23 day incubation period (Baker-Gabb, 1990; Baker-Gabb et al., 1990; Bennett, 1983). The young are primarily attended by the male, and perhaps sometimes by the female, and become independent at about two months of age (Baker-Gabb, 1990).

A generation time of 7.3 years (BirdLife International, 2011) is derived from an age at first breeding of 1.0 years and a maximum longevity in the wild of 13.5 years, both extrapolated from values for related Charadriiformes of similar size and ecology (Garnett et al., 2011).

### **Threats**

The main threat to plains-wanderers is cultivation of native grassland which, even if left to recover, remains unsuitable for decades (Garnett et al., 2011). Cultivation has all but eliminated the species from southern South Australia and Victoria and is increasing across the NSW Riverina (Garnett et al., 2011). Even where patches of habitat remain, they may be too few and too dispersed to be effective refuges during drought (Baker-Gabb, 1998). Overgrazing causes

the species to leave an area when grassland is reduced to a remnant less than 2–3 cm high with 60% or more bare ground (Baker-Gabb et al., 1990), possibly because the species becomes too vulnerable to predators (Baker-Gabb, 1987). Such overgrazing is particularly likely to take place during droughts. An absence of grazing, or insufficient grazing, when followed by, or following, widespread rainfall and prolific grass growth, can also be deleterious to the species because it allows the density of grasses to increase which, consequently, can render native grasslands unsuitable for inhabitation by the plains-wanderer (Baker-Gabb, 2002b; NPWS, 2002; Radford et al., 2013).

The insecticide Fenitrothion is occasionally used to spray Australian plague locusts (*Chortoicetes terminifera*), particularly in the NSW Riverina, and may kill plains-wanderers directly or indirectly through the food chain (Story et al., 2007). However, a biological control agent, *Metarhizium anisopliae* var. *acridum* (Green Guard®) can be used as an alternative for controlling locust plagues (Story et al., 2007). European foxes (*Vulpes vulpes*), feral cats (*Felis catus*) and native birds of prey, such as the spotted harrier (*Circus assimilis*) and black falcon (*Falco subniger*) are all potential predators of the plains-wanderer (Baker-Gabb, 2002b; Llewellyn, 1975; NPWS, 2002). Foxes may be significant predators when crops, which support high densities of house mouse (*Mus musculus*), occur within 2 km of plains-wanderer habitat (Baker-Gabb, 1998).

Plains-wanderers may be exposed to increased extinction risk due to their current historically-low population size. Small populations are at increased risk of extinction as chance events may have significant impacts on the population (Caughley, 1994). Other potential threats to plains-wanderers include a lack of appropriate burning regimes (NTAG, 2010), planting trees in or near native grasslands (Baker-Gabb, 2014), wildfires (OEH, 2015), habitat disturbance by rabbits (*Oryctolagus cuniculus*) (OEH, 2012), quail hunting, reduced food availability and climate change. There is also the possibility that currently unidentified threats are operating and significantly impacting plains-wanderer populations (OEH, 2015).

### How judged by the Committee in relation to the EPBC Act Criteria and Regulations

<b>Criterion 1. Population size reduction (reduction in total numbers)</b>			
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	<b>Critically Endangered Very severe reduction</b>	<b>Endangered Severe reduction</b>	<b>Vulnerable Substantial reduction</b>
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3, A4</b>	≥ 80%	≥ 50%	≥ 30%
A1	<i>based on any of the following:</i> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>		
A2			
A3			
A4			

**Evidence:**

**Eligible under Criterion 1 A2 (a) for listing as Critically Endangered**

Garnett et al (2011) suspected the number of mature individuals of plains-wanderer to be decreasing, however they estimated at the time that past, current or future population declines were unlikely to exceed 30% in any three-generation period. Since that time, significant declines in plains-wanderer numbers have been reported in the species' two strongholds in Victoria and NSW. Monitoring and annual surveys conducted across the Patho Plains of Victoria between 2010 and 2014 indicated a decline in numbers of approximately 95% during this period (Baker-Gabb, 2014). Monitoring across the NSW Riverina during the same period detected a decline in numbers of 84%, this decline was preceded by significant fluctuations in numbers across the region from 2001 onwards, with an overall decline of 93% across the region over the period from 2001 to 2014 (Wilson et al., 2014).

The Committee considers that the species has undergone a very severe reduction in numbers in under three-generation lengths (generation length = 7.3 years, decline documented in this assessment occurred over a  $\leq 14$  year period), equivalent to at least 93% percent and the reduction has not ceased, the cause has not ceased and is not understood. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 1 to make it eligible for listing as Critically Endangered.

<b>Criterion 2. Geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy</b>			
	<b>Critically Endangered Very restricted</b>	<b>Endangered Restricted</b>	<b>Vulnerable Limited</b>
B1. Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
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:**

**Eligible under Criterion 2 B2 (a),(b)(ii)(v),(c)(iv) for listing as Endangered**

Garnett et al (2011) estimated the plains-wanderers extent of occurrence to be 930 000 km<sup>2</sup> which is not considered to be very restricted, restricted or limited. However, the species' area of occupancy was estimated at 330 km<sup>2</sup> (restricted) (Garnett et al., 2011). There have also been extreme fluctuations in the number of mature individuals in the species' stronghold of the NSW Riverina, resulting in a net decline in the number of birds in less than three generations (Wilson et al., 2014). Furthermore there has been an inferred continuing decline in the species' area of occupancy (Garnett et al., 2011).

The species also appears to be severely fragmented. The term severely fragmented describes the circumstance in which individuals of a taxon are found in small and relatively isolated subpopulations with the result being an increased extinction risk to the taxon and a reduced probability of recolonisation if subpopulations were to go extinct (IUCN, 2012). Mature individuals of plains-wanderer are spread across more than 10 locations from eastern South Australia to central-west Queensland (Garnett et al., 2011). Reports suggest that plains-wanderers are mainly sedentary, particularly when habitat is suitable, however they may

sporadically move greater distances in response to changes in environment and habitat availability (Marchant and Higgins, 1993). Given the fractured distribution of the plains-wanderer it can be inferred that the species distribution is severely fragmented.

The Committee considers that the species' area of occupancy is restricted, and the geographic distribution is precarious for the survival of the species because it is severely fragmented, declines in the area of occupancy may be inferred and extreme fluctuations (leading to a net decline) in the number of mature individuals have been observed. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 2 to make it eligible for listing as Endangered.

<b>Criterion 3. Small population size and decline</b>			
	<b>Critically Endangered Very low</b>	<b>Endangered Low</b>	<b>Vulnerable Limited</b>
Estimated number of mature individuals	<b>&lt; 250</b>	<b>&lt; 2,500</b>	<b>&lt; 10,000</b>
AND either (C1) or (C2) is true			
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future	<b>Very high rate 25% in 3 years or 1 generation (whichever is longer)</b>	<b>High rate 20% in 5 years or 2 generations (whichever is longer)</b>	<b>Substantial rate 10% in 10 years or 3 generations (whichever is longer)</b>
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	<b>≤ 50</b>	<b>≤ 250</b>	<b>≤ 1,000</b>
(a) (ii) % of mature individuals in one subpopulation =	<b>90 – 100%</b>	<b>95 – 100%</b>	<b>100%</b>
(b) Extreme fluctuations in the number of mature individuals			

**Evidence:**

**Eligible under Criterion 3 C2 (a)(i),(b) for listing as Endangered**

Garnett et al (2011) estimated the total number of mature individuals of plains-wanderers to be 2000 (low). However, this estimate is now out of date as a 95% decline has been recorded in the species' Victorian stronghold of the Patho Plains (Baker-Gabb, 2014), and a 84% decline recorded in the NSW Riverina region (Wilson et al., 2014), since this time. A submission by the Office of Environment and Heritage (NSW) estimated the total population size of plains-wanderers to be ≤250 birds in the core part of its range, measured as approximately 200 birds in NSW and <50 birds in Victoria, and noted that no significant populations have been identified outside of the core range of the species (OEH, 2015). A submission from Baker-Gabb (2015) estimated that the total number of mature individuals of plains-wanderer may now be < 1000, however it was noted that a more definitive estimate of population size could not be provided due to the lack of recent surveying for the species in the arid zone. By all estimations the number of mature individuals of plains-wanderers is certainly < 2,500 (low).

Furthermore, the number of mature individuals in each subpopulation is ≤ 250 (OEH, 2015) and there have been extreme fluctuations in the number of mature individuals in the species' NSW stronghold (Wilson et al., 2014).

The Committee considers that the estimated total number of mature individuals of this species is low, and the geographic distribution is precarious for the survival of the species because there is

≤ 250 mature individuals in each subpopulation and there have been extreme fluctuations in numbers. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 3 to make it eligible for listing as Endangered.

<b>Criterion 4. Very small population</b>			
	<b>Critically Endangered Extremely low</b>	<b>Endangered Very Low</b>	<b>Vulnerable Low</b>
Number of mature individuals	<b>&lt; 50</b>	<b>&lt; 250</b>	<b>&lt; 1,000</b>

**Evidence:**

**Eligible under Criterion 4 for listing as Vulnerable**

Garnett et al (2011) estimated the total number of mature individuals of plains-wanderers to be 2000. However, this estimate is now out of date as a 95% decline has been recorded in the species' Victorian stronghold of the Patho Plains (Baker-Gabb, 2014), and a 84% decline recorded in the NSW Riverina region (Wilson et al., 2014), since this time. A submission by the Office of Environment and Heritage (NSW) estimated the total population size of plains-wanderers to be ≤ 250 birds in the core part of its range (OEH, 2015). A submission from Baker-Gabb (2015) estimated that the total number of mature individuals of plains-wanderer may now be < 1000. By current estimations the number of mature individuals of plains-wanderers is likely to be < 1000 (low).

The Committee considers that the total number of mature individuals is < 1000 which is low, making it eligible for listing as Vulnerable.

<b>Criterion 5. Quantitative Analysis</b>			
	<b>Critically Endangered Immediate future</b>	<b>Endangered Near future</b>	<b>Vulnerable Medium-term future</b>
Indicating the probability of extinction in the wild to be:	<b>≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)</b>	<b>≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)</b>	<b>≥ 10% in 100 years</b>

**Evidence:**

**Insufficient data to determine eligibility**

Population viability analysis has not been undertaken for this species.

**Conservation Actions**

**Recovery Plan**

The plains-wanderer (*Pedionomus torquatus*) was listed under the *Environment Protection and Biodiversity Conservation Act (1999)* in July 2000. At the time of listing, all species were required to have a recovery plan. The decision to have a recovery plan for the plains-wanderer should remain.

**Primary Conservation Objectives**

1. Reverse the long-term trend of population decline and increase numbers to a level where there is a viable, wild breeding population of plains-wanderers, even in poor breeding years

2. Maintain key plains-wanderer habitat in a condition that maximises survival and reproductive success, and provides refugia during periods of extreme environmental fluctuation

### **Conservation and Management Actions**

1. Develop a captive breeding strategy for plains-wanderers
2. Implement the captive breeding strategy and establish a captive population
3. Facilitate grazing management to soil type and enable landholders to maintain suitable grassland biomass for plains-wanderers on red soils
4. Reduce, and where possible prevent, the cultivation and loss of important areas of plains-wanderer habitat
5. Design and implement a habitat management strategy for all lands in which plains-wanderers are a management target
6. Develop strategies and programs to protect and enhance plains-wanderer habitat
7. Remove introduced trees and large boxthorns on, or within 300m of, red soils where suitable plains-wanderer habitat exists
8. Where necessary, as identified under research priority three, develop and implement feral species control programs
9. Where necessary, as identified under research priority five, mitigate the impacts of wildfires, quail hunting and pesticide use on plains-wanderers
10. Develop and implement a broad strategy to raise awareness and educate the general public about plains-wanderer conservation
11. Continue to inform, support and encourage landholders and other community members, including indigenous groups, to be involved in the conservation of plains-wanderers
12. Develop a targeted information pack to assist landholders, outdoor enthusiasts and professionals in the identification and reporting of sightings of plains-wanderers

### **Monitoring priorities**

1. Implement a long term plains-wanderer monitoring program in the species' strongholds in the Riverina region of NSW and the Northern Plains of Victoria
2. Undertake regular monitoring at other known plains-wanderer sites
3. Closely monitor grazing impacts on public and private reserves where grazing regimes are being managed for plains-wanderers, to ensure grassland structure remains within acceptable limits for the species

### **Information and research priorities**

1. Increase understanding of population dynamics of plains-wanderers (e.g. population size, age/size class structure, dispersal rates)
2. Study the effects of season, grazing and burning on the type and availability of food in plains-wanderer habitat
3. Measure the impacts of feral species on plains-wanderers
4. Study the roles of burning and slashing in maintaining and improving habitat conditions in National Parks, Reserves and other lands managed for plains-wanderer conservation

5. Measure the impacts of wildfires, quail hunting and pesticide use on plains-wanderers
6. Develop a Population Response Model for plains-wanderers

### **Recommendations**

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **transferring** from the Vulnerable category to the Critically Endangered category of the list:  
*Pedionomus torquatus*
- (ii) The Committee recommends that the current decision to have a recovery plan should be upheld.

Threatened Species Scientific Committee

04/03/2015

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