

# THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

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The Minister approved this conservation advice and transferred this species from the Vulnerable to Endangered category, effective from 15/02/2018

## Conservation Advice

### *Dasyornis longirostris*

western bristlebird

#### **Taxonomy**

Conventionally accepted as *Dasyornis longirostris* (Gould 1841).

#### **Summary of assessment**

##### **Conservation status**

Endangered: Criterion 1 A2ac, Criterion 2 B2ab, Criterion 3 C1

Vulnerable: Criterion 4 D

The highest category for which *Dasyornis longirostris* is eligible to be listed is 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**

The western bristlebird was listed as Vulnerable under the predecessor to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *Endangered Species Protection Act 1992* and transferred to the EPBC Act in July 2000.

This advice follows assessment of new information provided to the Threatened Species Scientific Committee (the Committee) to change the listing status of the western bristlebird to Endangered.

##### **Public consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for 30 business days between 4 April and 19 May 2017. 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**

Western bristlebirds are medium-sized birds growing to approximately 20–22 cm and are largely ground-dwelling, usually flying only in response to disturbance and rarely over a distance of more than 10–20 m. They are coloured dark olive-brown on the upperparts, pale chestnut on the wings, and pale grey to brown on the throat and underparts, with a scalloped or dappled patterning. They have a pale eyebrow over their red eyes, their wings are short and rounded and their tails, which they sometimes fan or hold erect, are longish with graduated feathers (Pizzey & Knight 1997).

##### **Distribution**

The western bristlebird is endemic to coastal south-west Western Australia. The species occurs at Two Peoples Bay Nature Reserve, Betty's Beach to Waychinicup National Park near Cheynes Beach, and at multiple sites in the Fitzgerald River National Park (McNee 1986; Comer & McNee 2001).

No western bristlebirds have been located in the area between these two locations, a distance

of 120 km, despite extensive suitable habitat available (Department of Parks and Wildlife 2014). Historic records suggest the species once occurred in coastal areas from Perth to Augusta and from Albany to Fitzgerald River National Park (Cale & Burbidge 1993; Burbidge 2007). Eighteen birds were translocated in 1999–2000 and 2007 from Two Peoples Bay Nature Reserve to near Walpole, west of Albany, but those translocation attempts failed (Burbidge 2003; Burbidge et al. 2010).

### Relevant Biology/Ecology

At Two Peoples Bay Nature Reserve, the species occurs in dense closed heath 1–1.5 m high. Near Waychinicup River and in the Fitzgerald River National Park, the species' main habitat is closed heath 0.5–1 m high, sometimes with scattered patches of mallee (*Eucalyptus* spp.). The species may use more open heath habitat if there are enough patches of dense shrubs in the area (McNee 1986).

The western bristlebird is an elusive, sedentary and ground-dwelling species with a restricted dispersal capability (DPaW 2014). The species flies weakly and reluctantly, only flying low over short distances (DPaW 2014), making it susceptible to several threatening processes including fire and predation.

Western bristlebirds occupy home ranges that may overlap with other individuals (DPaW 2014). Territory size is estimated to be seven hectares (Smith 1987; Garnett et al. 2011).

The western bristlebird forages on or close to the ground. The diet of the species comprises invertebrates, including worms, snails, insects and larvae, and seeds (BirdLife International 2017). The western bristlebird breeds from July to October (DPaW 2014). Females lay two eggs in a loosely-made domed nest of sedges, rushes and sticks (BirdLife International 2017).

Unburnt swampy vegetation, predominantly sedges and thickets, provides important refugia for the western bristlebird (Smith 1977, 1987; McNee 1986), particularly from fire and feral predators (Lindenmayer et al. 2009). Studies of *Dasyornis brachypterus* (eastern bristlebird) found that spatial patchiness of fire events and unburnt refuge areas within territories were an important factor influencing site occupancy and post-fire site re-occupancy of eastern bristlebirds (Lindenmayer et al. 2009; Baker 1997, 2000). Lindenmayer et al. (2009) stated it is likely that, in the absence of predator control, the rate of predation increased where vegetation cover had been removed by fire, which may have an important effect on population recovery after fire events.

In Fitzgerald River National Park, the western bristlebird has been observed to survive fire events where patches of habitat remained unburnt. At Two Peoples Bay Nature Reserve, moist heaths were reoccupied 2–3 years after a fire event (Burbidge 2003). Although, after an extensive fire at Two Peoples Bay in November 2015, a number of western bristlebirds were found scattered through regenerating vegetation during the winter of 2016 (A Burbidge pers. comm. 2017 as cited in K Atkins pers. comm. 2017). Suitable habitat in drier areas may not be reoccupied until 11–14 years after fire (Smith 1987). The species was found in heaths 5–12 years after fire between Boulder Hill and east of Waychinicup River, and 14–28 years after fire in northern Fitzgerald River National Park (McNee 1986).

A generation time of 5.2 years (BirdLife International 2011) is derived from an age at first breeding of 1.5 years. The species has a maximum longevity of 7.3 years. All values have been extrapolated from expert estimates for eastern bristlebird (*D. brachypterus*).

### Threats

The primary threat to the western bristlebird is increasing fire frequency and intensity (Garnett et al. 2011; DPaW 2014), which is likely to be compounded by increased predation following intense fire events. The species is suspected to be threatened by introduced predators and vegetation dieback due to *Phytophthora cinnamomi*, and potentially threatened by weed invasion and habitat degradation by feral herbivores. Climate change is an emerging threat due to increased temperature, reduced rainfall and increased storm intensity which are likely to increase the threat of fire. Habitat clearing was a primary threat to western bristlebirds in the past, but as the species now resides primarily in protected areas, clearing no longer poses a threat to the species (DPaW 2014).

**Table 1** – Threats impacting the western bristlebird in approximate order of severity of risk, based on available evidence.

Threat factor	Threat type and status	Evidence base
Fire		
Increased fire frequency and intensity	known present	<p>Western bristlebirds are fire sensitive due to their preference for long unburnt habitat and sedentary nature. Given the low population size, fire events are the most significant threat to the persistence of the species (DPaW 2014) and extensive fire is likely to be the cause of historical range contraction (BirdLife International 2016). Severe or large scale fires have the ability to render occupied habitat unsuitable for the species for a number of years (Smith 1977, 1987; McNee 1986). Fire frequencies of fewer than 5–10 year intervals have been associated with local extinction in some areas (Smith 1987). A series of large wildfires between 2000 and 2004, and in 2005 and 2006 substantially reduced the population size of the western bristlebird and caused reduction in habitat quality (BirdLife International 2017). Another major fire in 2015 burnt approximately 90 percent of the species’ habitat at Two Peoples Bay Nature Reserve (Comer &amp; Burbidge 2016).</p> <p>Fire is known to lead to increased predation for cover-dependent species. It is inferred from studies on eastern bristlebird that the western bristlebird is likely to be highly susceptible to predation after fire due to loss of dense protective cover, a greater number of individuals in small refuge areas to which feral predators have increased access (Lindenmayer et al. 2009; OEH 2012).</p> <p>Over time, the threat from bushfires is likely to increase for western bristlebirds, as fire intensity and frequency are predicted to increase in their primary habitat as a result of climate change (Bradstock 2010; Garnett et al. 2013). It is projected with high confidence that climate change will result in a harsher fire weather climate in south-west Western Australia (CSIRO &amp; BoM 2017). A warmer, dryer climate is expected to result in increased storm intensity and a greater incidence of lightning-caused bushfires. Increased storm intensity as a result of climate change is suspected to intensify the threat of fire on the western bristlebird and its habitat, as well as have implications on fire management in the region (DPaW 2014).</p> <p>Prescribed burning practices could also have a deleterious impact on the western bristlebird. These potential impacts derive from issues including seasonality of burning (i.e. during breeding), removal of key forage support (i.e. seeding species) and the increase in total fire frequency.</p>

Invasive species		
Predation by foxes ( <i>Vulpes vulpes</i> ) and cats ( <i>Felis catus</i> )	suspected present	Western bristlebirds are vulnerable to predation due to their ground-dwelling and sedentary behaviour (DPaW 2014). Predation by foxes is suspected to be a significant threat to the western bristlebird in the Fitzgerald River National Park. Cats have been observed in substantial numbers throughout the distribution of the western bristlebird and predation by cats is likely to be a significant threat to the species (Gilfillan et al. 2009; Burbidge et al. 2010; DPaW 2014). The threat is inferred from known predation by cats on co-existing species, <i>Atrichornis clamosus</i> (noisy scrub-bird) (DPaW 2014). However, the level and impact of predation by foxes and cats on the western bristlebird has not been determined.
Habitat degradation by weeds	potential present	Weed invasion has the potential to cause changes in the structure and floristic composition of western bristlebird habitat. Woody weeds in particular can form large stands with little structural variation. Weeds that may be having an impact on the western bristlebird include Victorian tea-tree ( <i>Leptospermum laevigatum</i> ), Sydney golden wattle ( <i>Acacia longifolia</i> ), taylorina ( <i>Psoralea pinnata</i> ), blackberry ( <i>Rubus fruticosus</i> aggregate) and African boxthorn ( <i>Lycium ferocissimum</i> ). However, the impact of weed invasion on the western bristlebird has not been demonstrated.
Habitat degradation by introduced herbivores	potential present	Feral herbivores including goats ( <i>Capra hircus</i> ) are likely to occur within western bristlebird habitat. Goats are known to be impacting the western end of Fitzgerald River National Park (DPaW 2014). Feral herbivores have the potential to cause substantial habitat degradation through disturbance of native vegetation and changes in structure and composition (DPaW 2014). However, the impact of introduced herbivores on the western bristlebird has not been demonstrated.
Phytopathogens		
Vegetation dieback from <i>Phytophthora cinnamomi</i>	suspected present	<i>Phytophthora cinnamomi</i> is causing vegetation dieback in areas of known habitat for the species including Two Peoples Bay Nature Reserve, Fitzgerald River National Park and Waychinicup National Park (DPaW 2014). The loss of vegetation structure and cover as a result of <i>Phytophthora</i> dieback is likely to impact the western bristlebird. However, there is insufficient information to demonstrate the level of impact of <i>Phytophthora</i> dieback on the species.
Climate change		
Increased temperature and reduced rainfall	suspected future	It is projected that climate change will result in average temperatures continuing to rise across all seasons, and reduced winter and spring rainfall in south-west Western Australia (CSIRO & BoM 2017). Changes in temperature and rainfall are suspected to lead to further losses and degradation of remnant vegetation, including food resources, for the western bristlebird (DPaW 2014).

Habitat loss, disturbance and modification		
Historic land clearing	known past	Past land clearing for settlement and agriculture is a factor for the contraction of the western bristlebird's distribution and significant population reduction (DPaW 2014). However, land clearing is no longer a threat to the species as almost all western bristlebirds now occur in conservation reserves (BirdLife International 2016).

## **Assessment of available information 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>	<b>≥ 90%</b>	<b>≥ 70%</b>	<b>≥ 50%</b>
<b>A2, A3, A4</b>	<b>≥ 80%</b>	<b>≥ 50%</b>	<b>≥ 30%</b>
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.		
	<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>		

### **Evidence:**

#### **Eligible under Criterion 1 (A2ac) for listing as Endangered**

In 2001, the western bristlebird population was estimated to have 620 pairs. In 2010, the population had 320 pairs, about two-thirds of which were in the Two Peoples Bay/ Waychinicup/ Mount Manypeaks area (i.e. 195 pairs) with the remaining 125 pairs in the Fitzgerald River National Park (Burbidge et al. 2010). Therefore, between 2001 and 2010, the western bristlebird population declined by approximately 48 percent (Burbidge et al. 2010). This decline was due to a series of large wildfires that substantially reduced the area and quality of habitat for the species during this period (Burbidge et al. 2010; BirdLife International 2017).

A major fire in 2015 burnt approximately 90 percent of the species' habitat at Two Peoples Bay Nature Reserve (Comer & Burbidge 2016). This fire event led to an additional decline of the Two Peoples Bay Nature Reserve subpopulation. Although the decline has not been quantified, it is conservatively estimated here as 45 percent (the midpoint between 0 and 90 percent; this estimate is conservative because western bristlebirds are known to decline strongly after extensive, intense fire). Given that in 2010 this subpopulation had 195 pairs, after the 2015 fire the subpopulation was likely fewer than 107 pairs. Therefore, in 2015, the total western bristlebird population is estimated to have had no more than 232 pairs. This equates to a reduction of at least 63 percent between 2001 and 2015.

The Committee considers that the western bristlebird is eligible for listing as Endangered under Criterion 1 (A2ac) as the population has declined more than 50 percent over three generations (or 15 years).

<b>Criterion 2. Geographic distribution as indicators 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 indicating distribution is precarious for survival:			
(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 (B2ab) for listing as Endangered.**

The extent of occurrence (EOO) is estimated at 7132 km<sup>2</sup> and area of occupancy (AOO) is estimated as 308 km<sup>2</sup>. These figures are based on the mapping of point records from 1997 to 2017, obtained from state governments, museums, CSIRO and Birdlife Australia. The EOO was calculated using a minimum convex hull, and the AOO calculated using a 2x2 km grid cell method, based on the IUCN Red List Guidelines 2014 (DOEE 2017).

Western bristlebirds occur east of Albany across areas of largely contiguous habitat including Two Peoples Bay Nature Reserve, Angove Creek Water Reserve, Betty's Beach, Mount Manypeaks to Cheynes Beach, and at 14 different sites in and near Fitzgerald River National Park (Gilfillan et al. 2009). However, as fire is the primary threat to this species, and a large fire has the capacity to burn several of the identified sites in a single event, the western bristlebird only occurs at three locations (Two Peoples Bay Nature Reserve area, Mount Manypeaks Nature Reserve area and Fitzgerald River National Park area) (K Atkins pers. comm. 2017).

The western bristlebird population is continuing to decline due to ongoing loss of area, extent and quality of habitat due to increased incidence and extent of fire throughout the western bristlebird range (A Burbidge pers. comm. 2017).

The Committee considers that the western bristlebird is eligible for listing as Endangered under Criterion 2 (B2ab) as the area of occupancy is restricted, there are fewer than five known locations where the species occurs and there is inferred continuing decline in the number of mature individuals and area, extent and quality of habitat.

<b>Criterion 3. 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 generation (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 (C1) for listing as Endangered**

In 2001, the western bristlebird population was estimated to have 620 pairs (Burbidge et al. 2010). The western bristlebird population declined by approximately 48 percent between 2001 and 2010 to 320 pairs (Burbidge et al. 2010) due to a series of large wildfires that substantially reduced the area and quality of habitat for the species during this period (Burbidge et al. 2010; BirdLife International 2017). In 2015, a large fire at Two Peoples Bay Nature Reserve affected 90 percent of habitat for the species in this area. This is likely to have caused further population reduction, by as much as 63 percent over three generations, or about 40 percent over two generations. It is estimated that the western bristlebird population in 2015 was about 230 pairs, or 460 adults.

The Committee considers that the western bristlebird is eligible for listing as Endangered under Criterion 3 (C1) as the total population size of the western bristlebird is considered low and there has been an observed high rate of population decline (more than 20 percent) over two generations.

<b>Criterion 4. Number of mature individuals</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.**

The western bristlebird population is estimated to have fewer than 1000 mature individuals (Burbidge 2010, Garnett et al. 2011). The Committee considers that the western bristlebird is eligible for listing as Vulnerable under Criterion 4 as the number of mature individuals is low.

<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.**

As a population viability analysis has not been undertaken, there is insufficient data to demonstrate if the species is eligible for listing under Criterion 5.

**Conservation Actions**

**Recovery Plan**

The western bristlebird is included in the South Coast Threatened Birds Recovery Plan (DPaW 2014). This recovery plan should be retained until it sunsets in 2024. A decision about whether there should be a recovery plan for the western bristlebird after the current plan has expired has not yet been determined, and should only be made once the current plan has been reviewed.

**Primary Conservation Actions**

The primary conservation action for the western bristlebird is to maintain high value breeding and foraging habitat for the species by undertaking active fire management at all known locations.

**Conservation and Management Priorities**

Fire

- Implement fire exclusion zones for areas identified as high value habitat or refuge areas for the western bristlebird to promote a post-fire age capable of ensuring long-term habitat persistence of 15 years or more. Create and maintain buffer zones around these areas to protect from wildfire.
- Fires must be managed to ensure that prevailing fire regimes do not promote invasion of exotic species. Control of introduced predators must be undertaken immediately following fire events.
- Fire management authorities and land management agencies should use suitable maps and install field markers to avoid damage to known western bristlebird habitat. Physical damage to the habitat must be avoided during and after fire operations.

Habitat loss, disturbance and modification

- Ensure land managers are aware of the occurrence of western bristlebirds and provide protection measures against key and potential threats.

Invasive species

- Develop and implement a control program to reduce numbers of cats and foxes at all known western bristlebird sites.
- Undertake a control program for weeds and feral herbivores where they are observed to threaten, or pose a threat to, the western bristlebird.

## Phytopathogens

- Continue to implement adaptive management actions to reduce the spread of *Phytophthora cinnamomi*, manage and contain infested areas, and protect non-infested areas across the western bristlebird distribution, including (SCNRM 2010):
  - Public access to high value western bristlebird habitat should be restricted where appropriate to reduce the risk of *Phytophthora* being transferred by people and vehicles into these areas.
  - Implementing permanent or mobile hygiene facilities for wash-down of vehicles, equipment, machinery and personal clothing at the exit points of infested areas and entry points to non-infested high value habitat.
  - Erect educational signage to raise awareness about *Phytophthora* dieback, its impacts on threatened species habitat, and the importance of minimising spread of the phytopathogen through restricted access and hygiene protocols.
  - Contain and eradicate *Phytophthora* at infested sites through control of water drainage, regular and targeted application of phosphite herbicide, installation of silt membranes, and fencing to reduce spread of *Phytophthora* by animals.

## Stakeholder Engagement

- Continue to engage stakeholders through the South Coast Threatened Bird Recovery Team to implement conservation actions.

## Survey and Monitoring priorities

- Regularly undertake monitoring of all known subpopulations to assess population size, population trend and distribution.
- Monitor the response of the population to fire, using an appropriate measure (e.g. occupancy, population abundance, individual mortality, ranging behaviour, breeding success) based on knowledge of the ecology of the species, and with a monitoring design that aims to improve understanding of the species' response to fire. Precise fire history records must be kept and maintained.
- Continue to monitor the spread of *Phytophthora cinnamomi* and level of threat of infestation to high value habitat across the western bristlebird distribution to inform ongoing management actions. Undertake regular site mapping to identify infested areas, at risk high value habitat and 'disease boundaries' to assist planning.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

## Information and Research priorities

- Improve understanding of the mechanisms of response to different fire regimes, and identify appropriate fire regimes for conservation of the western bristlebird, by undertaking appropriately designed experiments to assess the effect of fire age on vegetation structure and food availability.
- Determine the impact of altered vegetation structure resulting from *Phytophthora cinnamomi* on the western bristlebird, including forage, protection and nesting capability.

## **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 Endangered category:  
*Dasyornis longirostris*
- (ii) The Committee recommends that the recovery plan decision be maintained.

Threatened Species Scientific Committee

08/06/2017

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