



# Conservation Advice for *Psophodes nigrogularis lashmari* (Kangaroo Island Western Whipbird)

In effect under the *Environment Protection and Biodiversity Conservation Act 1999* from 14 December 2021.

This document combines the approved conservation advice and listing assessment for the species. It provides a foundation for conservation action and further planning.



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## Conservation status

*Psophodes nigrogularis lashmari* (Kangaroo Island Western Whipbird) is listed in the Endangered category of the threatened species list under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act) effective from 14 December 2021.

*Psophodes nigrogularis lashmari* was assessed by the Threatened Species Scientific Committee to be eligible for listing as Endangered under Criterion 1. The Committee's assessment is at Attachment A. The Committee assessment of the species' eligibility against each of the listing criteria is:

- Criterion 1: A2c: Endangered
- Criterion 2: B1ab(ii, iii)+2ab(ii, iii): Vulnerable

- Criterion 3: Not applicable
- Criterion 4: D Vulnerable
- Criterion 5: Insufficient data

The main factor that made the subspecies eligible for listing in the Endangered category was the severe (>50%) reduction in population size in the previous 10 years (Paton et al. 2021). This major reduction in population was caused by the largest recorded wildfire on Kangaroo Island that burned for six weeks from late December 2019 to early February 2020 (Government of South Australia 2020a). The subspecies' extent of occurrence (EEO) is estimated at 5,300 km<sup>2</sup> (stable trend), and the area of occupancy (AOO) is estimated to be 540 km<sup>2</sup> (contracted) (Paton et al. 2021). The population is estimated to have declined to 1,000 mature individuals in the wild due to the Kangaroo Island 2019/2020 bushfires, however this decline is probably not continuing (Paton et al. 2021).

An analysis by a team from the National Environmental Science Program (NESP) Threatened Species Recovery Hub shows that a large proportion of the range of Kangaroo Island Western Whipbird was affected by these fires: 51% was burnt in high to very high severity fire, and a further 11% was burnt in low to moderate severity fire (Legge et al. 2021). A structured expert elicitation process was used to estimate the proportional population change for this species from pre-fire levels to immediately after the fire and then out to three generations/10 years after the fire, when exposed to fires of varying severity. These results, combined with the spatial analyses of fire overlap, suggest that one year after the fire, the species has experienced an overall decline of 44% from pre-fire levels, but that the decline could be as large as 62% (bound of 80% confidence limits) (Legge et al. 2021). After 10 years, the estimate for the overall population decline relative to the pre-fire population is predicted to be 33%, but potentially as much as 58% (bound of 80% confidence limit) (Legge et al. 2021). For comparison, experts also estimated the population change over time in the absence of fire; by 10 years, the overall population of Kangaroo Island Western Whipbird after the fire was estimated to be 30% lower than it would have been, had the 2019/2020 fire not occurred (Legge et al. 2021).

The subspecies is also eligible to be listed in the Vulnerable category based on the limited EEO and AOO, occurring at 10 locations (range 5 to >10; Table 4), and the continuing decline of AOO and area, extent, and quality of habitat due to future wildfires.

Species can also be listed as threatened under state and territory legislation. For information on the current listing status of this subspecies under relevant state or territory legislation, see the [Species Profile and Threat Database](#).

## Species information

### Taxonomy

Conventionally accepted as *Psophodes nigrogularis lashmari* Schodde & Mason (1991).

Three other subspecies include *P. n. leucogaster* (EN) Yorke and Eyre Peninsulas, South Australia, *P. n. nigrogularis* (EN) Two Peoples Bay and Manypeaks Range, south-western Australia, and *P. n. oberon* (LC), south-western mallee, Western Australia. Eastern and western subspecies have sometimes been separated into two species.

Additionally, recent taxonomic revision (ALBSA 2020; IOC 2020) recognises two species of whipbird, the Black-throated Whipbird (*Psophodes nigrogularis*) and the White-bellied Whipbird (*Psophodes leucogaster*); and this subspecies as the Kangaroo Island White-bellied Whipbird (*Psophodes leucogaster lashmari*).

## Description

Weighing around 45 g, with a wingspan 24 to 26.5 cm and length 23.5 cm, the Kangaroo Island Western Whipbird is a distinctive, medium-sized, ground-dwelling bird with a short triangular erectile crest on its forehead (Higgins & Peter 2002). Plumage is mostly olive green, with pale tail tips and greenish tones in the wing, and the throat is black and bordered by broad white moustache. Tail outer feathers are tipped white. Sexes are alike and juveniles can be identified by the lack of white and black on the chin and throat (Higgins & Peter 2002).

The name “whipbird” was used to reflect the loud whipcrack-like song of the Eastern Whipbird *Psophodes olivaceus*, however the Western Whipbird, including the Kangaroo Island subspecies, does not make such a call (Higgins & Peter 2002).

## Distribution

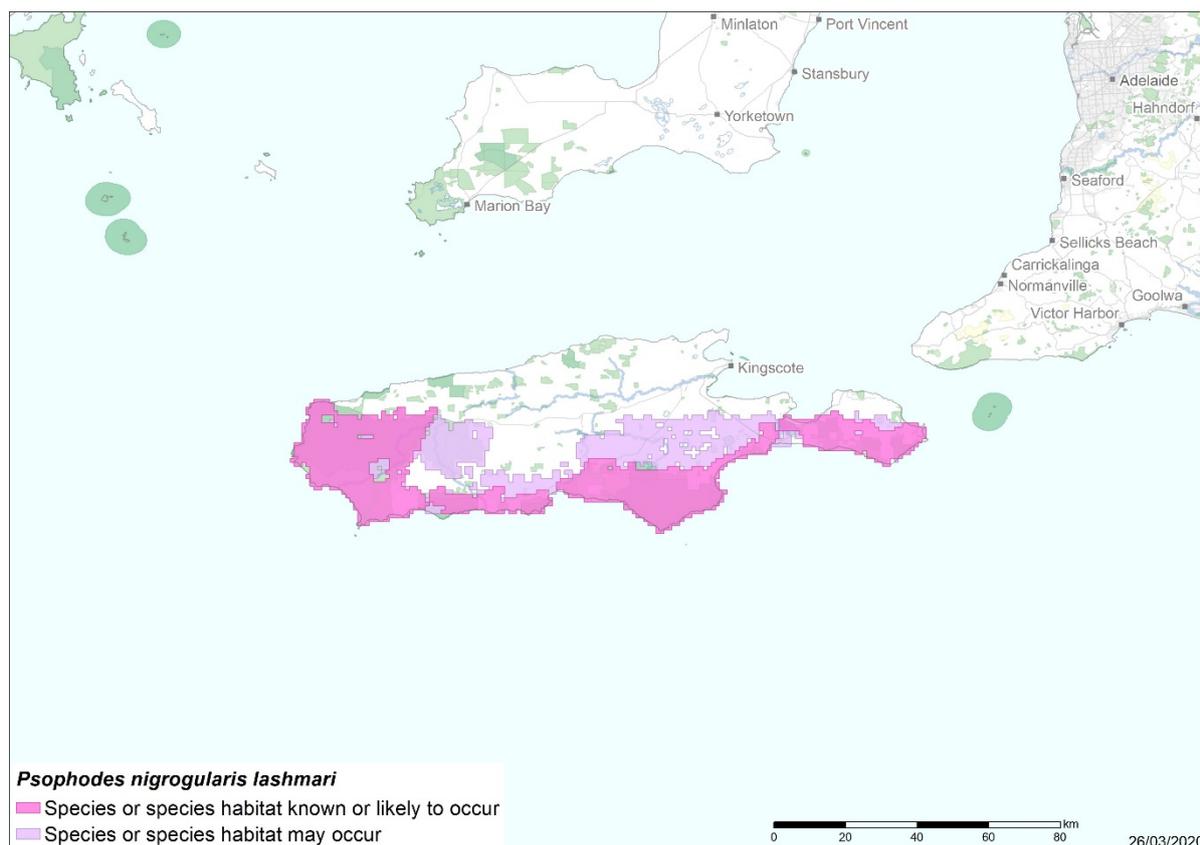
The Kangaroo Island Western Whipbird is endemic to Kangaroo Island in South Australia (Higgins & Peter 2002). Baxter (2015) describes the subspecies as uncommon, occurring mostly along the south and west coastal mallee belt from Cape Borda to Cape du Couedic and then east to Cape Willoughby. The subspecies is also widespread, albeit in lower density, inhabiting the major blocks of mallee in Flinders Chase National Park, Cape Gantheaume Conservation Park and the southern half of Dudley Peninsula between Dudley and Cape Hart Conservation Parks, along the north coast from Cape Borda east to Western River Conservation Park (Baxter 1989; Schodde & Mason 1991; Baxter 2015; Paton et al. 2021). The subspecies has also recently been recorded north of modelled area (Map 1) e.g., around Western River WPA, and adjacent private land.

Sporadic observations at localities in the north of the island (e.g., Kangaroo Gully, Middle River Gorge, Ballast Head) within months to a year after large fires suggest an ability to disperse considerable distances if needed (Paton et al. 2021). Isolated occurrences in the more fragmented eastern districts include Beyeria Conservation Park, Nepean Conservation Park/Western Cove and the Point Morrison area (Baxter 2015).

Prior to the 2019/2020 bushfires the population size on Kangaroo Island, while unknown, was thought to be relatively secure, compared to populations of whipbirds on the mainland (Pisanu & Baxter 2009). However, Kangaroo Island was severely affected by the 2019/2020 bushfires, where around half of the island was burnt (DEW 2020; Todd & Maurer 2020).

Surveys conducted immediately after the 2019/2020 bushfires observed 42 individuals, from 25 out of 145 unburnt fragments within the burnt area, and 3 plots outside it (Boulton et al. 2020). Subsequently, from May 2020 to April 2021, 104 transects were established on western Kangaroo Island and repeat surveyed up to 6 times at approximately 6-8 week intervals. This resulted in a total of 238 transect-surveys being undertaken in unburnt patches and 336 in burnt areas. Whipbirds were recorded at 43% and 8% of these respectively (Boulton & Gates 2021).

**Map 1 Modelled distribution of Kangaroo Island Western Whipbird**



Source: Base map Geoscience Australia; species distribution data [Species of National Environmental Significance](#) database.

### **Cultural and community significance**

The lands and waters of and around Kangaroo Island are of high cultural and spiritual significance to a number of Aboriginal Nations, particularly the Ramindjeri, Ngarrindjeri, Kurna and Narungga, and all have cultural stories associated with the Island (Paton et al. 2021). The cultural and community significance of the subspecies is not known. Further research into the subject area may benefit the conservation of the subspecies by providing insights about traditional culture and land management.

### **Relevant biology and ecology**

The Kangaroo Island Western Whipbird is secretive but curious and lives in monogamous pairs. On Kangaroo Island, birds have been recorded in coastal and subcoastal mallee and heath on limestone and dunes (Baxter 1995). Fire plays an important role in maintaining suitable habitat for the subspecies. While optimal fire frequency for the subspecies is unknown, most records for *P. n. leucogaster* are from vegetation last burnt 10 to 25 years earlier. *P. n. leucogaster* can also survive fire in pockets of unburnt vegetation (Garnett et al. 2011).

The subspecies inhabits dense shrubby habitats (Howe & Ross 1933; Condon 1966; Smith 1991) and prefers to run rather than fly, which it does in dense vegetation. Flight is described as strong but not sustained, thus restricting dispersal (especially across areas of cleared vegetation). However, birds are able to disperse through vegetated areas, over distances of more than a few kilometres, when there is pressure to move (Higgins & Peter 2002).

Western Whipbirds are sedentary after territory establishment (Smith 1991) and sing a repetitive and distinct territorial song. The subspecies mostly forages on the ground or in low vegetation, primarily searching for insects, either singly or in pairs. Birds have been observed probing leaf litter, dead stumps and branches of eucalypts and shrubs, and gleaning from vegetation (Higgins & Peter 2002).

Breeding takes place between July and November (Baxter 2015). Nests are bulky domes with a side entrance close to the ground in dense vegetation (Higgins & Peter 2002). Two eggs are usually laid and both sexes take turns brooding (Higgins & Peter 2002). Nestlings and fledglings are fed by both parents, usually on soft-bodied insects (Webster 1966; Smith 1991). If two young fledge each parent cares for one fledgling, though adults remain in close proximity to each other. Fledglings are depended for at least two months. The generation length is estimated to be 3 years (Bird et al. 2020).

### **Habitat critical to the survival of the Kangaroo Island Western Whipbird**

Habitat critical to the survival or important habitats of a species or ecological community refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal;
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators);
- to maintain genetic diversity and long-term evolutionary development; or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat critical to the survival of the Kangaroo Island Western Whipbird include:

- coastal and subcoastal mallee and heath on limestone and dunes;
- mallee heath across the lateritic plateau on central and western Kangaroo Island also provides important habitat for the subspecies.

Any known or likely habitat should be considered as habitat critical to the survival of the subspecies. Areas that are not currently occupied by the subspecies because they have been burnt (either in the 2019/2020, or in future fires), but should become suitable again in the future, should also be considered habitat critical to survival.

Habitat critical to survival should not be cleared and the net amount of habitat should be maintained and/or increased. Actions that have indirect impacts on habitat critical to the survival should also be minimised. Actions that compromise adult and juvenile survival, such as the introduction of new diseases, weeds, or predators, should also be avoided. Actions that remove habitat critical to survival would interfere with the recovery of Kangaroo Island Western Whipbird and reduce the area of occupancy of the species. If removal of habitat critical to survival cannot be avoided or mitigated, then as a last resort, an offset should be provided. Actions should not be assessed in isolation and consideration must be given to existing and future activities that may impact the species to ensure conservation outcomes on a landscape scale are achieved.

Additionally, the whole of Kangaroo Island has been identified as a Key Biodiversity Area (KBA) (BirdLife International 2020), guided by the KBA Standard (IUCN 2016). Although this subspecies has not been identified as a KBA trigger species (as KBAs do not recognise subspecies), conservation actions implemented would likely to benefit other already threatened species (e.g., Southern Emu-wren *Stipiturus malachurus*) and other species with similar ecological needs that were also affected by the 2019/2020 bushfires.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

## Threats

The most prominent threat that has caused the subspecies to decline is wildfire; particularly fire like the 2019/2020 bushfires, where half of the Kangaroo Island was impacted (Paton et al. 2021). While fire is integral to the ecology of Kangaroo Island, the 2019/2020 bushfires are the most extreme in recorded history and were unprecedented in their scale, speed and intensity (Government of South Australia 2020). Unlike in 2007, when 85% of Flinders Chase was burnt, few unburnt refuge areas remained to protect the subspecies in the 2019/2020 bushfires, because the fire weather, caused by heat and drought, was unparalleled (Collins et al. 2021; Paton et al. 2021). Extremes in fire weather (Di Virgilio et al. 2019; Dowdy et al. 2019) driven by longer and more severe droughts (Evans et al. 2017) and more frequent heatwaves (Herold et al. 2018) are likely to increase in frequency and intensity in coming decades due to human-induced climate change.

Given the subspecies' strongly terrestrial behaviour and size, predation by feral cats *Felis catus* (Woinarski et al. 2017) may affect population size, particularly immediately after fire prior to regeneration of dense habitat (McGregor et al. 2015, 2016). Other threats faced by Kangaroo Island Western Whipbird include inappropriate fire management (Birdlife Australia 2021, pers comm 02 July), habitat degradation caused by feral Pigs *Sus scrofa* (Government of South Australia 2020), invasive weeds and *Phytophthora cinnamomi* induced diebacks (Burgess et al. 2016). The flammable nature of some weeds, including non-endemic species such as Tasmanian Blue Gum *Eucalyptus globulus* (Government of South Australia 2021), may also increase fire risk and severity (Government of South Australia 2021).

**Table 1 Threats impacting Kangaroo Island Western Whipbird**

Threat	Status and severity <sup>a</sup>	Evidence
Fire		
Increase in frequent, large extent, high intensity wildfires	<ul style="list-style-type: none"> <li>• Status: historical, current &amp; future</li> <li>• Confidence: known</li> <li>• Consequence: severe</li> <li>• Trend: increasing</li> <li>• Extent: across the entire range</li> </ul>	<p>While fire is vital to the ecology of Kangaroo Island, the 2019/2020 bushfires were the most extreme in recorded history, burning approximately half of the island (DEW 2020; Todd &amp; Maurer 2020). The fire was also unprecedented in its scale, speed and intensity (Government of South Australia 2020a). Legge et al. (2021) estimated over 51% of the subspecies distribution was burnt in high severity fire, with an additional 11% burnt in low-moderate severity fire.</p> <p>Western Whipbirds rely on periodic fires to regenerate their habitat, keeping the shrub layer suitably dense (Gill et al. 1999). However, frequent, large extent, high intensity</p>

Threat	Status and severity <sup>a</sup>	Evidence
		<p>wildfires have a devastating effect on the subspecies' habitat and their ability to disperse through the landscape (Gill et al. 1999).</p> <p>Western Whipbirds are known to survive fire; however they usually do not persist in burnt areas (Gill et al. 1999). The optimal fire regime for the Kangaroo Island Western Whipbird is not known, however the species generally require long intervals without fire (at least 30 years and preferably 50 years) (McNee 1986); though studies have shown that they can recolonise burnt heath habitat after 4 to 7 years (Smith 1985).</p> <p>The risk of frequent, large extent, high severity wildfires is projected to increase on Kangaroo Island (Marshall et al. 2021).</p>
Inappropriate fire management	<ul style="list-style-type: none"> <li>• Status: historical, current &amp; future</li> <li>• Confidence: known</li> <li>• Consequence: severe</li> <li>• Trend: static</li> <li>• Extent: across the entire range</li> </ul>	<p>Following the 2019/2020 bushfires season there is pressure to increase fire management activities on Kangaroo Island; some of these may have negative impacts on the Kangaroo Island Western Whipbird (Birdlife Australia 2021, pers comm 02 July). Proposed changes include increased fire prevention works such as prescribed burns, mechanical vegetation removal and increased asset protection zones and buffer zones (BirdLife Australia 2021, pers comm 02 July). The implementation of fire management activities without consideration of the impacts on wildlife and threatened species could result in significant habitat loss, fragmentation, and degradation, and a declined rate of recovery for the Kangaroo Island Western Whipbird. Excluding fire from majority of remaining suitable habitat should be a priority in the next 10 years.</p>
Climate change		
Increased likelihood of extreme events (i.e., heatwave and drought)	<ul style="list-style-type: none"> <li>• Status: historical, current &amp; future</li> <li>• Confidence: known</li> <li>• Consequence: moderate</li> <li>• Trend: increasing</li> <li>• Extent: across the entire range</li> </ul>	<p>Average temperatures in Australia have increased by around 1.4°C in the past century (BOM &amp; CSIRO 2020; IPCC 2021), and global temperatures are likely to exceed 1.5°C in the next 20 years if global greenhouse gas emissions are not reduced immediately (IPCC 2021). As more frequent and extreme heatwaves are projected across Australia (BOM &amp; CSIRO 2020). Rainfall may also vary regionally under the changing climate (Evans et al. 2017), with lowest rainfall records in parts of southern Australia (BOM &amp; CSIRO 2020). Annual rainfall on Kangaroo Island is projected to decline by 7.5 to 8.9% by 2050, and 7.9 to 12.5% by 2070. Maximum temperature is also projected to increase by 1.1 to 1.3°C and 1.2 to 1.9°C by 2050 and 2070, respectively (Resilient Hills and Coasts 2016).</p> <p>The cumulative effect of the climate anomalies has led to, and will continue to, increase the likelihood of extreme events such as droughts and heatwaves (BOM &amp; CSIRO 2020). This change in climate may have detrimental</p>

Threat	Status and severity <sup>a</sup>	Evidence
		impact on Kangaroo Island Western Whipbird and their habitat. Climate anomalies will also increase the risk of wildfire (see <i>Increase in frequent, large extent, high intensity wildfires</i> ).
Invasive species (including threats from grazing, trampling, predation)		
Predation by cats	<ul style="list-style-type: none"> <li>• Status: historical, current &amp; future</li> <li>• Confidence: known</li> <li>• Consequence: low</li> <li>• Trend: decreasing</li> <li>• Extent: across the entire range</li> </ul>	<p>Predation by cats <i>Felis catus</i> (Commonwealth of Australia 2015a, 2015b) may be a threat to Kangaroo Island Western Whipbird with records of predation summarised in Woinarski et al. (2017).</p> <p>Kangaroo Island has a higher average density of feral Cats than similar environments on the mainland (Taggart et al. 2019; Hohnen et al. 2020), with approximately 1,600 individuals on the island (Hohnen et al. 2020). The threat of feral cats is also amplified by wildfires as they take advantage of recently burnt areas (McGregor et al. 2016), as they prefer to hunt in open habitats (McGregor et al. 2015).</p> <p>Management actions are being trialled around Dudley Peninsula and the goal is to develop a cat eradication program around Kangaroo Island (Kangaroo Island Landscape Board 2015, 2020b). However, an island wide cat eradication plan has not yet been developed and is not currently funded. Fire-predator interactions may exacerbate these effects.</p>
Habitat degradation caused by feral pigs	<ul style="list-style-type: none"> <li>• Status: historical, current &amp; future</li> <li>• Confidence: known</li> <li>• Consequence: low</li> <li>• Trend: static</li> <li>• Extent: across the entire range</li> </ul>	<p>Pest animals poses a threat to native fauna and flora on Kangaroo Island as they cause habitat degradation and increases competition for resources. With feral goat and deer eradicated, the current main pest specie is the feral pig (<i>Sus scrofa</i>).</p> <p>Feral pigs can cause serious habitat degradation through grazing, trampling and digging. They also kill and eat native wildlife and plants, spread weeds and damage streams. Additionally, feral pigs may spread the plant pathogen <i>P. cinnamomi</i> which can cause severe dieback in native vegetation (Commonwealth of Australia 2017a, 2017b). The eradication of feral pigs from Kangaroo Island was previously thought to be not feasible (based on criteria in Bomford &amp; O'Brien 1995). However, the severity of the 2019/2020 bushfires has also significantly reduced the feral pig population on the island, therefore presenting an opportunity for the eradication of the pest species. Currently, the Kangaroo Island Pig Eradication Action Plan is active, and will be reviewed annually (Government of South Australia 2020b).</p>
Habitat loss, degradation, and fragmentation		
<i>Phytophthora cinnamomi</i> induced diebacks	<ul style="list-style-type: none"> <li>• Status: current &amp; future</li> <li>• Confidence: inferred</li> <li>• Consequence: low</li> <li>• Trend: unknown</li> <li>• Extent: across part of its range</li> </ul>	<p>Due to having ideal climatic conditions (i.e., warm and wet winters, and dry summers), Kangaroo Island is particularly vulnerable to <i>P. cinnamomi</i> (Burgess et al. 2016). <i>P. cinnamomi</i> affects a wide range of native plants, altering their structural and floristic characteristics (Commonwealth of Australia 2018a; Hardham</p>

Threat	Status and severity <sup>a</sup>	Evidence
		<p>&amp; Blackman 2018). This is potentially threatening because of its capacity to cause widespread dieback and consequently reduce habitat suitability for Kangaroo Island Western Whipbirds. Fire-disease interactions likely exacerbate these effects</p>
Vegetation clearing	<ul style="list-style-type: none"> <li>• Status: historical &amp; current</li> <li>• Confidence: inferred</li> <li>• Consequence: low</li> <li>• Trend: static</li> <li>• Extent: across the entire range</li> </ul>	<p>Historical land clearance for agriculture is the main cause of habitat loss on Kangaroo Island. Following the devastating effects of the 2019/2020 bushfires around the island, there is pressure to increase fire management activities which may include the removal of plant biomass (see <i>Inappropriate fire management</i>). Further removal of habitat (e.g. roadside vegetation) without consideration of the impacts on threatened species could result in significant habitat loss, fragmentation, and degradation, causing further decline of Kangaroo Island birds. Fire-fragmentation interactions likely exacerbate these effects.</p>
Invasive weeds	<ul style="list-style-type: none"> <li>• Status: current &amp; future</li> <li>• Confidence: known</li> <li>• Consequence: low</li> <li>• Trend: static</li> <li>• Extent: across part of its range</li> </ul>	<p>Invasive weeds are a minor threat as they can change the availability of suitable habitat, reducing the quality of habitat (French &amp; Zubovic 1997).</p> <p>Fast-growing Tasmanian Blue Gum (<i>Eucalyptus globulus</i>) is an emerging threat on Kangaroo Island. Seedlings spread from nearby plantations that have emerged after the 2019/2020 bushfires may alter the structure and composition of native vegetation used by fauna species as they mature. Control programs are currently underway (Government of South Australia 2021). Fire-competition interactions may exacerbate these effects by accelerating weed invasion.</p> <p>Additionally, Eight Weeds of National Significance and 27 Declared Weeds of South Australia are found on Kangaroo Island, including several fire-adapted weeds (Invasive Plants and Animals Committee 2016; Kangaroo Island Landscape Board 2020; KI NRM Board 2020). Bridal Creeper (<i>Asparagus asparagoides</i>), Bridal Veil (<i>Asparagus declinatus</i>), Perennial Veldt Grass (<i>Ehrharta calycina</i>) and Phalaris (<i>Phalaris aquatica</i>) have been identified as weed species posing the greatest immediate threat to native flora on Kangaroo Island (Taylor 2003). With the ability to invade coastal vegetation, heath land, woodland, mallee shrubland, grassland, sclerophyll forest, riparian vegetation, rocky outcrop vegetation and roadside vegetation, these weed species have the potential to directly impact on the growth, recruitment and survival of flora (CRC Weed Management 2003; Taylor 2003; Kangaroo Island Natural Resources Centre 2019). They may also cause secondary impacts which include the alteration of hydrological cycles, fire regimes and micro-climate conditions, reducing the quality of habitat for birds (CRC Weed Management 2003; Taylor 2003; Kangaroo</p>

Threat	Status and severity <sup>a</sup>	Evidence
		Island Natural Resources Centre 2019). Seeds are often spread by birds.

Status—identify the temporal nature of the threat;

Confidence—identify the extent to which we have confidence about the impact of the threat on the species;

Consequence—identify the severity of the threat;

Trend—identify the extent to which it will continue to operate on the species;

Extent—identify its spatial content in terms of the range of the species.

Each threat has been described in Table 1 in terms of the extent that it is operating on the species. The risk matrix (Table 3) provides a visual depiction of the level of risk being imposed by a threat and supports the prioritisation of subsequent management and conservation actions. In preparing a risk matrix, several factors have been taken into consideration, they are: the life stage they affect; the duration of the impact; and the efficacy of current management regimes, assuming that management will continue to be applied appropriately (Table 2). The risk matrix (Table 3) and ranking of threats has been developed in consultation with experts, community consultation and by using available literature.

**Table 2 Risk prioritisation**

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
<b>Almost certain</b>	Low risk	Moderate risk	Very high risk	Very high risk	Very high risk
<b>Likely</b>	Low risk	Moderate risk	High risk	Very high risk	Very high risk
<b>Possible</b>	Low risk	Moderate risk	High risk	Very high risk	Very high risk
<b>Unlikely</b>	Low risk	Low risk	Moderate risk	High risk	Very high risk
<b>Unknown</b>	Low risk	Low risk	Moderate risk	High risk	Very high risk

**Categories for likelihood are defined as follows:**

Almost certain – expected to occur every year

Likely – expected to occur at least once every five years

Possible – might occur at some time

Unlikely – such events are known to have occurred on a worldwide basis but only a few times

Rare or Unknown – may occur only in exceptional circumstances; OR it is currently unknown how often the incident will occur

**Categories for consequences are defined as follows:**

Not significant – no long-term effect on individuals or populations

Minor – individuals are adversely affected but no effect at population level

Moderate – population recovery stalls or reduces

Major – population decreases

Catastrophic – population extinction

**Table 3 Kangaroo Island Western Whipbird risk matrix**

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
Almost certain		<ul style="list-style-type: none"> <li>Predation by cats</li> </ul>			
Likely		<ul style="list-style-type: none"> <li>Habitat degradation caused by pigs</li> </ul>		<ul style="list-style-type: none"> <li>Increase in frequent, large extent, high intensity wildfires</li> <li>Increased likelihood of extreme events (i.e., heatwave and drought)</li> </ul>	
Possible	<ul style="list-style-type: none"> <li>Invasive weeds</li> </ul>	<ul style="list-style-type: none"> <li><i>P. cinnamomi</i> induced diebacks</li> <li>Vegetation clearing</li> </ul>		<ul style="list-style-type: none"> <li>Inappropriate fire management</li> </ul>	
Unlikely					
Unknown					

Priority actions have then been developed to manage the threat particularly where the risk was deemed to be ‘very high’ or ‘high’. For those threats with an unknown or low risk outcome it may be more appropriate to identify further research or maintain a watching brief.

## Conservation and recovery actions

### Primary conservation outcome

- Restore population size of Kangaroo Island Western Whipbirds to the estimated pre-2020 levels.

### Increase in frequent, large extent, high intensity wildfires

- Consider impacts of predation on the subspecies and implement control programs if populations are likely to be significantly impacted by predation after fire.
- Provide fire and land managers with maps of known locations of the species, and specific advice to support decision making in wildfire prevention, preparation, response and recovery. Develop a landscape-scale fire management strategy which minimises the risk of extensive wildfire, whilst considering the ecological needs of the subspecies. For example:
  - Fire management activities to protect key sites and those identified as most at risk from wildfires should be prioritised.
  - Protect unburnt areas within or adjacent to recently burnt ground that may provide refuge, from planned back burns, clearing and other disturbance until the burnt areas have recovered sufficiently to support the subspecies once again.

- Ensure fire suppression strategies also consider impacts on the population or its habitat.
- Apply adaptive management to inform future fire management plans and actions.
- Consider impacts of predation on the subspecies and implement control programs if populations are likely to be significantly impacted by predation after fire.

### **Inappropriate fire management**

- Develop a landscape-scale fire management strategy with local authorities which considers the ecological needs of the subspecies.
- Minimise or avoid burning unburnt areas within or adjacent to recently burnt ground that may provide refuge, from planned and back burns, clearing and other disturbance until the burnt areas have recovered sufficiently to support the subspecies once again.

### **Stakeholder engagement/community engagement**

- Coordinate conservation efforts with other Kangaroo Island species affected by the 2019/2020 bushfires. Consider the possibility for a regional plan which includes all fire affected species on Kangaroo Island.
- Liaise with landholders to encourage their involvement in conservation.
- Continue to raise awareness with the public on the impact of weeds and *P. cinnamomi* have on native vegetation and ecosystems, and how they can help manage the spread of these (e.g., promote the Weed Control App produced by Biosecurity SA, and the Bushwalking guidelines to prevent *P. cinnamomi* (Natural Resources Kangaroo Island 2017)).
- Encourage the community to be involved with research and citizen science (e.g., submit sighting of birds and report signs of *P. cinnamomi* infection).

### **Survey and monitoring priorities**

- Conduct surveys around the island to determine the distribution and abundance of the subspecies, with a particular focus on the fire affected areas, and the rate of recovery of both habitat and birds within these areas.
- Coordinate surveys and monitoring programs with other bushfire affected species on the island.
- Monitor important parameters such as population size, breeding success, number of mature individuals and the effectiveness of management strategies.
- Monitor for any impacts of any extreme climatic events on the Kangaroo Island Western Whipbird.

### **Information and research priorities**

- Improve knowledge of the impacts of wildfire on the subspecies including their ecology, behaviour and habitat use, and their ability to re-colonise recently burnt areas. This should be used to inform future management.
- Accurately describe habitat critical to the survival for the subspecies.

- Use modelling techniques to investigate the potential impact of climate change, and determine sensitivity and resilience to climate change and extreme climate events, on the subspecies and their habitat critical for survival. For example, examining the likely reduction in inter-fire intervals and comparing that with the recovery times of whipbird populations, would be valuable.
- Identify weed species that negatively impact the subspecies and its habitat.
- Determine genetic diversity and population genetics of the Kangaroo Island Western Whipbird, especially smaller populations.
- Undertake further research to assess the impact of feral and introduced species (i.e., predation, disease and habitat alteration) and the effectiveness of the current control programs and incorporate new knowledge into management interventions.
- Trial radio-tracking of the subspecies to better understand how they move throughout the burnt landscape to access food, shelter and breeding resources and to identify important areas for protection and management. This type of information will provide valuable home range estimates to help develop a tailored monitoring program, allowing for more accurate population estimates on the island.

### **Recovery plan decision**

The Conservation Advice is considered to provide sufficient guidance on the recovery of the species and a Recovery Plan is unlikely to lead to substantial additional conservation benefits at this time.

Consequently, the Threatened Species Scientific Committee has not recommended that a recovery plan be required.

### **Links to relevant implementation documents**

#### **Threat Abatement Plans:**

- [Threat abatement plan for predation by feral cats](#) (Commonwealth of Australia 2015b).
- [Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs \(\*Sus scrofa\*\)](#) (Commonwealth of Australia 2017b).
- [Threat abatement plan for disease in natural ecosystems caused by \*Phytophthora cinnamomi\*](#) (Commonwealth of Australia 2018b).

#### **Other relevant implementation documents:**

- [Action Plan for the eradication of Feral Pigs from Kangaroo Island](#) (Government of South Australia 2020b).
- [Australian Weeds Strategy 2017-2027](#) (Invasive Plants and Animals Committee 2016).
- [Bushfire recovery where it matters most: Impacts and actions in Key Biodiversity Areas affected by the 2019/20 Bushfire Crisis](#) (BirdLife Australia 2020)
- [Feral cat eradication on Kangaroo Island 2015-2030 PROSPECTUS](#) (Kangaroo Island Landscape Board 2015).
- [Kangaroo Island Biosecurity Strategy 2017-2027](#) (Triggs 2017).

- [Kangaroo Island Feral Cat Eradication Program](#) (Kangaroo Island Landscape Board 2020).
- [Kangaroo Island Wildlife and Habitat Recovery Planning Workshop Summary Report DRAFT](#) (National Environmental Science Program 2020)

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# THREATENED SPECIES SCIENTIFIC COMMITTEE

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

The Threatened Species Scientific Committee finalised this assessment on 9 September 2021.

## Attachment A: Listing Assessment for *Psophodes nigrogularis lashmari*

### Reason for assessment

This assessment follows prioritisation of a nomination from the TSSC.

### Assessment of eligibility for listing

This assessment uses the criteria set out in the [EPBC Regulations](#). The thresholds used correspond with those in the [IUCN Red List criteria](#) except where noted in criterion 4, sub-criterion D2. The IUCN criteria are used by Australian jurisdictions to achieve consistent listing assessments through the Common Assessment Method (CAM).

### Key assessment parameters

Table 4 includes the key assessment parameters used in the assessment of eligibility for listing against the criteria.

**Table 4 Key assessment parameters**

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Number of mature individuals	1,000	750	1,250	<p>Based on the following record/assumptions:</p> <ul style="list-style-type: none"> <li>Densities recorded across their range (Higgins &amp; Peter 2002);</li> <li>Area of vegetation types likely to have been occupied before the 2019/2020 bushfires;</li> <li>An allowance for patchiness within the vegetation before the fire (10% suitable habitat occupied; DC Paton unpublished, cited in Paton et al. 2021); and</li> <li>Maps of fire severity in 2019/2020 within the pre fire range; and initial assumptions about mortality at different fire severity classes.</li> </ul> <p>Based on these assumptions, 51% of the population perished in the fire with a spread of estimates from 29% to 53% depending on the fire-related mortality assumed under different scenarios (Paton et al 2021). Legge et al. (2021) estimated that the subspecies has experienced an overall decline of 39% from pre-fire levels, but that the decline could be as large as 46 % (bound of 80% confidence limits). After 10 years, the estimate for the overall population decline relative to the pre-fire population is predicted to be 33%, but potentially as much as 58%</p>

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
				(bound of 80% confidence limit) (Legge et al. 2021).
<b>Trend</b>	Declined			Paton et al. (2021)
<b>Generation time (years)</b>	3.0	2.3	3.8	Bird et al. (2020)
<b>Extent of occurrence</b>	5,300 km <sup>2</sup>	5,300 km <sup>2</sup>	6,400 km <sup>2</sup>	Based on all records since 1990 (Paton et al. 2021)
<b>Trend</b>	Stable			Paton et al. (2021)
<b>Area of Occupancy</b>	540 km <sup>2</sup>	100 km <sup>2</sup>	1,010 km <sup>2</sup>	The estimated AOO is the area of habitat thought likely to have been supporting birds immediately after the 2019/2020 fire, the minimum is the number 2x2 km squares encompassing sites at which birds have been documented since 1990 that were unburnt, and the maximum is the area of suitable habitat before the fires. The 2019/2020 fire burnt at least half of all 1x1 km squares from which birds have been recorded since 1990 (Paton et al 2021) and 57% of suitable habitat (K Hermann unpublished data cited in Paton et al. 2021).
<b>Trend</b>	Contracting			Paton et al. (2021)
<b>Number of subpopulations</b>	1	1	1	Paton et al. (2021)
<b>Trend</b>	Stable			Paton et al. (2021)
<b>Basis of assessment of subpopulation number</b>	The population on the island is assumed to be panmictic.			
<b>No. locations</b>	10	5	>10	TSSC (2021, pers comm 15 Sept) Paton et al. (2021)
<b>Trend</b>	Not calculated			Paton et al. (2021)
<b>Basis of assessment of location number</b>	<p>An estimate of 10 locations was used in this assessment. Kangaroo Island Western Whipbirds are estimated to occur between 5-10 locations (TSSC 2021, pers comm 15 Sept) but could be &gt;10 (Paton et al. 2021) locations, based on the most plausible serious threat – fire (IUCN Standards and Petitions Committee 2019). The number of locations was determined using the 2019/2020 fire extent on Kangaroo Island, which heavily impacted the western side of Kangaroo Island, though unburnt habitat fragments remained within the fire-affected area.</p> <p>The risk of a fire extirpating all individuals on the eastern side of the island was considered. Given there are lower fuel loads and less contiguous vegetation cover in east, as well as greater access to fire-fighting resources, the risk of fire impacting this entire area is reduced. The narrow isthmus between Dudley Peninsula and American River may also assist in fire suppression efforts.</p> <p>Birds are highly mobile and are able move away from fire and persist in habitat refuge sites, recolonising burnt areas once they become suitable again. Therefore, given the widespread distribution of the subspecies (Map 1), the nonuniform nature of fire severity, and the subspecies’ ability to persist in refuge sites, it is unlikely that a single fire event would extirpate all individuals within one generation (3.0 years) across the entire island (Paton et al. 2021; TSSC 2021, pers comm 15 Sept). The geographic position of unburnt locations will</p>			

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
	vary between fires, but there are always likely to be 5-10 (TSSC 2021, pers comm 15 Sept) or >10 (Paton et al. 2021) locations occurring at least within known sites at: Flinders Chase National Park, Cape Gantheaume Conservation Park and the southern half of Dudley Peninsula between Dudley and Cape Hart Conservation Parks, as well as at sporadic localities in the north of the island (e.g. Kangaroo gully, Middle River gorge, Ballast Head) (Paton et al. 2021).			
<b>Fragmentation</b>	Not severely fragmented.			
<b>Fluctuations</b>	Not subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals.			

### Criterion 1 Population size reduction

Reduction in total numbers (measured over the longer of 10 years or 3 generations) based on any of A1 to A4				
		Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
<b>A1</b>		≥ 90%	≥ 70%	≥ 50%
<b>A2, A3, A4</b>		≥ 80%	≥ 50%	≥ 30%
<b>A1</b>	Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.	Based on any of the following		(a) direct observation [except A3]
<b>A2</b>	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.			(b) an index of abundance appropriate to the taxon
<b>A3</b>	Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]			(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
<b>A4</b>	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.			(d) actual or potential levels of exploitation
				(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

### Criterion 1 evidence

#### Eligible under Criterion 1 A2c for listing as Endangered

Kangaroo Island Western Whipbirds are endemic to Kangaroo Island, inhabiting the major blocks of mallee in Flinders Chase National Park, Cape Gantheaume Conservation Park and the southern half of Dudley Peninsula between Dudley and Cape Hart Conservation Parks (Baxter 1989; Schodde & Mason 1991; Paton et al. 2021). Kangaroo Island was heavily impacted during the 2019/2020 bushfires, where around half of the island was burnt (DEW 2020; Todd & Maurer 2020). Paton et al. (2021) estimated that 51% of the population died in the fire with a spread of estimates from 29% to 53%, depending on the fire-related mortality assumed under different scenarios.

Legge et al. (2021) estimated that the subspecies has experienced an overall decline of 39% from pre-fire levels, but that the decline could be as large as 46% (bound of 80% confidence limits). After 10 years, the estimate for the overall population decline relative to the pre-fire population is predicted to be 33%, but potentially as much as 58% (bound of 80% confidence limit) (Legge et al. 2021). For comparison, experts also estimated the population change over time in the absence of fire; by 10 years, the overall population of Kangaroo Island Western Whipbird after the fire was estimated to be 30% lower than it would have been, had the 2019/2020 fire not occurred (Legge et al. 2021).

The EOO for the subspecies is stable, however the AOO has contracted (Paton et al. 2021). The average reporting rate (the proportion of lists on which a species occurs) for the period before the fire was 1% (1977–1981, 1998–2018; BirdLife Australia 2020) and 4% in 465 lists collected from 375 sites in 2012–2014 (DC Paton unpublished cited in Paton et al. 2021). Two months after the fire, in a survey targeted towards habitats likely to be suitable for whipbirds, it was 17% in 145 unburnt fragments within the burnt area and 9% in 35 plots outside it (Boulton et al. 2020). Surveys conducted since the 2019/2020 bushfires recorded a reporting rate of 8% in 336 burnt transects and 43% in unburnt transects (Boulton & Gates 2021). The EOO for the subspecies is stable, however the AOO for the subspecies has contracted (Paton et al. 2021).

The Committee considers that the subspecies has undergone a severe reduction in numbers over ten years, which is equivalent to at least 51% and the cause has not ceased. This is because the threat of frequent, large extent, high intensity wildfires is projected to increase. Therefore, the species has met the relevant elements of Criterion 1 to make it eligible for listing as **Endangered**.

**Criterion 2 Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy**

	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
<b>B1.</b> Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
<b>B2.</b> Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
<b>AND at least 2 of the following 3 conditions:</b>			
(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			

**Criterion 2 evidence**

**Eligible under Criterion 2 B1ab(ii, iii)+2ab(ii, iii) for listing as Vulnerable**

The EOO is estimated at 5,500 km<sup>2</sup> (range 5,500–6,400 km<sup>2</sup>) and the AOO estimated at 540 km<sup>2</sup> (100–1,010 km<sup>2</sup>) (Paton et al. 2021). The EOO for the subspecies is thought to be stable, however the AOO for the subspecies has contracted (Paton et al. 2021). A continuing decline in the area, extent and quality of habitat and AOO is likely as the threat of frequent, large extent, high intensity wildfires is projected to increase (Marshall et al. 2021; Paton et al. 2021). The subspecies is estimated to occur at 10 locations (range 5 to >10; Table 4). The subspecies is not severely fragmented or subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals.

The Committee considers that the species' EOO and AOO is limited, and the number of locations is limited, and a continuing decline is projected for the area of occupancy due to the ongoing threat frequent, large extent, high intensity wildfires. Therefore, the species has met the relevant elements of Criterion 2 to make it eligible for listing as **Vulnerable**.

### Criterion 3 Population size and decline

	Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
<b>C1.</b> An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	<b>Very high rate</b> 25% in 3 years or 1 generation (whichever is longer)	<b>High rate</b> 20% in 5 years or 2 generation (whichever is longer)	<b>Substantial rate</b> 10% in 10 years or 3 generations (whichever is longer)
<b>C2.</b> 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	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

### Criterion 3 evidence

#### Not eligible

The subspecies consists of a single population (Paton et al. 2021). The total population size is now estimated to be 1,000 mature individuals (range 750–1250; Paton et al. 2021). The population appears to have declined by 29 to 53 % due to the 2019/2020 fires on Kangaroo Island, but is unlikely to be experiencing ongoing, continuous decline. The subspecies'

geographic distribution is not precarious for its survival, and it is not subject to extreme fluctuations in the number of mature individuals (Paton et al. 2021).

Although the number of mature individuals of the subspecies is low, there is no continuing decline, therefore the subspecies does not meet the required elements to be listed as threatened under this criterion.

#### Criterion 4 Number of mature individuals

	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
D. Number of mature individuals	< 50	< 250	< 1,000
D2. <sup>1</sup> Only applies to the Vulnerable 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: area of occupancy < 20 km <sup>2</sup> or number of locations ≤ 5

<sup>1</sup> The IUCN Red List Criterion D allows for species to be listed as Vulnerable under Criterion D2. The corresponding Criterion 4 in the EPBC Regulations does not currently include the provision for listing a species under D2. As such, a species cannot currently be listed under the EPBC Act under Criterion D2 only. However, assessments may include information relevant to D2. This information will not be considered by the Committee in making its recommendation of the species' eligibility for listing under the EPBC Act, but may assist other jurisdictions to adopt the assessment outcome under the [common assessment method](#).

#### Criterion 4 evidence

##### Eligible under Criterion 4 D for listing as Vulnerable

The total population size of Kangaroo Island Western Whipbirds is estimated to be 1,000 mature individuals (range 750–1,250; Paton et al. 2021).

The Committee considers that the total number of mature individuals is 1,000 (range 750–1,250) which is low. Therefore, the species has met the relevant elements of Criterion 4 to make it eligible for listing as **Vulnerable**.

#### Criterion 5 Quantitative analysis

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

## **Criterion 5 evidence**

### **Insufficient data to determine eligibility**

Population viability analysis has not been undertaken. Therefore, there is insufficient information to determine the eligibility of the species for listing in any category under this criterion.

### **Adequacy of survey**

The survey effort has been considered adequate and there is sufficient scientific evidence to support the assessment.

### **Public consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for 34 business days between 14 May and 2 July 2021.

## **Listing and Recovery Plan Recommendations**

The Threatened Species Scientific Committee recommends:

- (i) that the list referred to in section 178 of the EPBC Act be amended by **including** *Psophodes nigrogularis lashmari* in the list in the Endangered category.
- (ii) that there not be a recovery plan for this species.

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### Version history table

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