



Consultation Document on Listing Eligibility and Conservation Actions

Stipiturus malachurus halmaturinus (Kangaroo Island Southern Emu-wren)

You are invited to provide your views and supporting reasons related to:

- 1) the eligibility of *Stipiturus malachurus halmaturinus* (Kangaroo Island Southern Emu-wren) for inclusion on the EPBC Act threatened species list in the Endangered category; and
- 2) the necessary conservation actions for the above species.

Evidence provided by experts, stakeholders and the general public are welcome. Responses can be provided by any interested person.

Anyone may nominate a native species, ecological community or threatening process for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or for a transfer of an item already on the list to a new listing category. The Threatened Species Scientific Committee (the Committee) undertakes the assessment of species to determine eligibility for inclusion in the list of threatened species and provides its recommendation to the Australian Government Minister for the Environment.

Responses are to be provided in writing either by email to:
species.consultation@environment.gov.au

or by mail to:

The Director
Migratory Species Section
Biodiversity Conservation Division
Department of Agriculture, Water and the Environment
PO Box 858
Canberra ACT 2601

Responses are required to be submitted by 2 July 2021.

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General background information about listing threatened species

The Australian Government helps protect species at risk of extinction by listing them as threatened under Part 13 of the EPBC Act. Once listed under the EPBC Act, the species becomes a Matter of National Environmental Significance (MNES) and must be protected from significant impacts through the assessment and approval provisions of the EPBC Act. More information about threatened species is available on the department's website at: <http://www.environment.gov.au/biodiversity/threatened/index.html>.

Public nominations to list threatened species under the EPBC Act are received annually by the department. In order to determine if a species is eligible for listing as threatened under the EPBC Act, the Threatened Species Scientific Committee (the Committee) undertakes a rigorous scientific assessment of its status to determine if the species is eligible for listing against a set of criteria. These criteria are available on the Department's website at: <http://www.environment.gov.au/system/files/pages/d72dfd1a-f0d8-4699-8d43-5d95bbb02428/files/tssc-guidelines-assessing-species-2018.pdf>.

As part of the assessment process, the Committee consults with the public and stakeholders to obtain specific details about the species, as well as advice on what conservation actions might be appropriate. Information provided through the consultation process is considered by the Committee in its assessment. The Committee provides its advice on the assessment (together with comments received) to the Minister regarding the eligibility of the species for listing under a particular category and what conservation actions might be appropriate. The Minister decides to add, or not to add, the species to the list of threatened species under the EPBC Act. More detailed information about the listing process is at: <http://www.environment.gov.au/biodiversity/threatened/nominations.html>.

To promote the recovery of listed threatened species and ecological communities, conservation advices and where required, recovery plans are made or adopted in accordance with Part 13 of the EPBC Act. Conservation advices provide guidance at the time of listing on known threats and priority recovery actions that can be undertaken at a local and regional level. Recovery plans describe key threats and identify specific recovery actions that can be undertaken to enable recovery activities to occur within a planned and logical national framework. Information about recovery plans is available on the department's website at: <http://www.environment.gov.au/biodiversity/threatened/recovery.html>.

Privacy notice

The Department will collect, use, store and disclose the personal information you provide in a manner consistent with the Department's obligations under the Privacy Act 1988 (Cwth) and the Department's Privacy Policy.

Any personal information that you provide within, or in addition to, your comments in the threatened species assessment process may be used by the Department for the purposes of its functions relating to threatened species assessments, including contacting you if we have any questions about your comments in the future.

Further, the Commonwealth, State and Territory governments have agreed to share threatened species assessment documentation (including comments) to ensure that all States and Territories have access to the same documentation when making a decision on the status of a potentially threatened species. This is also known as the '[common assessment method](#)'. As a result, any personal information that you have provided in connection with your comments may be shared between Commonwealth, State or Territory government entities to assist with their assessment processes.

The Department's Privacy Policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint. A copy of the Department's Privacy Policy is available at: <http://environment.gov.au/privacy-policy> .

Information about this consultation process

Responses to this consultation can be provided electronically or in hard copy to the contact addresses provided on Page 1. All responses received will be provided in full to the Committee and then to the Australian Government Minister for the Environment.

In providing comments, please provide references to published data where possible. Should the Committee use the information you provide in formulating its advice, the information will be attributed to you and referenced as a 'personal communication' unless you provide references or otherwise attribute this information (please specify if your organisation requires that this information is attributed to your organisation instead of yourself). The final advice by the Committee will be published on the department's website following the listing decision by the Minister.

Information provided through consultation may be subject to freedom of information legislation and court processes. It is also important to note that under the EPBC Act, the deliberations and recommendations of the Committee are confidential until the Minister has made a final decision on the nomination, unless otherwise determined by the Minister.

Consultation document for *Stipiturus malachurus halmaturinus* (Kangaroo Island Southern Emu-wren)

Conservation status

Stipiturus malachurus halmaturinus is being assessed by the Threatened Species Scientific Committee to be eligible for listing under the EPBC Act. The Committee's preliminary assessment is at Attachment A. The Committee's preliminary assessment of the subspecies' eligibility against each of the listing criteria is:

- Criterion 1: A2c: Endangered
- Criterion 2: Not eligible
- Criterion 3: Not eligible
- Criterion 4: Not eligible
- Criterion 5: Not eligible

The main factor that appears to make the subspecies eligible for listing in the Endangered category is the severe (>50 percent) reduction in population size in the last 10 years (one generation 2.1 years) (Bird et al. 2020; Paton et al. 2021). This major reduction in population was caused by the 2019/2020 wildfires on Kangaroo Island. The subspecies' extent of occurrence (E00) is estimated to be stable (4,550 km²), however the area of occupancy (A00) has contracted to 430 km². There are estimated to be 5,000 mature individuals in the wild (low reliability) with a declined trend (high reliability), however the 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 Southern Emu-wren was affected by these fires: 57 percent was burnt in high to very high severity fire, and a further 11 percent was burnt in low to moderate severity fire (NESP TSR Hub 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 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 56 percent from pre-fire levels, but that the decline could be as large as 67 percent (bound of 80 percent confidence limits) (NESP TSR Hub 2021). After three generations, the estimate for the overall population decline relative to the pre-fire population is predicted to be 30 percent, but potentially as much as 61 percent (bound of 80 percent confidence limit) (NESP TSR Hub 2021). For comparison, experts also estimated the population change over time in the absence of fire; by three generations, the overall population of Kangaroo Island Southern Emu-wren after the fire was estimated to be 25 percent lower than it would have been, had the 2019/2020 fire not occurred (NESP TSR Hub 2021). Further analysis of the severity and nature of the impacts of the fires on Kangaroo Island Southern Emu-wren is

underway by the Threatened Species Recovery Hub of the National Environmental Science Program and other organisations. The Threatened Species Scientific Committee will update the description of the fire impacts in this Conservation Advice to incorporate the latest evidence, prior to providing the assessment of this subspecies to the Minister for the Environment.

Subspecies 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 *Stipiturus malachurus halmaturinus* (Parsons 1920).

The subspecies is one of eight recognised. Subspecies from the Eyre Peninsula (*S. m. parimeda*), Mount Lofty Ranges and Fleurieu Peninsula (*S. m. intermedius*) are Endangered. The subspecies on Dirk Hartog Island (*S. m. hartogi*) is Vulnerable and the remaining subspecies (*S. m. malachurus*, *S. m. littleri*, *S. m. polionotum*, *S. m. westernensis*), either have not been assessed or are considered Least Concern.

Description

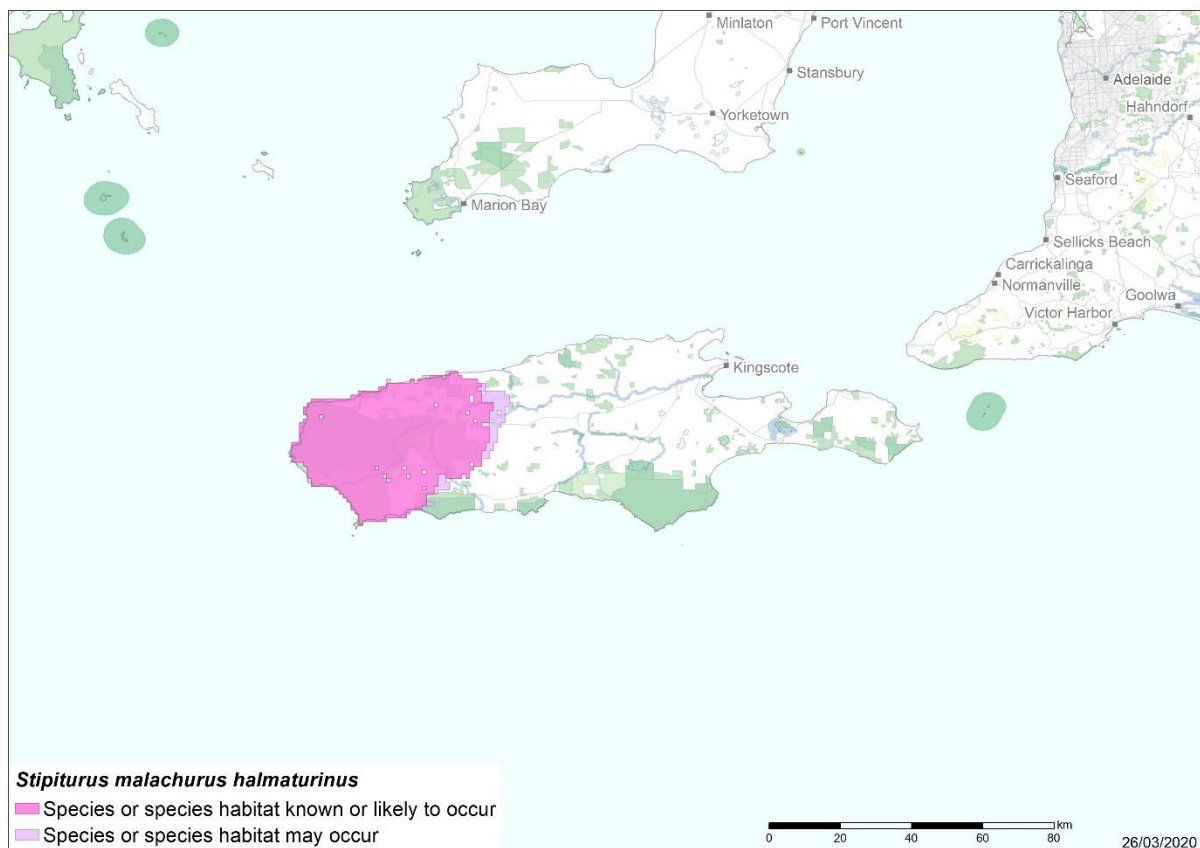
The Kangaroo Island Southern Emu-wren is one of Australia's smallest birds, yet is the largest of the Emu-wrens, with a wingspan of 9 to 19 cm and a weight of 5 to 9 g (Higgins et al. 2001). Body length is around 6 cm and tail length around 10 cm, with a total length of around 16 cm. Adult birds are olive grey to olive brown streaked black above, while underparts are tawny brown. Male birds have a distinctive blue chin and throat, which is absent in females (Higgins et al. 2001). The Emu-wren's tails are filamentous and comprised of six emu-like feathers. Plumage varies with habitat and in cooler, wetter areas, individuals are darker, with thicker streaks.

Distribution

The Kangaroo Island Southern Emu-wren is endemic to Kangaroo Island, South Australia. Recent modelling suggests that the western side of the island is key habitat for the subspecies (Map 1). Kangaroo Island was affected heavily during the 2019/2020 bushfires where around half of the island, mostly the western side, was burnt (Todd & Maurer 2020). The extent of occurrence is based on all records since 1990. The estimated area of occupancy is the area of habitat thought likely to be supporting birds immediately after the 2019/2020 fire.

There is insufficient information available to describe the subspecies' current distribution on the island in detail. Further surveys and monitoring programs are required to assess the area of occupancy, population size and trend of the subspecies post 2019/2020 bushfires.

Map 1 Modelled distribution of the Kangaroo Island Southern Emu-wren



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, Kaurna and Narungga, and all have cultural stories associated with the Island. 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

Southern Emu-wrens typically occupy low, dense, intact heath (Higgins et al. 2001). On Kangaroo Island specifically, the subspecies inhabits dry hills supporting low open Mallee with a sclerophyllous understorey of paperbark, banksia, casuarina and grasstrees, sometimes in eucalypt forest in river valleys and on alluvial plains (Higgins et al. 2001). They particularly favour the cliff-top heaths but are also widespread on the ironstone plateau of Flinders Chase (Higgins et al. 2001).

The subspecies is almost entirely insectivorous, rarely consuming seeds or vegetable material (Higgins et al. 2001). Birds have been observed foraging on or near the ground, in and below dense vegetation including low shrubs and grasses, among litter and low vegetation on the ground and in the foliage of shrubs and grasses (Higgins et al. 2001).

Kangaroo Island Southern Emu-wrens build domed nests made from grass, sedge or rushes in well concealed locations in dense shrubs, on or near the ground (Higgins et al. 2001). Nests are often lined with fine roots, fur, seeds and feathers (Higgins et al. 2001). Females typically lay two to four oval shaped white or cream coloured eggs per clutch, moderately speckled with fine reddish-brown spots and flecks (Higgins et al. 2001).

Habitat critical to the survival

Habitat critical to the survival of the Kangaroo Island Southern Emu-wren, is likely linked to its breeding and feeding biology. The Kangaroo Island Southern Emu-wren is a sedentary, dispersal-limited subspecies that occupies a range of habitats on Kangaroo Island that can be considered critical for its survival. The subspecies is common where there is intact heath (Paton et al. 2021). Habitat critical to the survival includes all known Kangaroo Island Southern Emu-wren sites, specific habitat that may be potential habitat, and the surrounding matrix of these areas which provide corridors for dispersal between suitable habitat patches. Areas that are not currently occupied or used 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.

Additionally, the whole of Kangaroo Island has been identified as a Key Biodiversity Area (KBA) (KBA; BirdLife International 2020), guided by the KBA Standard (IUCN 2016). Although this subspecies has not been identified as a KBA trigger species, conservation actions implemented would likely benefit already threatened species and other species with similar ecological needs which were also impacted 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 main threat faced by the Kangaroo Island Southern Emu-wren is wildfire as all individuals of the subspecies and all habitat critical to the survival are potentially threatened. The known range of the subspecies occurs in a fire prone area, that has been heavily impacted by wildfires in the past. The 2019/2020 fires were unprecedented in their scale and intensity. Climate change is likely to exacerbate the extent of impact that extreme events (e.g., severe drought and more frequent and intense wildfire) may have in the future.

Additional threats to the subspecies include introduced predators, habitat degradation and demographic and genetic stochasticity.

Table 1 Threats impacting Kangaroo Island Southern Emu-wren

Threat	Status and severity ^a	Evidence
Fire		
Increase in frequency and/or intensity of wildfires	<ul style="list-style-type: none"> • Status: historical, current & future • Confidence: known • Consequence: severe • Trend: increasing • Extent: across the entire range 	Fires that are too frequent, too infrequent but too hot, or too extensive can have negative effects on birds (Woinarski & Recher 1997). The most significant impacts occur after fire through loss of habitat and food, increased predation, reduced fecundity or local extinction (Brooker & Rowley 1991; Baker 1997; Whelan et al. 2002).

Threat	Status and severity ^a	Evidence
		<p>Wildfire is the main threat to the subspecies as it causes direct catastrophic loss of habitat and individuals. The habitat preferred by Kangaroo Island Southern Emu-wrens (low, dense vegetation) are highly susceptible to fire. In the 2019/2020 wildfire events, it was estimated that 51 percent of the island was burnt (Todd & Maurer 2020).</p> <p>Initial fire mapping has indicated that many bird species have lost major proportions of their habitat in these fire-affected areas (Boulton et al. 2020). Detailed survey and monitoring programs should be conducted in order to assess the impact of the fires on Kangaroo Island Southern Emu-wren and their habitat.</p>
Climate change		
Increased likelihood of extreme events (i.e., wildfire, heatwave, and drought)	<ul style="list-style-type: none"> • Status: historical, current & future • Confidence: known • Consequence: severe • Trend: increasing • Extent: across the entire range 	<p>Average temperatures in Australia have increased by over 1 degree Celsius (BOM & CSIRO 2018), and global temperatures are expected to rise another 1.5 to 2 degrees Celsius by 2050 (IPCC 2018). More frequent and extreme heatwaves are also expected across Australia. Furthermore, rainfall patterns have also been affected, with record low rainfall recorded across parts of South Australia (BOM & CSIRO 2018).</p> <p>Annual rainfall on Kangaroo Island is projected to decline by 7.5 to 8.9 percent by 2050, and 7.9 to 12.5 percent by 2070. Maximum temperature is also projected to increase by 1.1 to 1.3 degrees Celsius and 1.2 to 1.9 degrees Celsius 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 wildfire, drought, flood and storm (BOM & CSIRO 2010, 2018; Di Virgilio et al. 2019) that may have a detrimental effect on Kangaroo Island Southern Emu-wrens and their habitat.</p>
Habitat loss, degradation and modifications		
Invasive weeds	<ul style="list-style-type: none"> • Status: current • Confidence: known • Consequence: moderate • Trend: static • Extent: across the entire range 	<p>Invasive weeds could degrade the floristic and structural integrity of habitat, and result in changing the availability of resources. Numerous weed species have been declared on Kangaroo Island (Government of South Australia 2020).</p> <p>Additionally, due to the flammable nature of some weeds (e.g., gorse <i>Ulex europaeus</i>), the risk and severity of wildfire is also increased.</p>
<i>Phytophthora cinnamomi</i> induced diebacks	<ul style="list-style-type: none"> • Status: future • Confidence: inferred • Consequence: moderate • Trend: unknown 	<p><i>P. cinnamomi</i> is a plant pathogen that infects a wide range of native plants, alters the structural and floristic characteristics of the vegetation. Kangaroo Island has been identified as being vulnerable to <i>Phytophthora</i> (Doyle et al. 2006) due to the</p>

Threat	Status and severity ^a	Evidence
	<ul style="list-style-type: none"> Extent: across part of its range 	<p>ideal climatic conditions (warm and wet winter, dry summer; Burgess et al. 2016). The disease is potentially threatening due to its capacity to kill key habitat species, reducing habitat quality for Kangaroo Island Southern Emu-wrens (Hardham & Blackman 2018).</p>
Invasive species (including threats from grazing, trampling, predation)		
Predation by cats	<ul style="list-style-type: none"> Status: historical, current & future Confidence: known Consequence: moderate Trend: static Extent: across the entire range 	<p>Feral/introduced species that pose a threat to Southern Emu-wrens on Kangaroo Island include feral cats (<i>Felis catus</i>), which are known to prey on this taxon (Woinarski et al 2017). Kangaroo Island has a higher average density of cats than that on the mainland (Taggart et al. 2019; Hohnen et al. 2020) with a total of around 1600 individuals on the island (Hohnen et al. 2020).</p> <p>The threat of cats is also amplified by bushfires 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 in place and the current goal is to eradicate feral cats from Kangaroo Island by 2030 (Kangaroo Island Landscape Board 2015).</p>
Habitat degradation by pest animals (i.e., pigs and peafowl)	<ul style="list-style-type: none"> Status: current & future Confidence: known Consequence: moderate Trend: static Extent: across the entire range 	<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 unmanaged goat and deer eradicated, current main pest species are the feral pig (<i>Sus scrofa</i>) and the peafowl (<i>Pavo cristatus</i>).</p> <p>Feral pigs can cause serious habitat degradation through grazing, trampling and digging (Commonwealth of Australia 2017a, 2017b). Additionally, they may also spread the plant pathogen <i>P. cinnamomi</i> (see above) and cause severe diebacks of native vegetation (Commonwealth of Australia 2017a).</p> <p>The impacts of peafowls are not well studied. They mostly feed on agricultural crops and pasture, impacting livestock. However, they are susceptible to diseases and parasites, which could be spread to native species (Latham 2011). Cunningham et al. (2016) mapped the habitat suitability and modelled the projection of population size of peafowl on Kangaroo Island and the results indicated if unmanaged, the population of peafowls on the island could exceed 2,000 individuals after 10 years, therefore it is important for management actions to be in place.</p>
Isolated subpopulations		
Demographic and genetic stochasticity	<ul style="list-style-type: none"> Status: current & future Confidence: inferred Consequence: severe 	<p>Because of their limited dispersal abilities, Southern Emu-wrens are at risk of being fragmented into small, isolated populations as a result of wildfire. These small</p>

Threat	Status and severity ^a	Evidence
	<ul style="list-style-type: none"> • Trend: unknown • Extent: across the entire range 	<p>populations may be threatened by demographic and genetic stochasticity.</p> <p>Demographic stochasticity refers to the unpredictable variability in factors that determines a population's persistence, such as population growth rates arising from differences amongst individuals in seasonal survival, reproduction and sex ratios (Frankham et al. 2002). This means that small populations could drift to extinction due to random within-in season variations, even if expected birth rates are higher than death rates on average (Pickett 2017).</p> <p>Another potential threat with small, isolated populations is genetic drift, which could lead to consequences such as the loss of genetic diversity, inbreeding depression and the accumulation of deleterious mutation (Frankham et al. 2002). These could lead to a lower capacity to respond to environmental changes or fluctuations, and increased expression of deleterious recessive alleles, leading to reduced individual survival and reproductive capacity (inbreeding depression; Pickett 2017).</p>

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 subspecies. 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
Almost certain	Low risk	Moderate risk	Very high risk	Very high risk	Very high risk
Likely	Low risk	Moderate risk	High risk	Very high risk	Very high risk
Possible	Low risk	Moderate risk	High risk	Very high risk	Very high risk
Unlikely	Low risk	Low risk	Moderate risk	High risk	Very high risk
Unknown	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 Southern Emu-wren risk matrix

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
Almost certain			Pest animals Predation by cats	Climate change	Wildfire
Likely		<i>P. cinnamomi</i> induced diebacks Invasive weeds	Demographic and genetic stochasticity		
Possible					
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

- Increase population size of Kangaroo Island Southern Emu-wren to estimated pre-2020 levels.

Conservation and management priorities

Wildfire

- Fire management protocols in place to prevent fires affecting more than 25 percent of the population per decade.
- Develop approaches to stop fire on hot, windy days.
- Actively manage the landscape to minimise the risk of very large wildfires.
- Develop a site-based fire management strategy with local authorities which considers the ecological needs of the subspecies.
- Monitor bushfire-affected areas to assess the impact of wildfire on the subspecies and their habitats, and the capacity of the subspecies to recover from such events.
- Protect unburnt areas within or adjacent to recently burnt ground that may provide refuge, until the burnt areas have recovered sufficiently to support the subspecies once again.

Climate change

- Use climatic modelling techniques to investigate the potential impact of climate change on habitat critical to the survival. For example, examining the likely reduction in inter-fire intervals and comparing that with the recovery rates of Southern Emu-wren populations would be valuable.

Pest animals

- Assess the effectiveness of currently pest species management (Threat Abatement Plan (TAP) addressing habitat degradation, competition and disease transmission by feral pigs active since 2017; Commonwealth of Australia 2017b) and incorporate new information into management.
- Investigate the impacts of peafowl have on the subspecies and its habitat.

Predation by cats

- Continue to implement the Kangaroo Island Feral Cat Eradication Program with the aim of eradicating feral cats on the island by 2030.
- Continue to implement Feral Cat Threat Abatement Plan (Commonwealth of Australia 2015b).

***P. cinnamomi* and invasive weeds**

- Continue to raise awareness with the public on the impact of weeds and *P. cinnamomi* have on native vegetation and ecosystems (e.g., promote the Weed Control App produced by Biosecurity South Australia, and the Bushwalking guidelines to prevent *P. cinnamomi* (Natural Resources Kangaroo Island 2017)).
- Review risk of *P. cinnamomi* and monitor for sites of infection regularly.
- Undertake surveys to assess the effectiveness of the control program for *P. cinnamomi* and incorporate new knowledge into management preventions.
- Consult with local authorities to determine the appropriate methods and the effectiveness of weed control and implement recommendations.

Demographic and genetic stochasticity

- Consider translocation of individuals as a management tool to increase viability of smaller, isolated populations.
- If feasible, establish new populations in suitable habitat.

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 landholder/land managers to encourage their involvement in conservation.
- Continue to raise awareness with the public on the impacts *P. cinnamomi* and pest animals have on native plant and animal species.

- Encourage the community in 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 Southern Emu-wren.

Information and research priorities

- Improve knowledge of the impacts wildfire have on the subspecies and their habitat, and their ability to re-colonise recently burnt areas.
- Accurately describe habitat critical to the survival for the subspecies. Use climate modelling techniques to investigate potential influence of climate change on breeding and foraging habitats, and on fire regimes that could affect the subspecies.
- Determine Kangaroo Island Southern Emu-wren's sensitivity/resilience to climate change and disturbance by extreme climate events.
- Determine genetic diversity and population genetics of the Kangaroo Island Southern Emu-wren, 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.

Recovery plan decision

A decision about whether there should be a recovery plan for this subspecies has not yet been determined. The purpose of this consultation is to elicit additional information to help inform this decision.

Links to relevant implementation documents

Threat Abatement Plans (TAPs):

- [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:

- [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)

Conservation Advice and Listing Assessment references

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THREATENED SPECIES SCIENTIFIC COMMITTEE

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

The Threatened Species Scientific Committee draft assessment

Attachment A: Listing Assessment for *Stipiturus malachurus halmaturinus*

Reason for assessment

This assessment follows prioritisation of a nomination from the public/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	5,000	4,800	5,100	The population estimate of Kangaroo Island Southern Emu-wrens is based on average densities recorded across their range (Higgins et al. 2001), the area of vegetation types likely to have been occupied before the 2019/2020 fire, an allowance for patchiness within the vegetation before the fire (10 percent suitable habitat occupied), maps of fire severity in 2019/2020 within the pre-fire range and initial assumptions about mortality at different fire severity classes (fire severity low: mortality of 20 percent assumed; medium: 50 percent ; high: 80 percent; very high: 100 percent) (Paton et a. 2021).
Trend	Declined			Paton et al. (2021)
Generation time (years)	2.1	1.6	2.6	Bird et al. (2020)
Extent of occurrence	4,550 km ²	4,550 km ²	6,400 km ²	The EOO is based on all records since 1990 (Paton et al. 2021).
Trend	Stable			Paton et al. (2021)

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Area of Occupancy	430 km ²	74 km ²	930 km ²	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. The maximum is the area of suitable habitat before the fires (Paton et al. 2021).
Trend	Contracted			Paton et al. (2021)
Number of subpopulations	1	1	1	Paton et al. (2021)
Trend	Stable			Paton et al. (2021)
Basis of assessment of subpopulation number	The entire population occurs on a single island.			
No. locations	>10			Paton et al. (2021)
Trend	Not calculated			Paton et al. (2021)
Basis of assessment of location number	The spatial nature of the threats is such that there are >10 geographically or ecologically distinct areas where a single threatening event could affect all individuals of the subspecies present within a period of three years. The geographic position of unburnt locations will vary between fires, but there are always likely to be >10.			
Fragmentation	Not severely fragmented.			
Fluctuations	Not subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals - no parameter was changed by an order of magnitude by the 2019/2020 fires.			

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
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%
A1	Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.		(a) direct observation [except A3]
A2			(b) an index of abundance appropriate to the taxon
A3			(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
A4			(d) actual or potential levels of exploitation
			(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Based on any of the following

Criterion 1 evidence

Eligible under Criterion 1 A2c for listing as Endangered

Kangaroo Island Southern Emu-wrens are endemic to Kangaroo Island, occurring widely across the island (Boulton 2020). Kangaroo Island was heavily impacted during the 2019/2020 bushfires, where around half of the island was burnt (DEW 2020; Todd & Maurer 2020). 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 Southern Emu-wren was affected by these fires: 57 percent was burnt in high to very high severity fire, and a further 11 percent was burnt in low to moderate severity fire (NESP TSR Hub 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 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 56 percent from pre-fire levels, but that the decline could be as large as 67 percent (bound of 80 percent confidence limits) (NESP TSR Hub 2021). After three generations, the estimate for the overall population decline relative to the pre-fire population is predicted to be 30 percent, but potentially as much as 61 percent (bound of 80 percent confidence limit) (NESP TSR Hub 2021). For comparison, experts also estimated the population change over time in the absence of fire; by three generations, the overall population of Kangaroo

Island Southern Emu-wren after the fire was estimated to be 25 percent lower than it would have been, had the 2019/2020 fire not occurred (NESP TSR Hub 2021).

The extent of occurrence (EOO) for the subspecies is stable, however the area of occupancy (AOO) for the subspecies has contracted (Paton et al. 2021). The average reporting rate across the island for the period before the fire was 0.04 (1977–1981, 1998–2018; BirdLife Australia 2020) and 0.02 in 465 lists collected from 375 sites in 2012–2014 (DC Paton unpublished, cited in Paton et al. 2021). Two months after the fire it was 0.26 in 110 unburnt fragments within the burnt area and 0.11 in 35 plots outside it (Boulton et al. 2020), but the survey was targeted towards habitats likely to be suitable for emu-wrens, which explains the much higher reporting rate.

The data presented above appear to demonstrate that the subspecies is **eligible for listing as Endangered** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

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

	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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			

Criterion 2 evidence

Not eligible

The EOO is estimated at 4550 km² (range 4550–6400 km²) and the AOO estimated at 430 km² (range 74–930 km²) (Paton et al. 2021). The EOO is based on all records since 1990. 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. The maximum is the area of suitable habitat before the fires. The 2019/2020 fire burnt an estimated 78 percent of all 1x1 km

squares from which birds have been recorded since 1990 (Legge et al. 2020) and 69 percent of suitable habitat, but the resulting population losses are not believed to be ongoing. The EOO for the subspecies is thought to be stable, however the AOO for the subspecies has contracted (Paton et al. 2021). The subspecies is estimated to occur at more than 10 locations and does not appear to be severely fragmented (Paton et al. 2021), however further investigation is needed to confirm this (S Legge pers. comms. 20 February 2021). The subspecies is not subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations, or mature individuals.

The data presented above appear to demonstrate the subspecies is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

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			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
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	≤ 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 generally accepted to be 5000 mature individuals (range 4800–5100) (Paton et al. 2021). The population appears to have declined by 34 to 63 percent 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 (Paton et al. 2021).

The data presented above appear to demonstrate the subspecies is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 4 Number of mature individuals

	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
D. Number of mature individuals	< 50	< 250	< 1,000
D2.¹ 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 ² or number of locations ≤ 5

¹ 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

Not eligible

The total population size of the subspecies is estimated to be 5,000 mature individuals (range 4800–5100) (Paton et al. 2021). This estimate is based on average densities recorded across their range (Higgins et al. 2001), the area of vegetation types likely to have been occupied before the 2019/2020 fire, an allowance for patchiness within the vegetation before the fire (10 percent suitable habitat occupied), maps of fire severity in 2019/2020 within the pre-fire range and initial assumptions about mortality at different fire severity classes (Paton et al. 2021).

The data presented above appear to demonstrate that the subspecies is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional

information to better understand the subspecies' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

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 appears not to have been undertaken, and therefore there is insufficient data to demonstrate if the subspecies is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Adequacy of survey

The information used in this assessment is considered adequate and thus there is sufficient scientific evidence to support the assessment of this subspecies under Criterion 1.

CONSULTATION QUESTIONS FOR *Stipiturus malachurus halmaturinus*
(Southern Emu-wren (Kangaroo Island))

SECTION A - GENERAL

1. Is the information used to assess the nationally threatened status of the species/subspecies robust? Have all the underlying assumptions been made explicit? Please provide justification for your response.
2. Can you provide additional data or information relevant to this assessment?
3. Have you been involved in previous state, territory or national assessments of this species/subspecies? If so, in what capacity?

PART 1 – INFORMATION TO ASSIST LISTING ASSESSMENT

SECTION B DO YOU HAVE ADDITIONAL INFORMATION ON THE ECOLOGY OR BIOLOGY OF THE SPECIES/SUBSPECIES? (If no, skip to section C)

Biological information

4. Can you provide any additional or alternative references, information or estimates on longevity, average life span and generation length?
5. Do you have any additional information on the ecology or biology of the species/subspecies not in the current advice?

SECTION C ARE YOU AWARE OF THE STATUS OF THE TOTAL NATIONAL POPULATION OF THE SPECIES/SUBSPECIES? (If no, skip to section D)

Population size

6. Has the survey effort for this taxon been adequate to determine its national adult population size? If not, please provide justification for your response.
7. Do you consider the way the population size has been derived to be appropriate? Are there any assumptions and unquantified biases in the estimates? Did the estimates measure relative or absolute abundance? Do you accept the estimate of the total population size of the species/subspecies? If not, please provide justification for your response.
8. If not, can you provide a further estimate of the current population size of mature adults of the species/subspecies (national extent)? Please provide supporting justification or other information.

If, because of uncertainty, you are unable to provide a single number, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of possible species/subspecies numbers, and also choose the level of confidence you have in this estimate:

Number of mature individuals is estimated to be in the range of:

1–1000 1001–2500 2501–5000 >5000 >10 000

Level of your confidence in this estimate:

- 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
- 31–50% - more than a guess, some level of supporting evidence
- 51–95% - reasonably certain, information suggests this range
- 95–100% - high level of certainty, information indicates quantity within this range
- 99–100% - very high level of certainty, data are accurate within this range

SECTION D ARE YOU AWARE OF TRENDS IN THE OVERALL POPULATION OF THE SPECIES/SUBSPECIES? (If no, skip to section E)

9. Does the current and predicted rate of decline used in the assessment seem reasonable? Do you consider that the way this estimate has been derived is appropriate? If not, please provide justification of your response.

Evidence of total population size change

10. Are you able to provide an estimate of the total population size during the early 2010s (*at or soon after the start of the most recent 10 year period*)? Please provide justification for your response.

If, because of uncertainty, you are unable to provide a single number, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of possible species/subspecies numbers, and also choose the level of confidence you have in this estimate.

Number of mature individuals is estimated to be in the range of:

- 1–1000 1001–2500 2501–5000 >5000 >10 000

Level of your confidence in this estimate:

- 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
- 31–50% - more than a guess, some level of supporting evidence
- 51–95% - reasonably certain, information suggests this range
- 95–100% - high level of certainty, information indicates quantity within this range
- 99–100% - very high level of certainty, data are accurate within this range

11. Are you able to comment on the extent of decline in the species/subspecies' total population size over the last 10 years? Please provide justification for your response.

If, because of uncertainty, you are unable to provide an estimate of decline, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of decline, and also choose the level of confidence you have in this estimated range.

Decline estimated to be in the range of:

- 1–30% 31–50% 51–80% 81–100% 90–100%

Level of your confidence in this estimated decline:

- 0–30% - low level of certainty/ a bit of a guess/ not much information to go on
 31–50% - more than a guess, some level of supporting evidence
 51–95% - reasonably certain, suggests this range of decline
 95–100% - high level of certainty, information indicates a decline within this range
 99–100% - very high level of certainty, data are accurate within this range

12. Please provide (if known) any additional evidence which shows the population is stable, increasing or declining.

SECTION E ARE YOU AWARE OF INFORMATION ON THE TOTAL RANGE OF THE SPECIES/SUBSPECIES? (If no, skip to section F)

Current Distribution/range/extent of occurrence, area of occupancy

13. Does the assessment consider the entire geographic extent and national extent of the species/subspecies? If not, please provide justification for your response.
14. Has the survey effort for this species/subspecies been adequate to determine its national distribution? If not, please provide justification for your response.
15. Is the distribution described in the assessment accurate? If not, please provide justification for your response and provide alternate information.
16. Do you agree that the way the current extent of occurrence and/or area of occupancy have been estimated is appropriate? Please provide justification for your response.
17. Can you provide estimates (or if you disagree with the estimates provided, alternative estimates) of the extent of occurrence and/or area of occupancy.

If, because of uncertainty, you are unable to provide an estimate of extent of occurrence, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of extent of occurrence, and also choose the level of confidence you have in this estimated range.

Current extent of occurrence is estimated to be in the range of:

- <100 km² 100 – 5 000 km² 5 001 – 20 000 km² >20 000 km²

Level of your confidence in this estimated extent of occurrence

- 0–30% - low level of certainty/ a bit of a guess/ not much data to go on
 31–50% - more than a guess, some level of supporting evidence
 51–95% - reasonably certain, data suggests this range of decline

- 95–100% - high level of certainty, data indicates a decline within this range
- 99–100% - very high level of certainty, data is accurate within this range

If, because of uncertainty, you are unable to provide an estimate of area of occupancy, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of area of occupancy, and also choose the level of confidence you have in this estimated range.

Current area of occupancy is estimated to be in the range of:

- <10 km² 11 – 500 km² 501 – 2000 km² >2000 km²

Level of your confidence in this estimated extent of occurrence:

- 0–30% - low level of certainty/ a bit of a guess/ not much data to go on
- 31–50% - more than a guess, some level of supporting evidence
- 51–95% - reasonably certain, data suggests this range of decline
- 95–100% - high level of certainty, data indicates a decline within this range
- 99–100% - very high level of certainty, data is accurate within this range

SECTION F ARE YOU AWARE OF TRENDS IN THE TOTAL RANGE OF THE SPECIES/SUBSPECIES? (If no, skip to section G)

Past Distribution/range/extent of occurrence, area of occupancy

18. Do you consider that the way the historic distribution has been estimated is appropriate? Please provide justification for your response.
19. Can you provide estimates (or if you disagree with the estimates provided, alternative estimates) of the former extent of occurrence and/or area of occupancy.

If, because of uncertainty, you are unable to provide an estimate of past extent of occurrence, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of past extent of occurrence, and also choose the level of confidence you have in this estimated range.

Past extent of occurrence is estimated to be in the range of:

- <100 km² 100 – 5 000 km² 5 001 – 20 000 km² >20 000 km²

Level of your confidence in this estimated extent of occurrence

- 0–30% - low level of certainty/ a bit of a guess/ not much data to go on
- 31–50% - more than a guess, some level of supporting evidence
- 51–95% - reasonably certain, data suggests this range of decline
- 95–100% - high level of certainty, data indicates a decline within this range

99–100% - very high level of certainty, data is accurate within this range

If, because of uncertainty, you are unable to provide an estimate of past area of occupancy, you may wish to provide an estimated range. If so, please choose one of the ranges suggested in the table below of ranges of past area of occupancy, and also choose the level of confidence you have in this estimated range:

Past area of occupancy is estimated to be in the range of:

<10 km² 11 – 500 km² 501 – 2000 km² >2000 km²

Level of your confidence in this estimated extent of occurrence:

0–30% - low level of certainty/ a bit of a guess/ not much data to go on

31–50% - more than a guess, some level of supporting evidence

51–95% - reasonably certain, data suggests this range of decline

95–100% -high level of certainty, data indicates a decline within this range

99–100% - very high level of certainty, data is accurate within this range

PART 2 – INFORMATION FOR CONSERVATION ADVICE ON THREATS AND CONSERVATION ACTIONS

SECTION G DO YOU HAVE INFORMATION ON THREATS TO THE SURVIVAL OF THE SPECIES/SUBSPECIES? (If no, skip to section H)

20. Do you consider that all major threats have been identified and described adequately?
21. To what degree are the identified threats likely to impact on the species/subspecies in the future?
22. Are the threats impacting on different populations equally, or do the threats vary across different populations?
23. Can you provide additional or alternative information on past, current or potential threats that may adversely affect the species/subspecies at any stage of its life cycle?
24. Can you provide supporting data/justification or other information for your responses to these questions about threats?

SECTION H DO YOU HAVE INFORMATION ON CURRENT OR FUTURE MANAGEMENT FOR THE RECOVERY OF THE SPECIES/SUBSPECIES? (If no, skip to section I)

25. What planning, management and recovery actions are currently in place supporting protection and recovery of the species/subspecies? To what extent have they been effective?

26. Can you recommend any additional or alternative specific threat abatement or conservation actions that would aid the protection and recovery of the species/subspecies?
27. Would you recommend translocation (outside of the species' historic range) as a viable option as a conservation actions for this species/subspecies?

SECTION I DO YOU HAVE INFORMATION ON STAKEHOLDERS IN THE RECOVERY OF THE SPECIES/SUBSPECIES?

28. Are you aware of other knowledge (e.g. traditional ecological knowledge) or individuals/groups with knowledge that may help better understand population trends/fluctuations, or critical areas of habitat?
29. Are you aware of any cultural or social importance or use that the species/subspecies has?
30. What individuals or organisations are currently, or potentially could be, involved in management and recovery of the species/subspecies?
31. How aware of this species/subspecies are land managers where the species/subspecies is found?
32. What level of awareness is there with individuals or organisations around the issues affecting the species/subspecies?
 - a. Where there is awareness, what are these interests of these individuals/organisations?
 - b. Are there populations or areas of habitat that are particularly important to the community?

PART 3 – ANY OTHER INFORMATION

33. Do you have comments on any other matters relevant to the assessment of this species/subspecies?