Australian Capital Territory

Nature Conservation (Southern Whiteface) Conservation Advice 2024

Notifiable instrument NI2024-257

made under the

Nature Conservation Act 2014, s 90C (Conservation advice)

1 Name of instrument

This instrument is the *Nature Conservation (Southern Whiteface) Conservation Advice 2024.*

2 Commencement

This instrument commences on the day after its notification day.

3 Conservation advice for Southern Whiteface

Schedule 1 sets out the conservation advice for Southern Whiteface (*Aphelocephala leucopsis*).

Arthur Georges Chair, Scientific Committee 21 May 2024

Schedule 1

(see s 3)





CONSERVATION ADVICE SOUTHERN WHITEFACE Aphelocephala leucopsis

CONSERVATION STATUS

The Southern Whiteface *Aphelocephala leucopsis* (Gould, 1841) is recognised as threatened in the following jurisdictions:

International	Vulnerable, International Union for the Conservation of Nature (IUCN) Red List				
National	Vulnerable , Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)				
	Vulnerable, Action Plan for Australian Birds 2020				
ACT	Vulnerable, Nature Conservation Act 2014				
NSW	Vulnerable, Biodiversity Conservation Act 2016				
Oueensland	Vulnerable, Nature Conservation Act 1992				

ELIGIBILITY

The Southern Whiteface is listed as Vulnerable in the ACT Threatened Native Species List under IUCN Criterion A— A2bc+3c+4bc due to a substantial decline in the national population size (30–50%) over the past ten years (actually over every ten years since 1999) with no indication that the declines are slowing (Ehmke et al. 2021 and Attachment A - DCCEEW 2023). Habitat loss and fragmentation is likely the cause of the species decline, especially in the parts of the species' range where there has been complete removal of habitat for intensive agriculture (Ehmke et al. 2021).

DESCRIPTION AND ECOLOGY

The Southern Whiteface is a small stocky thornbill like bird, measuring about 11 cm and weighing 12 g on average (Birdlife Australia 2023). The top of its body, wings and head are grey-brown and the underparts are white (Schodde and Mason 1999). Its tail has a broad black tail band with white tips. The forehead is white, edged in black and the bill is darkgrey, stubby and finch-like. The adult sexes are similar and juveniles do not have the black band on the face between the eyes (Hermes 2021).

Breeding occurs usually from July to December but is influenced by rainfall (Taylor and COG 1992, Birdlife Australia 2023). 2–5 eggs are laid in untidy domed nests of grass, rootlets and bark, preferrably built in a hollow tree limb, crevice or stump, or sometimes in dense foliage of shrubs or small trees (Hermes 2021, Birdlife Australia 2023). Talor and COG (1992)



Southern Whiteface (Patrick Cox - Canberra Nature Map)

reported that standing dead timber provides the ideal nesting sites and is essential for the species' survival.

Birds busily feed on the ground in small flocks and mainly on insects, spiders, and seeds, largely gleaned from the bare ground or leaf litter (Higgins and Peter 2002, Antos and Bennet 2006, Antos et al. 2008, Hermes 2021, Birdlife Australia 2023).

DISTRIBUTION AND HABITAT

The distribution of the Southern Whiteface is across most of the mainland of Australia south of the Tropic of Capricorn as shown in Map 1. Two subspecies are recognised: *A. I. leucopsis* (South-east Southern Whiteface (found in the ACT)), found throughout south-eastern and central Australia; and *A. I. castaneiventris* (South-west Southern Whiteface) found in Western Australia with a broad hybrid zone between the two subspecies in the east of Western Australia. The national estimated extent of occurrence (EOO) is 4.9million km² and the area of occupancy (AOO) is 70,000 km² and contracting (Ehmke et al. 2021). The species occurs in areas of fallen timber and/or standing dead timber (Hermes 2021) in a wide range of open eucalypt/acacia woodlands and shrublands where there is an understory of grasses and/or shrubs (Higgins & Peter 2002).



Map1: Modelled distribution of the Southern Whiteface (Source: DCCEEW 2023)

Source: Base map Geoscience Australia; species distribution data Species of National Environmental Significance database.

The species is resident in the ACT region (Figure 1 and 2) and was once described in the early 1950s as common on the lowlands, present in all seasons and presumed to nest in the ACT (Cabby 2000). Taylor and COG (1992) reported it as being found where woodland merges with grassland and in dry, rocky paddocks with scattered shrubs, short grass and dead timber, being more common below about 800 m but able to survive the winter up to 1100 m in frost hollows in the Upper Naas catchment.

Wilson (1999) noted that the species was apparently declining due to displacement from its threatened habitat (grasslands/woodlands) by urban and rural development, consequently the Southern Whiteface has been recorded in the Canberra Garden Bird Surveys only eight times (Canberra Birds 2023). Until the

mid-1980s the species was regularly reported in the Tuggeranong Valley in areas since developed, and while suburban nature reserves (e.g., Farrer Ridge) may provide a refuge, these scattered remnants are unlikely to be able to support populations in the long-term (Taylor and COG 1992). The species continues to show very low reporting rates with a small but significant decrease in overall trend reflecting very low numbers at woodland sites (Bounds et al. 2021).

Between 2015 and 2017, the reporting rate levelled off to around 0.7% (COG 2018) (Figure 1) representing around 254 total birds (2016-17), 213 (in 2017–18) (COG 2018, COG 2019) (Figure 2). The numbers remained at this low level through to 2018–19 (204 birds) but the reporting rate (0.5%) is at its lowest level ever (COG 2020).

The habitat critical to the survival of the species is identified in the Commonwealth Conservation Advice (DCCEEW 2023) and corresponds with all known or likely habitat in Map 1 and includes areas of:

- relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both
- habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat
- living and dead trees with hollows and crevices which are essential for roosting and nesting.



Figure 1: Southern Whiteface records in the ACT region – 1982–2017

Source: Canberra Birds (2018). Reporting rate has continued to decline from a 4% peak in 2008, to 0.5% in 2018–19, its lowest level ever (COG 2020).

Note: Reporting rate (%) is the proportion of all surveys in which the species was present. These data were collected by volunteer birdwatchers using various survey methods and on some occasions more than one person may have recorded bird sightings on the same day, which may skew the data.





Source: Canberrabirds.org.au. (2018). Note: Reporting rate (%) is the proportion of all surveys in which the species was present. These data were collected by volunteer birdwatchers using various survey methods and on some occasions more than one person may have recorded bird sightings on the same day, which may skew the data.

THREATS

Apart from the complete removal of its habitat (including for intensive agriculture) no other clear reasons for the continued decline in the species numbers have been confirmed for this species (Ehmke et al. 2021). While the species lives in some of the driest and hottest parts of the country, it has declined in places that are generally far wetter (Ehmke et al. 2021). The species continues to decline in the ACT (in the south-eastern edge of its national distribution) but reporting rates have fluctuated (Bounds et al. 2021), possibly due to oscillating unfavourable herbage mass conditions impacting its preferred habitat, resulting from extreme weather variabilities.

Other possible pressures on the shrinking habitat for the species, identified in the ACT, include the tendency for graziers to tidy-up paddocks of standing dead timber and the demand for firewood by Canberra residents (Taylor and COG 1992). Removal of woody weeds is also likely a cause of decline (e.g., removal of the dense shrub African Box-thorn (*Lycium ferocissimum*)), linked to loss of the species in woodland in the Jerrabomberra West Nature Reserve and elsewhere. The recent COG analysis also suggested removal of woody weeds may explain the observed declines in recent years and highlights the need for land managers to determine the presence of woody weed frequent native species and where present, undertake additional measures (e.g., staged or supplementary habitat plantings) to mitigate the impacts of habitat removal (Bounds et al. 2021).

It is important to determine and understand the residual threats to the Southern Whiteface in the ACT to inform local ecological management for the species. Threats to the Southern Whiteface identified in the Commonwealth Conservation Advice (DCCEEW 2023) include:

• over-clearing of native vegetation and subsequent fragmentation and degradation of remnant habitat patches

- over-grazing by livestock
- increased frequency and length of droughts
- increased likelihood of extreme events (including wildfire, drought and heatwaves).

MAJOR CONSERVATION OBJECTIVES

The primary objective in the ACT is to protect Southern Whiteface habitat through limiting clearance of suitable woodland habitat and prioritising conservation management to woodland patches, particularly those that are large or have complex habitat structure.

CONSERVATION PRIORITIES

Conservation priorities are detailed in the Commonwealth Conservation Advice (DCCEEW 2023) for the species and rely on engaging with other jurisdictions to support regional and national recovery of the species. Priorities for the Southern Whiteface in the ACT should be to:

- identify and protect woodland and grassland habitat identified as habitat critical to the survival
 of the species (especially living and dead trees with hollows and crevices which are essential for
 roosting and nesting)
- maintain and enhance connectivity of woodland remnants through regeneration and revegetation using a diverse mix of locally appropriate native species, targeting the productive lower parts of the landscape which may provide important drought refuges.
- develop appropriate management interventions preventing intensive over-grazing of habitat and removal of dead timber
- monitor long-term trends and the effectiveness of management actions
- determine all factors contributing to population declines
- understand demography, breeding success and movement ecology with respect to climate variables and use climate modelling techniques to investigate the potential impact of climate change on the species (particularly on abundance and population trends) and its habitat
- actively seek opportunities to involve members of local indigenous communities in on ground activities
- encourage and support the continuation and further development of community-based conservation activities.

CONSERVATION ISSUES

It is recommended that quantitative targets and resourcing requirements are clearly identified in any Action Plan or other related projects/programs relevant to this species. Broader conservation issues for this and other declining woodland birds need to be considered in developing and implementing actions arising from this advice and the species listing assessment (DCCEEW 2023).

Critical Habitat

The temperate woodlands of the northern ACT and the bordering NSW region have been extensively disturbed by agriculture and urbanization and small patches of woodland are now embedded in a pastoral or suburban matrix. Consequently, birds are threatened by a reduction in habitat area, increased isolation, and declining habitat condition emphasising the importance and need of large, structurally complex, connected, high quality woodland patches to accommodate existing woodland birds (Watson et al. 2002, Watson et al. 2008). Watson et al. (2002) predicted that the decline of woodland bird species will continue unless appropriate habitat conservation strategies are applied as suggested (Watson et al. 2008).

The Commonwealth Conservation Advice (DCCEEW 2023) identifies 'habitat critical to the survival' or important habitats of a species refers to areas that are necessary:

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

Habitat critical to the survival should not be cleared, fragmented or degraded. Any known or likely habitat (Map 1) should be considered as habitat critical to the survival of the species. Additionally, areas that are not currently occupied by the species due to recent disturbance (e.g., fire, grazing or human activity), but should became suitable again in the future, should also be considered habitat critical to the survival of the species. It is essential that the highest level of protection is provided to these areas, across all tenures, and that enhancement and protection measures target these productive sites. No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat under the EPBC Act.

Climate Change

Climate change impacts are inevitable and will affect the likelihood of persistence, within the ACT, of many species. Indeed, recent work demonstrates the negative effects of heatwaves and consequences for population persistence in bird communities of semi-arid woodlands (Gardner et al. 2022). The ACT is expected to face similar climate conditions in coming decades. Amongst the most vulnerable in this regard are those species that occupy highly fragmented habitat with highly restricted distributions. Capacity must be developed to model the impact on this species and its habitat under likely climate change scenarios if we are to anticipate and manage the impacts of climate change. This will require a combination of research and the development of in-house capacity for the collection of relevant data and its application in climate change modelling. New developments in biophysical models can provide a predictive understanding of the habitats required for persistence in the face of climate change and other stressors (see review by Briscoe et al. 2023). Such models integrate physical data on climate and terrain with measures of morphology, behaviour, physiology and life history of the species in question. Ensuring collection of relevant data to provide the necessary information to parameterize models that can explore population persistence and species distributions is critical. Given increases in the frequency and intensity of extreme heat events are widely predicted it will be important to characterise the nature and use of thermal refuges used by birds under such conditions to quantify the importance of refuges for survival, and to preserve/regenerate such habitat.

Population Viability

An understanding of demographic rates, dispersal and behaviour is necessary for assessing responses to environmental changes and to inform population modelling (e.g., PVA, Biophysical Models), which can predict likelihoods of viability over the longer term. This will inform management options which may include assessment of genetic diversity and the possibility of genetic rescue. It is possible for the viability of species/population to be compromised such that they are unable to rebound if conditions improve and/or respond to suitable management. For example, loss of genetic diversity and associated genetic problems, such as inbreeding depression, in small populations can reduce survival and reproductive rates such that the population cannot respond to improved conditions.

Jurisdictional Collaboration

Many woodland birds have large distributions and while the ACT makes up a small component, in terms of area, it can play an important role in informing conservation due to its location, local expertise and community interest. Developing policies and recovery plans across several jurisdictions with many stakeholders requires ongoing discussion/negotiations across many stakeholders and jurisdictional entities.

Ngunnawal Community Engagement

The ACT Government should actively facilitate, the inclusion of the Ngunnawal people in the conservation of this species and its habitat as part of Ngunnawal Country. Reference to the draft Cultural Resource Management Plan (ACT Government in prep.) would be useful to inform culturally appropriate resource management including of native species that aligns with achieving conservation outcomes for the species.

OTHER RELEVANT ADVICE, PLANS OR PRESCRIPTIONS

- Commonwealth Conservation Advice Southern Whiteface (DCCEEW 2023)
- ACT Woodland Conservation Strategy (ACT Government 2004)
- ACT Woodland Conservation Strategy (ACT Government 2019)
- ACT Conservation Advice Loss of Mature Trees (Scientific Committee 2018)

LISTING BACKGROUND

The Southern Whiteface is listed as a Vulnerable species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), effective 31 March 2023. It is eligible to be listed as Vulnerable under Criterion 1 (A2bc+3c+4bc) of the EPBC Act. In 2023, under the *Nature Conservation Act 2014*, the ACT Scientific Committee recommended the Southern Whiteface be listed in the Vulnerable category in the ACT Threatened Native Species List to align with the EPBC Act listing.

ACTION PLAN DECISION

The ACT Scientific Committee does not recommend that the Minister for the Environment should make the decision to have an individual action plan for the species in the ACT under the *Nature Conservation Act 2014* at this time but proposes that an Action Plan for (threatened) Woodland birds (including specific requirements for the Southern Whiteface) should be developed and implemented by the Conservator. There are several woodland birds, including the Southern Whiteface, for which there are actions that are designed to provide for the conservation and management of the habitat of these birds collectively in the Woodland Strategy (ACT Government 2019), however a targeted Action Plan for (threatened) Woodland Birds and their habitat in the ACT is necessary to identify, understand and help address the declines and support recovery.

A National Recovery Plan is required to be prepared for the species (DCCEEW 2023) but there are likely to be ACT specific questions that need to be answered that a National Recovery Plan may not address. For example, as the decline in the ACT is not fully understood and is likely fully attributed to urbanisation we could reduce further losses through better urban planning. Also, The ACT population occurs in the south-eastern edge of the broad national distribution (Map 1) and modelling suggests optimal climatic conditions for the species will retract to the south (Garnett & Franklin 2014).

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FURTHER INFORMATION

Further information can be obtained from the Environment, Planning and Sustainable Development Directorate (EPSDD). EPSDD Website: <u>https://www.environment.act.gov.au/nature-conservation</u>

ATTACHMENT A: NATIONAL LISTING ASSESSMENT (DCCEEW 2023)

Attachment A: Listing Assessment for Aphelocephala leucopsis

Reason for assessment

Prioritisation of a nomination from the TSSC.

Assessment of eligibility for listing

This assessment uses the criteria set out in the <u>EPBC Regulations</u>. The thresholds used correspond with those in the <u>IUCN Red List criteria</u> except where noted in criterion 4, subcriterion 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.

Metric	Estimate used in the assessment	Minimum plausible value	Maximum plausible value	Justification
Number of mature individuals	477,000	236,000	954,000	The population estimates of the two southern whiteface subspecies (67,000 (36,000-134,000) <i>A. l.</i> <i>castaneiventris</i> , and 410,000 (200,000-820,000) <i>A. l. leucopsis</i>) are the product of the three measures of AOO and the density recorded in 2 ha 20 min surveys (<i>A. l.</i> <i>castaneiventris</i> 3.36±SD 2.50; <i>A. l.</i> <i>leucopsis</i> 3.42± SD 2.75; Birdata cited in Ehmke et al. 2021). Each 2x2 km square contributing to the AOO is assumed to indicate 16 ha of suitable habitat (S Garnett pers. comm. 9 Nov 2021). The following assumptions are made in the estimates of the population size: • The AOO, which attributes 2x2 km of habitat to any point at which the species is recorded, is based only on sightings of birds that have been entered into the BirdLife Australia database (S Garnett pers. comm. 9 Nov 2021). Many areas occupied by the species are likely to be unrecorded. From some, however, the birds may have disappeared since the record was made. For this reason, the AOO has wide error margins (S Garnett pers. comm. 9 Nov 2021).
				of the AOO is likely to be small

Table 4 Key assessment parameters

Threatened Species Scientific Committee

Metric	Estimate used in the assessment	Minimum Maximum plausible plausible value value		Justification		
				relative to the total 2x2 km assumed to be occupied (S Garnett pers. comm. 9 Nov 2021). In some 2x2 km AOO squares, the entire area will be suitable habitat and occupied. In others, only a fragment of occupied habitat may remain. For there to be a record at all must mean there is 2 ha of habitat in which the species was present in at least part at the time of the survey (S Garnett pers. comm. 9 Nov 2021). The population estimates assume that double that area is available within every 2x2 km, which is deliberately highly conservative (S Garnett pers. comm. 9 Nov 2021). • The density is based on surveys in which observers have noted the number of individuals they have seen during a survey. The number of individuals recorded during surveys is highly variable (S Garnett pers. comm. 9 Nov 2021). The reliability of this population estimate is low (S Garnett pers. comm. 9 Nov 2021).		
Trend	Declining	I	I	The species has been long marked as declining, the evidence for loss is now strong and based largely on reporting rates (Ehmke et al. 2021).		
Generation time (years)	2.8	2.1	3.5	Bird et al. (2020). The reliability of this estimate is low.		
Extent of occurrence	4,910,000 km ²		The EOO was calculated using occurrence records from 2000–2021 (Australian Government 2021).			
Trend	Stable			The EOO trends for both subspecies is estimated to be stable (Ehmke et al. 2021). The reliability of this estimate is low.		
Area of Occupancy	80,000 km ²	65,000 km ²	140,000 km ²	The minimum AOO is the number of 2x2 km squares within which they have been recorded since 1990 (Ehmke et al. 2021). The reliability of this estimate is low.		
Trend	Contracting		Trends in range-wide reporting rates for both subspecies since 2000 have been strongly negative with a high level of significance (Ehmke et al. 2021). The reliability of this estimate is high.			
Number of subpopulations	1	1	1	Ehmke et al. (2021). The reliability of this estimate is low.		
Trend	Stable			Ehmke et al. (2021). The reliability of this estimate is high.		
Basis of assessment of	There are no impediments to dispersion across the large ranges of either subspecies, so both are assumed to be panmictic (Ehmke et al. 2021).					

Metric	Estimate used in the assessment	Minimum Maximum plausible plausible value value		Justification	
subpopulation number					
No. locations	>10			Ehmke et al. (2021)	
Trend	Not calculated Ehmk			Ehmke et al. (2021)	
Basis of assessment of location number	The spatial nature of the threats, even though stochastic in space and time, is such that there are >10 geographically or ecologically distinct areas where a single threatening event could affect all individuals of either taxon present within a period of three years (Ehmke et al. 2021).				
Fragmentation	Not severely fragmented (Ehmke et al. 2021).				
Fluctuations	Not subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals (Ehmke et al. 2021).				

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	Enda Seve	ngered re reduction		Vulnerable Substantial reduction
A1		≥ 90%	≥ 709	%		≥ 50%
A2, A	13, A4	≥ 80%	≥ 50%	%		≥ 30%
A1 A2 A3	Population reduction observed, estimate past and the causes of the reduction are understood AND ceased. Population reduction observed, estimate past where the causes of the reduction be understood OR may not be reversible Population reduction, projected or susp to a maximum of 100 years) [(<i>a</i>) cannot	ted, inferred or suspected ir e clearly reversible AND ted, inferred or suspected ir may not have ceased OR ma e. pected to be met in the futur t be used for A3]	n the ay not re (up	Based on any of the following	(a) (b) (c) (d) (e)	direct observation [except A3] an index of abundance appropriate to the taxon a decline in area of occupancy, extent of occurrence and/or quality of habitat actual or potential levels of exploitation the effects of introduced
A4	An observed, estimated, inferred, proje reduction where the time period must i future (up to a max. of 100 years in futu reduction may not have ceased OR may be reversible.	cted or suspected population include both the past and the ure), and where the causes of r not be understood OR may	on of not			taxa, hybridization, pathogens, pollutants, competitors or parasites

Criterion 1 evidence

Eligible under Criterion 1 A2bc+3c+4bc for listing as Vulnerable

Southern whitefaces occur across most of mainland Australia south of the tropics from the north-eastern edge of the Western Australian wheatbelt east to the Great Dividing Range. There is a broad hybrid zone between the two subspecies extending north from the western edge of the Nullarbor Plain. The northern boundary extends to about Carnarvon in the west, to the southern Northern Territory in central Australia, but is slightly further south in Queensland,

where the species is largely confined to the south-west of the Mitchell Grass Downs and along the southern state border (Schodde & Mason 1999).

Reporting rate data can be used to determine bird species abundance. Data used in trend analyses are limited to standardised bird surveys drawn from discrete (spatially separated) sites which have multiple repeat observations over time. Trends in range-wide reporting rates for both subspecies since 2000 have been strongly and significantly negative (Ehmke et al. 2021). For south-west southern whitefaces, reporting rates in 2 ha 20 min counts and 500 m radius area searches from 2000-2020 declined by 86% and 46%, respectively (2000-2009: -35% and -35%; 2010–2019: -49%, +3%). For south-east southern whitefaces, the equivalent figures were 64% and 72% from 1999-2000 (2000-2009: -49% and -20%; 2010-2019: -57% and -65%). South-east southern whitefaces are one of a suite of taxa often considered to be declining at a local level, including around Adelaide, western New South Wales and northern Victoria (Paton et al. 1994; Reid 1999; Olsen et al. 2005) and they disappeared after the millennium drought in central New South Wales (Ellis & Taylor 2014). Trend analysis over the 21-year period 1998-2019 showed a small decline in the Australian Capital Territory, with the rate of decline statistically significant over the period 2009-2014 (Bounds et al. 2021). There is a low reporting rate for this species, which now occurs in very low numbers at a small number of locations. There are no comparable regional data for south-west southern whitefaces.

However, reporting rates for some periods, and from some localities, have not been negative. Reporting rates were stable between the first Australian Bird Atlas (1977–1981) and the second (1998–2001) for the whole species (Barrett et al. 2002); in New South Wales reporting rates in less wooded bioregions increased between Atlases (Barrett et al. 2007); there was no significant change in reporting rates from 2 ha 20 min surveys for 1999–2013 for the Arid Zone and Mallee regions (BirdLife Australia 2015); or in surveys during 2000–2015 at over 165 sites in southern New South Wales (Lindenmayer et al. 2018). Reporting rates in the Australian Capital Territory show a four-fold fluctuation, with peaks around 1989 and 2009 and troughs in 2000 and 2017 (Canberra Ornithologists Group 2019).

Overall, declines across the range of both subspecies are 30–50% every ten years (one generation 2.9 years) since 1999, with no suggestion that the declines are slowing (Ehmke et al. 2021). There is no clear reason for declines in either southern whiteface subspecies, except in that part of the range where there has been complete removal of habitat for intensive agriculture (Ehmke et al. 2021).

The Committee considers that the species has undergone a substantial reduction in numbers over ten years (one generation 2.9 years), which is equivalent to at least 30–50% and the reduction has not ceased, the cause has not ceased and is not understood. Therefore, the species has met the relevant elements of Criterion 1 to make it eligible for listing as Vulnerable.

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 conditi	ons:			
(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

Southern whiteface extent of occurrence (EOO) is estimated to be 4,910,000 km² (Australian Government 2021) with a stable trend (Ehmke et al. 2021), however the area of occupancy (AOO) is contracting and is estimated at 70,000 km² (range 34,400–140,000 km²) (Ehmke et al. 2021). The population is not considered severely fragmented and there are no impediments to dispersion across the large range of the species (Ehmke et al. 2021). The number of locations has not been calculated but is assumed to be greater than 10 (Ehmke et al. 2021). The spatial nature of the threats, even though stochastic in space and time, is such that there are thought to be more than 10 geographically or ecologically distinct areas were a single threatening event could affect all individuals of either taxon present within a period of 10 years (Ehmke et al. 2021). The species is not subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals (Ehmke et al. 2021).

Following assessment of the data the Committee has determined that the species' geographic distribution is not precarious for its survival. Therefore, the species has not met this required element of this criterion.

Criterion 3 Population size and decline

		Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estir	mated 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:			
	(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

There are currently estimated to be 477,000 (range 236,000–954,000) mature individuals in the wild (S Garnett pers. comm. 9 Nov 2021) with a declining trend (Ehmke et al. 2021). This estimate includes 67,000 (range 36,000–134,000) *A. l. castaneiventris* individuals and 410,000 (range 200,000–820,000) *A. l. leucopsis* individuals. The reliability of all population estimates is very low (S Garnett pers. comm. 9 Nov 2021). The population estimates of the two subspecies are the product of the three measures of AOO and the density recorded in 2 ha 20 min surveys (*A. l. castaneiventris* 3.36±SD 2.50; *A. l. leucopsis* 3.42± SD 2.75; Birdata cited in Ehmke et al. 2021). The species is not subject to extreme fluctuations in EOO, AOO, number of subpopulations, locations or mature individuals (Ehmke et al. 2021).

The total number of mature individuals is not considered low. Therefore, the species does not meet the required element of 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. 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 km² 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 <u>common</u> <u>assessment method</u>.

Criterion 4 evidence Not eligible

There are currently estimated to be 477,000 (range 236,000–954,000) mature individuals in the wild (S Garnett pers. comm. 9 Nov 2021) with a declining trend (Ehmke et al. 2021). This estimate includes 67,000 (range 36,000–134,000) *A. l. castaneiventris* individuals and 410,000 (range 200,000–820,000) *A. l. leucopsis* individuals. The reliability of all population estimates is very low (S Garnett pers. comm. 9 Nov 2021). The population estimates of the two subspecies are the product of the three measures of AOO and the density recorded in 2 ha 20 min surveys (*A. l. castaneiventris* 3.36±SD 2.50; *A. l. leucopsis* 3.42± SD 2.75; Birdata cited in Ehmke et al. 2021).

The total number of mature individuals is not considered low. Therefore, the species does not meet the required elements of this criterion.

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 49 business days between 28 January 2022 and 18 March 2022.

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** *Aphelocephala leucopsis* in the list in the Vulnerable category.

(ii) that there should be a recovery plan for this species.