FLORA & FAUNA GUARANTEE

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE

PRELIMINARY RECOMMENDATION ON A NOMINATION FOR DE-LISTING

Aythya australis – Hardhead

DOCID107-417469679-742

Dates of consideration: 16 May, 30 June, 19 August, 21 October, 6 December 2022, 3 February, 20 March, 5 May 2023.

Validity: The nomination is for a valid item.

Prescribed information: The prescribed information was provided

Name of the Nominator is adequately provided

Name of the Item is adequately provided

The nominated taxon is accepted by the Scientific Advisory Committee (SAC) as a valid taxon because it has been formally described and is accepted as a valid taxon by Museums Victoria.

Current conservation status

The taxon nominated for de-listing is currently listed as Vulnerable in Victoria on the *Flora and Fauna Guarantee Act 1988* (FFG Act) Threatened List under Primary Criterion 5.1 – Subcriterion 5.1.3(b)(ii) (IUCN criterion C2a(ii)) (State Government of Victoria 2021).

Nomination for de-listing under the FFG Act

The nomination to remove the Hardhead from the FFG Act Threatened List was made under Section 16A(2)(a) of Division 3 of the FFG Act:
A person may make a nomination to the Committee to be considered under this Division that a taxon of flora or fauna that is specified in the Threatened List is no longer eligible to be specified in the Threatened List.

It is contended in the nomination that the taxon does not meet the small population size and decline thresholds as required by criterion C2a(ii) under which it was listed.

Eligibility of the taxon to be removed from the Threatened List

The SAC has assessed the eligibility of the taxon to be removed from the Threatened List based on its extinction risk within Victoria in accordance with Section 16C(4)(c) of the FFG Act and the criteria for determining eligibility for listing prescribed in the Flora and Fauna Guarantee Regulations 2020 (FFG Regulations). In its application of the relevant eligibility criteria, the SAC has, as required by the nationally adopted Common Assessment Method, had regard to the *IUCN Red List Categories and Criteria (Version 3.1)* and the *Guidelines for Using the IUCN Red List Categories and Criteria (version15, 2022).*

Species information

Description, life history, generation length
The Hardhead is a medium-sized, dark-brown bird with white feathers under the tail. The male has a white eye. In flight, the Hardhead has a large white band across the belly, the underwing is translucent white, and the upper wing has a white strip

on the trailing edge. The Hardhead is very swift in flight with rapid, short wing beats. The wings are narrow and pointed and set well back on the body. On the water, the Hardhead is a dark coloured duck, floating very low and sometimes the white undertail is visible (Game Management Authority 2023b). Hardheads dive for their food, leaping forward and diving smoothly under the water. They eat aquatic plants and animals, particularly mussels and freshwater shellfish (Marchant & Higgins 1990). Hardheads breed in low, thick vegetation, in or near the water, along rivers and channels and around billabongs and dams, more generally in coastal wetlands. The nest is a trampled platform of reeds, sticks and vegetation, with some down lining. The nest is built by the female and is often added to with what she can reach from the nest. She incubates the eggs alone (BirdLife Australia 2023).

The generation length of the Hardhead is estimated to be 6 to 8 years, based on BirdLife International data from congeners on other continents. BirdLife International (2023) gives an estimated generation length of 7.7 years.

Distribution
The Hardhead is endemic to Australia, though it is occasionally seen in New Guinea and other islands. The Hardhead is widely distributed throughout Australia; however, the stronghold of the species during the non-breeding season is in the deeper, permanent freshwater swamps and lagoons of the Murray-Darling Basin and south-east South Australia (Emison et al. 1987). The species has been quite common at times on the freshwater lakes at the mouth of the Murray River and in the swamps of the east coast (Frith 1977). In Victoria, Hardhead have been observed to be most abundant on larger wetlands (> 6 ha) and sewage ponds and in the southern bioregion of the state. They have been less abundant on dams and smaller water bodies, and in the east, west and north of the state (Ramsey & Fanson 2021).

Habitat
Hardhead are found in freshwater swamps and wetlands, showing a very strong preference for extensive areas of deep water, especially if these carry abundant cover in the form of emergent vegetation. They are rarely seen on land and tend to roost on low branches and stumps near the water. They prefer deep, fresh open water and densely vegetated wetlands on the coast for breeding. In the inland, its favourite haunts are in the permanent cumbungi swamps and lignum creeks. Hardheads occur occasionally in sheltered estuaries (BirdLife Australia 2023, Frith 1977).

Threats
The major contributor to the decline of Hardheads in Australia and Victoria is drainage of deep-water swamps on the coast, the main breeding habitat of the taxon (Frith 1977). Loss of these wetland types and the increased use of water for irrigation, with the associated decrease in the frequency of natural flooding regimes, has also reduced the number of wetlands available on the coast which act as drought refuges. Breeding habitat has also been reduced by diversion of water for irrigation and flood mitigation (Marchant & Higgins 1990).

Decision by the Scientific Advisory Committee

The eligibility of the nominated taxon to be maintained on or removed from the Threatened List must be determined in accordance with the eligibility criteria prescribed for the purposes of Division 2 of Part 3 of the FFG Act.

The relevant eligibility criteria are prescribed in Schedule 1 of the FFG Regulations, which provides that a taxon is at risk of extinction in a particular category of threat if a primary criterion is met and is therefore eligible to be specified in the Threatened List.

As required under the Intergovernmental Memorandum of Understanding - Agreement on a Common Assessment Method for Listing of Threatened Species (to which Victoria is a signatory), eligibility has also been assessed in accordance with the *IUCN Red List Categories and Criteria (Version 3.1)* and *Guidelines for Using the IUCN Red List Categories and Criteria*.

The IUCN guidelines (2022) allow for the removal of a species from the Threatened List (de-listing) when new or corrected information arises since the first or previous assessment. Evidence demonstrates that the taxon does not meet the criterion under which it was listed as Vulnerable in Victoria under the FFG Act (C2a(ii)).

For details of the IUCN criteria see Appendix 1.

Criterion A – Population size reduction

Not eligible

Evidence:
Data from the Eastern Australian Waterbird Aerial Surveys 1983 - 2022 (Porter et al. 2022) and the Victorian Duck Season Priority Waterbird Counts 2014 – 2021 (formerly the Summer Waterbird Count) (Game Management Authority 2023a) indicate that while Hardhead numbers fluctuate, there is no evidence of a declining population trend. The past population reduction does not meet the threshold for eligibility under criterion A2, and the future population reduction does not meet the threshold for eligibility under criterion A3.

Criterion B – Geographic range (Extent of Occurrence and Area of Occupancy)

Not eligible

Evidence:
The Extent of Occurrence across the taxon's range is estimated to be 220,000 km^2 and the Area of Occupancy is estimated to be 8,800 km^2, both of which exceed the thresholds for criterion B (State Government of Victoria 2021).

Criterion C – Small population size and decline

Not eligible

Evidence:
The average annual abundance estimates of mature Hardhead in Victoria between 2014 – 2021 is approximately 18,700 (Game Management Authority 2023a) which exceeds the threshold for criterion C (< 10,000). Total Hardhead abundance in Victoria in 2020 was estimated to be c. 55, 300 (Ramsey & Fanson 2021) and c. 13,300 in 2021 (Ramsey & Fanson 2022). Post-drought waterfowl counts (2009-2012) estimated Hardhead abundance to be c. 4,800 at the Western Treatment Plant alone (Loyn et al. 2014). There is currently no evidence of a decline in population size (BirdLife International 2017, Porter et al. 2022).

Criterion D – Very small or restricted population

Not eligible

Evidence:
The estimated number of mature Hardheads in Victoria far exceeds the criterion D threshold of <1,000.

In accordance with the IUCN Guidelines for application of criteria at regional and national levels (IUCN 2012), conspecific populations outside Victoria may affect the risk of extinction. The Hardhead population in Victoria may experience a 'rescue effect' from interstate populations (none of which are considered threatened under relevant state legislation), and immigration will likely decrease the extinction risk within Victoria. Therefore, even if the Hardhead did meet the criteria for listing as Vulnerable in Victoria, the Guidelines would require the result to be downgraded where exchange occurs between the regional and global population. This adjustment would move the result from Vulnerable to Near Threatened, thereby making the Hardhead ineligible for listing.

Criterion E – Quantitative analysis

Insufficient data to determine eligibility.
There is no population viability analysis available to provide evidence for this criterion.

Documentation

The published information provided to and sourced by the SAC has been assessed. To the best of their knowledge, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

Preliminary Recommendation of the Scientific Advisory Committee

As outlined above, the taxon nominated for de-listing does not satisfy at least one criterion of the set of criteria prepared and maintained under Division 2 of Part 3 of the FFG Act and stated in Schedule 1 of the FFG Regulations.

The SAC concludes that on the evidence available, the nominated taxon is not eligible for listing.

The Scientific Advisory Committee therefore supports the nomination for de-listing and makes a preliminary recommendation that the Hardhead be removed from the *Flora and Fauna Guarantee Act 1988* Threatened List.

Endorsement by the Convenor of the Scientific Advisory Committee **Date**

Dr. Michelle T. Casanova **10 August 2023**
Convenor

References

BirdLife Australia (2023) Birds in Backyards species profile. Accessed 15 February 2023. https://www.birdsinbackyards.net/species/Aythya-australis

BirdLife International (2017) *Aythya australis* (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017. Accessed 15 February 2023. https://dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T22680387A112385790.en

BirdLife International (2023) Species factsheet: *Aythya australis.* Accessed 15 February 2023. http://datazone.birdlife.org/species/factsheet/hardhead-aythya-australis

Emison, W.B., Beardsell, C.M., Norman, F.I., Loyn, R.H. and Bennett, S.C. (1987) Atlas of Victorian Birds. Department of Conservation, Forests and Lands, Royal Australasian Ornithologists Union, Melbourne.

Frith, H.J. (1977) Waterfowl in Australia. Hardhead, pp 243-255. Reed, Sydney.

Game Management Authority (2023a) Duck research. Accessed 15 February 2023.
https://www.gma.vic.gov.au/research/duck-research

Game Management Authority (2023b) Game duck species. Accessed 15 February 2023.
https://www.gma.vic.gov.au/hunting/duck/game-duck-species

IUCN. (2012) Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0. Gland, Switzerland and Cambridge, UK: IUCN. iii + 41pp.

Loyn, R. H., Rogers, D. I., Swindley, R. J., Stamation, K., Macak, P. & Menkhorst, P. (2014) Waterbird monitoring at the Western Treatment Plant, 2000–12: The effects of climate and sewage treatment processes on waterbird populations. Arthur Rylah Institute for Environmental Research Technical Report Series No. 256. Department of Environment and Primary Industries, Heidelberg, Victoria

Marchant, S. & Higgins, P.J. (eds) (1990) Handbook of Australian, New Zealand and Antarctic Birds. Hardhead, p. 1351. Oxford University Press, Melbourne.

Porter, J.L., Kingsford, R.T., Francis, R., Brandis, K. and Ahern, A. (2022) Eastern Australian Waterbird Aerial Survey - October 2022 Annual Summary Report. Centre for Ecosystem Science, School of Biological, Earth and Environmental Sciences, UNSW Sydney.
https://www.unsw.edu.au/research/ecosystem/our-research/rivers-and-wetlands/eastern-australian-waterbird-survey

Ramsey, D.S.L. & Fanson, B. (2021) Abundance estimates of game ducks in Victoria: Results from the 2020 aerial survey. Arthur Rylah Institute for Environmental Research Technical Report Series No. 325. Department of Environment, Land, Water and Planning, Heidelberg, Victoria.

Ramsey, D.S.L. & Fanson, B. (2022) Abundance estimates for game ducks in Victoria – results from the 2021 aerial and ground surveys. Arthur Rylah Institute for Environmental Research. Department of Environment, Land, Water and Planning, Heidelberg, Victoria

State Government of Victoria (2021). Department of Environment, Land, Water and Planning. *Aythya australis* threatened species assessment. Accessed 15 February 2023.
https://bio-dev-naturekit-public-data.s3-ap-southeast-2.amazonaws.com/species_assessments/Aythya_australis_10215.pdf

Appendix 1: IUCN Red List Categories and Criteria

SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).[1]

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.

A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation *[except A3]*
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
(d) actual or potential levels of exploitation
(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)

	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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			

C. Small population size and decline

	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	**D1.** < 1,000
D2. *Only applies to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	**D2.** typically: AOO < 20 km² or number of locations ≤ 5

E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
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

1 Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.