Threatened Species Assessment

Pygopus schraderi
Hooded Scaly-foot

Taxonomy

Pygopus schraderi Boulenger, 1913

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* as *Pygopus nigriceps* (SAC 1994).

Categorised as Critically endangered in the 2013 Advisory list of threatened vertebrate fauna in Victoria (DSE 2013).

Proposed conservation status

Critically Endangered in Victoria

Criteria C1+2a(i)

Species Information

Description and Life History

The Hooded Scaly-foot is a large legless lizard, attaining a total length of 475mm, and a snout-vent length of about 180mm. Females reach larger sizes than males. Variable in colour, the Hooded Scaly-foot may be pale grey to reddish-brown on the dorsal surface and whitish on the ventral surface. The dorsal scales may be dark-edged, forming a reticulated pattern, or individual pale and dark scales may form a vague longitudinal pattern (Cogger 2018; Robertson and Coventry 2019). The head is usually darker than the body, and this colour may consist of two dark cross-bands. In older specimens these bands may become obscure or merge into a single dark hood (Cogger 2018; Robertson and Coventry 2019).

Like most legless lizards, this species lays a clutch of two eggs once a year. Gravid females have been reported in January and February (Ehmann 1992). The taxon is thought to be largely crepuscular or nocturnal, but may be active during the day at southern latitudes or on cooler days, although they are probably inactive during the winter months (Robertson and Coventry 2019). The Hooded Scaly-foot feeds mainly on surface-active insects and arachnids (Patchell and Shine 1986).

Generation Length

The generation length of Hooded Scaly-foot is estimated to be 4 to 6 years. This is based on published documentation (Greer 2019, DAWW 2019) for other pygopodids (e.g. Delma, Lialis), which have a lifespan of ~8-10 years, and reach sexual maturity at ~2-4 years. It is assumed that the Hooded Scaly-foot exhibits similar characteristics.

Distribution

Old records (pre-1900) exist from Kerang and near Kewell, south of Warracknabeal. There is also an old record of uncertain date from the vicinity of Ouyen, an unconfirmed record from Ulupna Island west of Tocumwal (mid-1970s), and records from Quambatook (1986), Lake Ranfurly, west of Mildura (1992), and 11 records from Terrick Terrick National Park since 1995 (Robertson 1999; J. Coventry pers. comm.). Populations exist in reserves at Terrick Terrick National Park (TTNP), Korrak Korrak Grasslands Reserve (KKGR) and Neds Corner station (both Trust for Nature properties). The lizard possibly occurs in the Bael Bael Grasslands NCR, although flooding and

fire early this millennium has rendered much of previously suitable habitat there unsuitable. No recent records exist for Bael Bael Grasslands Nature Conservation Reserve (BBGNCR). In 2014 a lizard was detected in a private paddock just north of Birchip; follow up surveys in 2018 revealed the site to be overgrown and unsuitable.

Surveys during 2010-2018 on established monitoring transects at TTNP, KKG, and BBGNCR have revealed general low abundance and declines.

Habitat

Within Victoria the taxon occurs in the north of the state and generally inhabits areas of clay and clay-loam soils, with Black Box *Eucalyptus largiflorens*, chenopod, grassland and Buloke *Casuarina luehmannii* vegetation (Robertson 1999). Fallen timber, rocks, mats of dead vegetation, grass tussocks, burrows and soil cracks are used as shelter sites (Wilson and Knowles 1988; Ehmann 1992). The Hooded Scaly-foot is thought to forage both on the surface and in soil cracks and burrows (Robertson 1999).

Threats

The most serious threat to the Hooded Scaly-foot in Victoria is the destruction, degradation and fragmentation of its habitat (Robertson 1999). The taxon may be dependent on ground litter for cover and food resources. Consequently, activities such as grazing, small-scale timber cutting and firewood collection which disturb or destroy this layer may threaten this taxon. Robertson (1999) identified several threats to the TTNP population. The taxon relies on subterranean micro-environments, and any serious disturbance to the soil structure, by processes such as cultivation or excessive trampling by stock, may eliminate it from an area. Weed invasion may modify vegetation structure to the detriment of the taxon.

IUCN Criteria

Criterion 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 and the causes of the reduction are clearly reversible AND understood AND ceased.

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

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

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

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, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 12 to 18 years is estimated to be 25 to 45%, based on (a), (b), (c) and (e) above.

This is based on recent surveys (2010-2015) and limited 2018 surveys at four key locations, and the known impacts of recent events (fire, flood) and regular threats.

Eligible under Criterion A3 as Vulnerable

The population reduction over the next 12 to 18 years is estimated to be 25 to 45%, based on (c) and (e) above.

Short term decline assumes a linear decline, based on Victorian Biodiversity Atlas (VBA) records, recent standardised surveys of four key populations, and the ongoing impacts of the known threats.

Eligible under Criterion A3 as Vulnerable

The population reduction over any 12 to 18 year period, including both past and future, is estimated to be 25 to 45%, based on (a), (b), (c) and (e) above.

Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
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			

Evidence:

Eligible under Criterion B as Endangered

The Area of Occupancy (AoO) is estimated to be 51 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The taxon is estimated to be severely fragmented. There are multiple, small isolated subpopulations that are all at risk from flooding, fire or habitat loss, such that there is increased extinction risk and little or no probability of recolonisation should subpopulations become extinct.

There are three sites (Bael Bael/Korrak Korrak, Ned's Corner, Terrick Terrick), two of which (BB/KK, TT) were affected by flooding in the last decade. All three sites could be significantly affected by fire, so there are three locations.

It has a continuing decline in (i), (ii), (iii), (iv), and (v) above.

Criterion 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 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				

Evidence:

Eligible under Criterion C as Critically Endangered

It is estimated that there are 50 to 200 mature individuals. This assessment is based on recent surveys (2010-2015) and limited 2018 surveys at four key locations.

The number of mature individuals is inferred to continue to decline, based on recent survey data and extrapolation, assuming a linear decline into the longer term.

A continuing decline of 8 to 25% is estimated to occur within 1 generation. The number of mature individuals in each subpopulation is 50 or fewer.

Criterion D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)	< 50	< 250	< 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 species to critically endangered or Extinct in a very short time.	-	-	D2. Typically: AoO < 20 km2 or number of locations ≤ 5

Evidence:

Eligible under Criterion D as Endangered

It is estimated that there are 50 to 200 mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon oes not have a detailed Population Viability Analysis.

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