

Threatened Species Assessment

Cyclodomorphus michaeli Eastern She-oak Skink

Taxonomy

Cyclodomorphus michaeli Wells & Wellington, 1984

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1996).

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

Proposed conservation status

Critically Endangered in Victoria

Criteria A2ce+4ce

Species Information

Description and Life History

The Eastern She-oak Skink is a large and slender skink with smooth body scales, short limbs and a relatively long tail (90-120% of the snout-vent length) and obvious ear openings. Each limb has five fingers or toes, with the third toe slightly longer than the fourth. The Eastern She-oak Skink is typically pale or dark brown, olive or reddish, while its flanks are paler. The ventral surface is usually a paler shade of the main body colour. It also has an obscure pattern produced by scales with dark posterior or lateral margins, tending to the transverse or longitudinal from nape to tail tip. There is a broad dark vertical bar from the eye to the lower lips and the snout tip is usually dark. Such patterning is usually more pronounced in juveniles. Mean adult snout-vent length (SVL) is in the range 130-174 mm (DEPI 2014).

The taxon is viviparous. Mating occurs in early spring and up to 19 young are born in mid-summer (Robertson and Coventry 2019). It is probably predominantly diurnal but may be active on warm nights. It feeds mainly on invertebrates, but likely consumes some plant matter too (Robertson and Coventry 2019).

Generation Length

The generation length of the Eastern She-oak Skink is inferred to be 4 to 8 years. This is inferred from the alpine congener, *Cyclodomorphus praealtus*, which probably first reproduces around 3 or 4 years of age.

Distribution

This taxon is restricted to the far east of the State and appears to be restricted to East Gippsland east of Orbost (Robertson and Coventry 2019, DEPI 2014).

Habitat

The taxon occupies heathy or grassy areas and appears to prefer tussocks; within these areas it shelters in the tussocks themselves, as well as in leaf litter and beneath rocks and other ground debris (Robertson and Coventry 2019). It does not burrow and is dependent on ground vegetation for most stages of its life history, and for shelter.

Cyclodomorphus michaeli

Eastern She-oak Skink

Threats

Major threats to this lizard are habitat loss, fragmentation and degradation, predation, environmental weeds and climate change. Bushfires and fire management activities may also be threats to the persistence of this lizard (DEPI 2014). It is highly vulnerable to direct fire, and then post-fire to exposure from a lack of shelter and to the impacts of feral predators. Feral herbivores (particularly deer) are increasing in numbers and having a detrimental effect on most native vegetation communities in East Gippsland; it is probable that deer are degrading the habitat of this lizard. It is possible that the habitat may also be affected by planned burning and forest management operations such as road construction and maintenance. It is also likely that areas of habitat will continue to be affected by human activities.

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% |
| <p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p> <p style="text-align: center;"><i>based on any of the following:</i></p> <p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p> | | | |

Evidence:

Eligible under Criterion A2 as Critically Endangered

The population reduction over the past 12 to 24 years is inferred to be 50 to 85%, based on (c) and (e) above.

There have been no targeted surveys for this taxon and no monitoring. Clearing and fragmentation of its habitat will have an obvious negative impact, and past activities in East Gippsland that have resulted in loss and fragmentation of habitat will have had a detrimental impact on this species.

At least 80% of its known range was thoroughly burnt in January and February 2020, leading any survivors vulnerable to exposure and predators. Only a small area was unburnt, on Howe Flat.

The causes of the reduction may not have ceased, be understood or be reversible.

Cyclodomorphus michaeli

Eastern She-oak Skink

Eligible under Criterion A3 as Endangered

The population reduction over the next 12 to 24 years is suspected to be 40 to 80% (midpoint 50%), based on (c) and (e) above.

Clearing and fragmentation of the skink's habitat will have an obvious negative impact, and past activities in East Gippsland that have resulted in loss and fragmentation of habitat will have had a detrimental impact. Feral herbivores (particularly deer) are increasing in numbers and having a detrimental effect on most native vegetation communities in East Gippsland; it is probable that deer are degrading the habitat of this lizard. Any survivors of the East Gippsland bushfires will be under pressure from habitat damage, and any subpopulations are likely to be small and at risk of in-breeding. The upper limit of decline is based on the likelihood that Howe Flat will be burnt in future fires.

Eligible under Criterion A4 as Critically Endangered

The population reduction over any 12 to 24 year period, including both past and future (up to 100 years in the future), is suspected to be 50 to 85%, based on (c) and (e) above. The causes of reduction may not have ceased, be understood or be reversible.

This is based on the past and future impacts of the identified threats, and the risk of future fires.

| 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 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 | | | |

Evidence:

Eligible under Criterion B as Endangered

The Extent of Occurrence (EoO) is estimated to be 1,528 km², based on accepted, post-1970 records in the Victorian Biodiversity Atlas (VBA).

The Area of Occupancy (AoO) is estimated to be 84 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA.

The taxon has one location and a continuing decline in (iii) and (v) above.

Cyclodomorphus michaeli

Eastern She-oak Skink

| 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:

Ineligible under Criterion C as Data Deficient

There is insufficient evidence to determine the number of mature individuals.

| Criterion D. Very small or restricted populations | | 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 km ² or number of locations ≤ 5 |

Evidence:

Ineligible under Criterion D

There is insufficient evidence to determine the number of mature individuals.

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

References

Cogger, HG. (2014). *Reptiles and Amphibians of Australia*. CSIRO, Collingwood, Victoria.

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Cyclodomorphus michaeli Eastern She-oak Skink

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