

NSW Threatened Species Scientific Committee

Conservation Assessment of *Anilios batillus* Waite 1894 (Typhlopidae)

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NSW Threatened Species Scientific Committee

***Anilios batillus* Waite 1894 (Typhlopidae)**

Distribution: Endemic to NSW

Current EPBC Act Status: Not listed

Current NSW BC Act Status: Not Listed

Proposed listing on NSW BC Act: Not listed (as it is data deficient)

Conservation Advice: *Anilios batillus*

Summary of Conservation Assessment

Anilios batillus was found to be ineligible for listing as it is Data Deficient under all Criteria. The species is known from a single specimen reportedly collected from Wagga Wagga, but this locality has been deemed suspect. There are no data available to determine population size or trends, distribution nor information on threats to the population or habitat of this species.

A recent IUCN assessment found *Anilios batillus* to be Data Deficient on the basis that “the provenance of this species, which is known from a single 19th Century specimen, is unclear and it is consequently unknown whether it is subject to major threats” (Shea *et al.* 2018).

Description and Taxonomy

Anilios batillus was described by Cogger (2014) as:

“Life colours unknown, but from the preserved specimen is likely to have been dark brown with faint, narrow, longitudinal, dark stripes resulting from blackish outer edges of the individual scales; paler belly, probably white or creamy-yellow. Snout distinctly pointed above, angular and shovel-shaped in profile. Nasal cleft completely dividing the basal scale, but not visible from above. Rostral oval from above, widest in front. Scales in 24 rows at mid-body. Length is 53 times the body diameter. Total length of only known specimen 32cm.”

Common Name: Shovel-snouted Blind Snake

Due to the questionable collection locality of the only specimen (Cogger *et al.* 1983; Shea 1999) and similarities between this specimen and New Guinea and Solomon Island typhlopids (McDowell 1974), the species was, for a time, excluded from lists of Australian herpetofauna (Wilson and Knowles 1988; Swan 1990; Weigel 1990; Ehmann 1992). However, comparisons of the holotype to all other typhlopids species by Shea (1999) concluded that it was distinct from all other typhlopids species and was most similar to Australian *Ramphotyphlops* (now *Anilios*; Hedges *et al.* 2014; Pyron and Wallach 2014), reinstating it as a member of the Australian herpetofauna. It remains uncertain whether the species correctly belongs to the the same genus as other Australian blindsnakes (Shea 1999; Shea *et al.* 2017)

Synonyms: *Typhlops batillus*, *Ramphotyphlops batillus*, *Typhlina batilla*, *Libertadictus batillus*, *Austrotyphlops batillus*.

Distribution and Abundance

The species is known from a single specimen, reportedly from Wagga Wagga, New South Wales, collected prior to 1894. However, there is doubt regarding the provenance of this specimen and it could have come from anywhere, including outside Australia (Cogger *et al.* 1983; Shea 1999; Shea *et al.* 2017).

NSW Threatened Species Scientific Committee

There have been no specific surveys for this species around Wagga Wagga (G. Shea *in litt.* May 2018), although the greater region has been subject to some general herpetological surveys, which have not located the species (Annable 1995; Murphy 2012). However, blind snakes are difficult to survey due to their fossorial and nocturnal habits.

There is no available census data to assess the population size of *Anilius batillus*.

Ecology

There have been no detailed behavioural or ecological studies on this species and little information is known about its specific habitat or life history.

In general, blind snakes are fossorial and shelter in termite mounds, under leaf litter, rocks or logs or in rotting wood (Cogger 2014). They are nocturnal with most activity occurring on warm nights during or after rain (Cogger 2014; Greer 1997).

Like other blind snakes, this species is likely to feed mainly on larvae and pupae of ants and termites (Cogger 2014). It is presumed to be oviparous, with eggs likely to be laid in late spring to summer (Greer 1997). Blind snakes emit an unpleasant odour from their anal glands, if threatened (Cogger 2014). The population structure of blind snakes is unknown (Greer 1997).

There is no information available on growth rate, age to maturity or longevity of the species.

Threats

There are no documented threats to *Anilius batillus*.

The general region in which the species was originally recorded has undergone significant changes as a result of agricultural development (OEH 2016). Potential threats include habitat loss from land clearing, habitat degradation including soil compaction and erosion by introduced species such as cattle, rabbits and goats and predation by feral animals such as cats and foxes.

Assessment against IUCN Red List criteria

There is insufficient evidence to support any listing outcome for *Anilius batillus* as a result of the limited information available and provenance uncertainty.

IUCN (2017) states that: 'if a taxon is only known from its type locality and there is no information on its current status or possible threats, the taxon should be listed as Data Deficient.' In addition, if a "taxon is known only from one or more specimens with no or extremely uncertain locality information, ...it is not possible to make any further inference about its status" and the species should be considered to be Data Deficient (IUCN 2017).

Criterion A Population Size reduction

Assessment Outcome: Data Deficient

Justification: To be listed as threatened under Criterion A the species must have experienced a population reduction of $\geq 30\%$ (VU threshold) over three generations or 10 years (whichever is longer). No quantifiable data is available on the population size or dynamics of this species and there are no data on population declines over any relevant time frames (10 years or 3 generations). Therefore, there is insufficient data to assess *Anilius batillus* against this criterion.

Criterion B Geographic range

Assessment Outcome: Data Deficient

NSW Threatened Species Scientific Committee

Justification: This species is known from only one specimen reportedly from the 'Wagga Wagga' area. However, the provenance of this specimen is uncertain, and there is some debate as to whether the specimen was even collected in Australia. Therefore, there is insufficient data to assess *Anilios batillus* against this criterion.

In addition to these thresholds, at least two of three other conditions must be met. These conditions are:

- a) The population or habitat is observed or inferred to be severely fragmented or there is 1 (CR), ≤ 5 (EN) or ≤ 10 (VU) locations.

Assessment Outcome: Data Deficient

Justification: There is insufficient data to assess whether *Anilios batillus* is severely fragmented in population or habitat. Additionally, there are no documented threats to determine the number of locations.

- 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

Assessment Outcome: Data Deficient

Justification: There are no documented threats to *Anilios batillus* for which to determine whether or not there is a continuing decline in population size, geographic distribution or habitat quality.

- c) Extreme fluctuations.

Assessment Outcome: Data Deficient

Justification: There is no available data to assess the likelihood of extreme fluctuations in population size or geographic distribution of *Anilios batillus*.

Criterion C Small population size and decline

Assessment Outcome: Data Deficient

Justification: Currently there is no available data to assess the population size or decline in *Anilios batillus*. No targeted surveys have been undertaken and it is not possible to determine the number of mature individuals based on the one record available.

At least one of two additional conditions must be met. These are:

- C1. An observed, estimated or projected continuing decline of at least: 25% in 3 years or 1 generations (whichever is longer) (CE); 20% in 5 years or 2 generations (whichever is longer) (EN); or 10% in 10 years or 3 generations (whichever is longer) (VU).

Assessment Outcome: Data Deficient

Justification: There are no documented threats to *Anilios batillus* and no data on population declines over any relevant timeframes determine if there is a continuing decline in population size.

- C2. An observed, estimated, projected or inferred continuing decline in number of mature individuals.

Assessment Outcome: Data Deficient

Justification: There are no documented threats to *Anilios batillus* for which to determine whether or not there is a continuing decline in population size.

In addition, at least 1 of the following 3 conditions:

NSW Threatened Species Scientific Committee

- a (i). Number of mature individuals in each subpopulation ≤ 50 (CR); ≤ 250 (EN) or ≤ 1000 (VU).

Assessment Outcome: Data Deficient

Justification: There is no available census data to assess the number of mature individuals per subpopulation of *Anilius batillus*.

- a (ii). % of mature individuals in one subpopulation is 90-100% (CR); 95-100% (EN) or 100% (VU)

Assessment Outcome: Data Deficient

Justification: The percentage of mature individuals per subpopulation is unknown. There is insufficient data to assess *Anilius batillus* against this subcriterion.

- b. Extreme fluctuations in the number of mature individuals

Assessment Outcome: Data Deficient

Justification: There is no available data to assess the likelihood of extreme fluctuations in population size or geographic distribution of *Anilius batillus*.

Criterion D *Very small or restricted population*

Assessment Outcome: Data Deficient

Justification: Currently there is no available data to assess the total number of mature individuals or the geographic range of *Anilius batillus*. There are no documented threats to this species. Therefore, there is insufficient data to assess *Anilius batillus* against this criterion.

Criterion E *Quantitative Analysis*

Assessment Outcome: Data Deficient

Justification: There is insufficient data available to undertake a quantitative analysis to determine the extinction probability of *Anilius batillus*.

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NSW Threatened Species Scientific Committee

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Expert Communications

- Jodi Rowley, NSW Threatened Species Scientific Committee & Curator of Amphibian & Reptile Conservation Biology, Australian Museum & UNSW Sydney.
- Glenn Shea, Senior Lecturer, University of Sydney & Research Associate, Australian Museum.

Biodiversity Conservation Regulations 2017

Clause 4.2 – Reduction in population size of species

(Equivalent to IUCN criterion A)

Assessment Outcome: Data deficient

(1) The species has undergone or is likely to undergo within a time frame appropriate to the life cycle and habitat characteristics of the taxon:			
	(a)	for critically endangered species	a very large reduction in population size, or
	(b)	for endangered species	a large reduction in population size, or
	(c)	for vulnerable species	a moderate reduction in population size.
(2) The determination of that criteria is to be based on any of the following:			
	(a)	direct observation,	
	(b)	an index of abundance appropriate to the taxon,	
	(c)	a decline in the geographic distribution or habitat quality,	
	(d)	the actual or potential levels of exploitation of the species,	
	(e)	the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.	

Clause 4.3 - Restricted geographic distribution of species and other conditions

(Equivalent to IUCN criterion B)

Assessment Outcome: Data deficient

The geographic distribution of the species is:			
	(a)	for critically endangered species	very highly restricted, or

NSW Threatened Species Scientific Committee

	(b)	for endangered species	highly restricted, or
	(c)	for vulnerable species	moderately restricted,
and at least 2 of the following 3 conditions apply:			
	(d)	the population or habitat of the species is severely fragmented or nearly all the mature individuals of the species occur within a small number of locations,	
	(e)	there is a projected or continuing decline in any of the following:	
		(i)	an index of abundance appropriate to the taxon,
		(ii)	the geographic distribution of the species,
		(iii)	habitat area, extent or quality,
		(iv)	the number of locations in which the species occurs or of populations of the species,
	(f)	extreme fluctuations occur in any of the following:	
		(i)	an index of abundance appropriate to the taxon,
		(ii)	the geographic distribution of the species,
		(iii)	the number of locations in which the species occur or of populations of the species.

Clause 4.4 - Low numbers of mature individuals of species and other conditions

(Equivalent to IUCN criterion C)

Assessment Outcome: Data deficient

The estimated total number of mature individuals of the species is:			
	(a)	for critically endangered species	very low, or
	(b)	for endangered species	low, or
	(c)	for vulnerable species	moderately low,
and either of the following 2 conditions apply:			
	(d)	a continuing decline in the number of mature individuals that is (according to an index of abundance appropriate to the species):	
		(i)	for critically endangered species very large, or
		(ii)	for endangered species large, or
		(iii)	for vulnerable species moderate,
	(e)	both of the following apply:	
		(i)	a continuing decline in the number of mature individuals (according to an index of abundance appropriate to the species), and
		(ii)	at least one of the following applies:
		(A)	the number of individuals in each population of the species is:
			(i) for critically endangered species extremely low, or
			(ii) for endangered species very low, or
			(iii) for vulnerable species low,
		(B)	all or nearly all mature individuals of the species occur within one population,
		(C)	extreme fluctuations occur in an index of abundance appropriate to the species.

NSW Threatened Species Scientific Committee

Clause 4.5 - Low total numbers of mature individuals of species

(Equivalent to IUCN criterion D)

Assessment Outcome: Data deficient

The total number of mature individuals of the species is:			
	(a)	for critically endangered species	extremely low, or
	(b)	for endangered species	very low, or
	(c)	for vulnerable species	low.

Clause 4.6 - Quantitative analysis of extinction probability

(Equivalent to IUCN criterion E)

Assessment Outcome: Data deficient

The probability of extinction of the species is estimated to be:			
	(a)	for critically endangered species	extremely high, or
	(b)	for endangered species	very high, or
	(c)	for vulnerable species	high.

Clause 4.7 - Very highly restricted geographic distribution of species—vulnerable species

(Equivalent to IUCN criterion D2)

Assessment Outcome: Data deficient

For vulnerable species,	the geographic distribution of the species or the number of locations of the species is very highly restricted such that the species is prone to the effects of human activities or stochastic events within a very short time period.
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