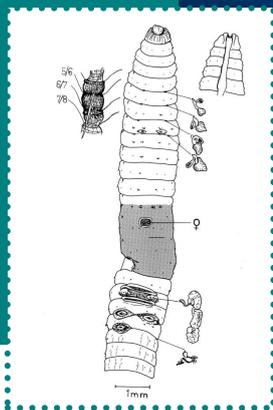


# *Hypolimnus pedderensis*

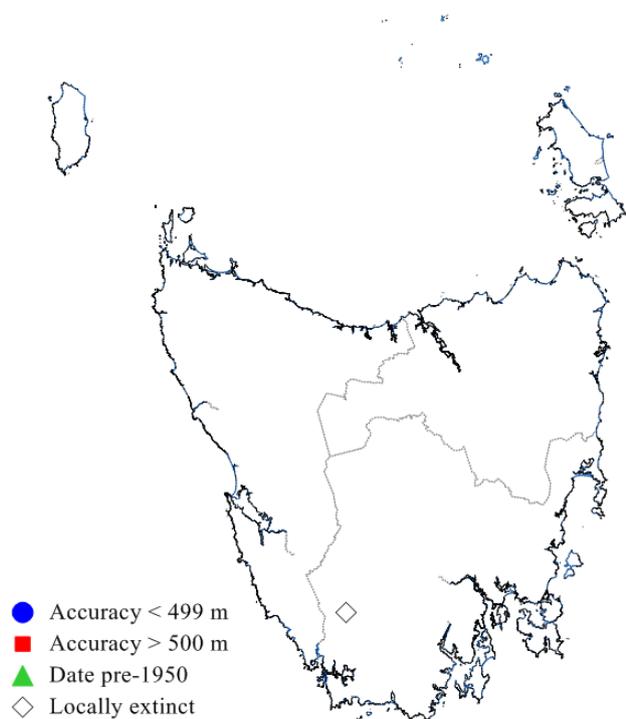
## Lake Pedder Earthworm

TASMANIAN THREATENED SPECIES LISTING STATEMENT

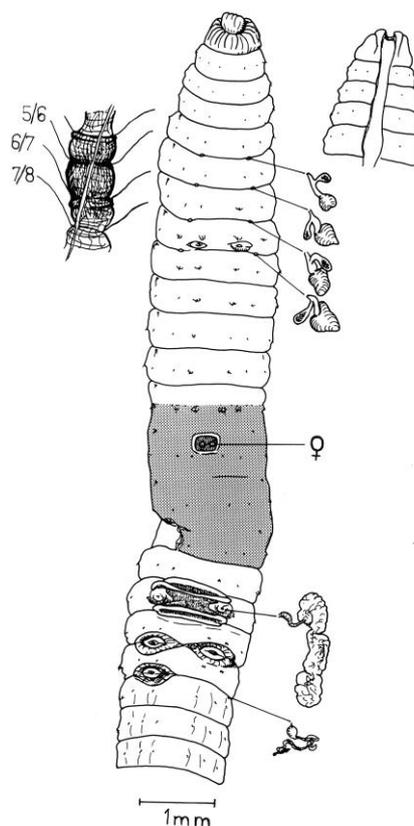


Line drawing by Robert Blakemore

- Common name:** Lake Pedder Earthworm
- Scientific name:** *Hypolimnus pedderensis* (Jamieson)
- Group:** Invertebrate, Annelida, Oligochaetae, Megascolecidae
- Name history:** *Perionychella pedderensis* (Jamieson, 1974); *Diporochaeta pedderensis*
- Status:** *Threatened Species Protection Act 1995:* **extinct**  
*Environment Protection and Biodiversity Conservation Act 1999:* **Extinct**  
*IUCN Red List:* **Extinct**
- Distribution:** Endemic status: **Endemic**  
Tasmanian NRM Regions: **South**



**Figure 1.** The distribution of the Lake Pedder Earthworm



**Plate 1.** The Lake Pedder Earthworm (Line drawing by Robert Blakemore)

#### SUMMARY

The Lake Pedder Earthworm is known from a single collection from the sandy shores of Lake Pedder, found prior to the flooding of the lake for the generation of hydro-electric power generation. The species has not been detected since 1971, despite some targeted surveys of potential habitat. The species is now presumed to be extinct.

#### IDENTIFICATION AND ECOLOGY

The Lake Pedder Earthworm is a species of segmented earthworm. It was described by Jamieson (1974) from a single slightly damaged specimen collected in 1971.

Virtually nothing is known of the biology or life history of the Lake Pedder Earthworm. Jamieson (1974) indicated that the gut contents of the single specimen contained sand, possibly indicating that the species feeds on microbes and/or algae on sand particles or organic matter amongst the sand.

#### Survey guidelines

Surveys can be undertaken at any time of the year and involve hand sampling soil to search for interstitial fauna (fauna that inhabits the spaces within sediments), followed by sorting and identification.

#### Description

The single specimen of the Lake Pedder Earthworm is 50 mm in length and 1.6 mm in diameter. It has 129 body segments. The head area and the back have faint brown pigmentation (yellowed in alcohol) and the clitellum (the smooth, short section of skin collaring the body of the worm that secretes cocoons for reproduction) is buff. Description adapted from Blakemore (1996, 2000).

#### Confusing species

Identification of terrestrial earthworms requires specialist expertise. Blakemore (1996, 2000) discusses the distinctiveness of the Lake Pedder Earthworm, especially in relation to closely related and potentially sympatric species. The differences between closely related species are slight, based on anatomical features requiring

some level of microscopic dissection and understanding of earthworm morphology. For example, multiple oesophageal gizzards (and reduced dorsal pores) warranted its placement in a new genus (Blakemore 2000). Doubled (or tripled) oesophageal gizzards are a characteristic of several mainland Australian genera, but these genera are lumbricine and meroic. *Hypolimnus* is the only perichaetine and holonephric genus of earthworms known to have multiple oesophageal gizzards, and *Hypolimnus pedderensis* the only species (Blakemore 2000).

#### DISTRIBUTION AND HABITAT

The Lake Pedder Earthworm is endemic to Tasmania, known only from the sandy shore of the main beach of the original Lake Pedder, where Maria Creek came to the lake edge (Table 1, Figure 1).

Little is known about the historical distribution of the Lake Pedder Earthworm. However, it is likely that it was restricted to the beach and shores of the original Lake Pedder (Blakemore 2000, Plate 2).



Plate 2. Lake Pedder prior to flooding (image by Paddy Dalton)

No information on habitat was provided in the original description of the Lake Pedder Earthworm by Jamieson (1974) other than that the specimen was sorted from interstitial fauna. From this it is assumed that the species favoured sandy waterlogged sediments (Blakemore 1996).

**Table 1.** Population summary for the Lake Pedder Earthworm

	Location	Tenure	NRM region	1:25 000 mapsheet	Year last seen	Extent of subpopulation (ha)	Abundance
1	Lake Pedder	Southwest National Park (World Heritage Area)	South	Solitary	1971	Unknown	Unknown

NRM region = Natural Resource Management region

#### POPULATION PARAMETERS

There is no information available on total population numbers of the Lake Pedder Earthworm (Table 1). The species was described from a single specimen (Jamieson 1974) collected in 1971.

Surveys conducted since the flooding of the original lake have failed to locate further specimens (e.g. Dyne 1991, Blakemore 1996). Both authors concluded that the Lake Pedder Earthworm was most likely extinct because its original habitat has been destroyed.

#### RESERVATION STATUS

The only known location where the Lake Pedder Earthworm was known to occur was within the Southwest National Park, which is part of the Tasmanian Wilderness World Heritage Area.

#### CONSERVATION STATUS

The Lake Pedder Earthworm was listed in 1995 as endangered on the Tasmanian *Threatened Species Protection Act 1995*, and in 2011 was uplisted to extinct.

A status of extinct is usually based on evidence that a species has not been confirmed from the wild for more than 50 years. However, in the case of the Lake Pedder Earthworm, it is reasonable to presume that the species is extinct because the only known collection of the species (of a single specimen) is from 1971, prior to the inundation of the original Lake Pedder (which occurred in 1972), from which shores the species was originally located.

#### THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

The total and permanent inundation of the only known site (represented by a single specimen collected in 1971) for the Lake Pedder Earthworm on the shores of the original Lake Pedder occurred in 1972 for a hydro-electric power scheme. This resulted in the elimination of the only known population of the species (Blakemore 2003).

No other threats are identified.

#### MANAGEMENT STRATEGY

##### What has been done?

Surveys have been conducted for the species since the flooding of the original lake but have failed to locate further specimens (e.g. Dyne 1991, Blakemore 1996). These surveys were commissioned by the World Heritage Area fauna program and specifically targeted the species.

The first survey (Dyne 1991) was a sampling program in the Serpentine and Upper Huon catchments designed to locate remnant populations of the species, and noted that “the present impoundment exhibits environments so different to the original lake that sampling at its margins for earthworms cannot be productive”, hence the survey of parts of the Serpentine River catchment (in which the original Lake Pedder was located) and upper Huon River catchment (some streams of this catchment flow into the new Lake Pedder). The second was a more extensive survey of the shores of the new Lake Pedder (Blakemore 1996).

## Management objectives

There are limited practical management options for a presumed extinct invertebrate that was likely to be restricted to a specialised habitat type, now completely inundated.

Subject to funding and an appropriate priority framework, attempts to re-discover the species could be made.

## What is needed?

Targeted surveys would be needed to re-discover the species. Surveys to date (e.g. Dyne 1991; Blakemore 1996) have been undertaken by targeting potentially suitable habitats on the margins of Lake Pedder (essentially qualitative with respect to attempting to find the species) and have not been quantitative (in terms of survey effort with respect to length, intensity and pattern of survey). Future surveys aimed at rediscovering the species would also be qualitative in nature, targeting potential habitat, possibly in other lake systems such as Lake Rhona and lakes with similar quartzite-based shores. Furthermore, although the species is presumed extinct, if any future survey seeks to find the worm it would be most important to collect specimens for confirmation of identification and perhaps to try to take DNA samples (e.g. from tip of tail) for comparison with the type.

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## View:

[www.dpipwe.tas.gov.au/threatenedspecieslists](http://www.dpipwe.tas.gov.au/threatenedspecieslists)

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**Permit:** A permit is required under the *Tasmanian Threatened Species Protection Act 1995* and *Nature Conservation Act 2002* to “take” (which includes kill, injure, catch, damage, destroy and collect), keep, trade in or process any specimen or products of a listed species. Additional permits may also be required under other Acts or regulations to take, disturb or interfere with any form of wildlife or its products, e.g. on reserved land.