

First 'common' earthworm found in Tasmania

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Summary: The European earthworm *Lumbricus terrestris* Linnaeus, 1758 has been found in a suburban garden in Launceston - the first authenticated record of this species in Australia.

Studies on *L. terrestris* have a long history, it was one of the species considered by Charles Darwin in his famous treatise on earthworms (Darwin 1881). In the past, various species of earthworms introduced into Australia have been misidentified as *L. terrestris*. An unfortunate consequence of earlier unsubstantiated accounts of presence in Australia is its erroneous listing as an introduced species in the scientific literature. Here I describe the animal, give details of the Launceston find and comment on earlier accounts of its distribution. A formal scientific note on *L. terrestris* in Tasmania will appear elsewhere*.

Description: *Lumbricus terrestris* (see illustration Fig. 1) is a fairly stout-bodied earthworm about 250 mm long and 12 mm wide. The posterior third of the body flattens and assumes a spade-like shape when the worm is disturbed. In life, the top of the worm is gunmetal gray with a blue iridescence, while the underside is pink and the clitellum ('saddle') is yellowish. There are 136 segments, with the clitellum on segments 32-37. There are eight setae per segment, closely paired in regular rows. Dorsal pores: 7/8 small, from 8/9 larger. Nephropores: large at anterior margin of segment just lateral of the 'b' setal line on many segments (e.g. on right-hand side on 11-15, 20, 22-25, 28, 30-36, 39-44, etc.), irregularly alternating to between the 'd' line and mid-dorsum (e.g. on right-hand side seen in dorsal position on 3-7, 9, 17-19, 21, 26-27, 29, 33-34, 37-39, 44-45). (Note: see illustration for location of 'a', 'b', 'c' and 'd' setal lines. It is not known why in some segments the nephropores appear to be in both positions on one side.) Spermathecal pores: in 9/10/11 in 'cd', nearer to 'c' lines. Female pores: paired, just lateral of 'b' setae on 14. Male pores: towards lateral extremity of equatorial slits within tumid lips between 'a' and 'c' setal lines, confined to 15; distinct mound tract (formed by parallel seminal grooves?) extends from male pores (or female pores?) to clitellum between 'b' and 'c' line on both sides. Genital markings: ventral setal couples within slightly tumid pads, especially 8, 9-11, 25, 31-32 and 37-38; tubercula pubertatis as elongate smooth pad just median of 'c' line in 33-36 on both sides. Details of the internal anatomy of *L. terrestris* are readily available in zoology textbooks (e.g. Sims & Gerard

1985, figs 4 & 6). In order to avoid excessive damage to the single available specimen, I have not dissected it. The description agrees with that of Sims & Gerard (1985: 106-108, figs 1, 37 & 38), who for internal anatomy only remark on the septa and seminal vesicles, and also with descriptions by Gates (1972: 118-123) and Lee (1959: 365-368).

Biology: I found the animal (QVM registration number 14:3648) on the soil surface while I was digging to 1 m depth in black clay in a suburban garden at 145 Holbrook Street, Invermay, Launceston on 29 June 1997. The specimen is mature and compete; it was fixed in 10% formalin and preserved in 80% ethanol. (Other specimens not kept).

The characteristic spade-shaped tail is believed to enhance gripping of the burrow walls, as the worm's foraging behaviour is to anchor the tail in the mouth of the burrow and to drag leaves and twigs back down for feeding. The burrow may extend to 3 m depth, and the entrance is often marked by a small midden of pebbles and twigs as well as a plug of leaves, etc (Gates 1972, Sims & Gerard 1985). *L. terrestris* is usually described as being nocturnally active (e.g. Linnaeus 1758: 647; '*adscendit noctu*'), and its above-ground wandering and copulation have earned it the common name in North America of the 'European Nightcrawler' (in French Canada, 'ver nocture rampant'). However, its dark pigmentation indicates a need for protection from sunlight and the present specimen was rapidly escaping over the soil surface in daytime. This escape response may have been enticed by my digging; perhaps I reminded the worm of a European mole (*Talpa* sp.) for which *L. terrestris* is a favourite food. Such an escape response is exploited by predatory birds like lapwings (*Vanellus* spp.) that mimic the mole-digging vibrations by stamping on the soil surface (Darwin 1881: 28).

Confusion. A number of references note that other earthworm species have frequently been confused with *L. terrestris* in the past, possibly due partly to its inaccurate characterisation in school texts as 'the common earthworm', an expression rejected for this species by, amongst others, Stephenson (1930) in a preface to his great monograph. Gates (1972: 123) remarks that:

'A belief that almost any earthworm is *Lumbricus terrestris* is not entirely restricted to high-school graduates who have had an elementary course in biology (cf. Stephenson, 1930: xi). The species used in a recent electron-microscope study of sperm cytology was said to be *L. terrestris* but actually was *Allolobophora* [= *Aporrectodea*] *tuberculata*'.

A species that has often been confused with *L. terrestris* until relatively recently is *Aporrectodea longa* (Ude), the distribution of which was given by Sims & Gerard (1985:

64) as extending to 'Australia (including Tasmania)'. *Ap. longa* has been frequently reported from all Australian States (see Blakemore, 1997: 607 for a list of records of this and 15 other introduced lumbricid species). For example, Wood (1974), while acknowledging Professor Jamieson for identifying the earthworms, recorded this species as *Allolobophora terrestris f. longa* (Ude) from Kosciusko National Park. Gates (1972: 75-76), who had earlier shown that this latter name is illegitimate, went on to state that:

Ap. longa is not known to have been sold or used for bait in North America but the species may have occasionally been mistaken for [*L.*] *terrestris*, unless anglers are more careful than university professors'.

Distribution. According to Sims & Gerard (1985: 108) the distribution of *L. terrestris* includes 'the Holarctic and temperate regions of South America, Australia, New Zealand, several temperate oceanic and other southern islands'. It is said to be found 'in many undisturbed, terrestrial habitats, most numerous in grasslands (including lawns) and orchards, less common in woodland, arable soil and river banks. Found in alkaline soils of pH 6.2-10.0; especially abundant in clay'. In New Zealand, Lee (1959: 367-368) regarded this species as 'quite common in garden soils in Auckland, Hamilton, and probably in other nearby towns'. However, the record of this species in 'Australia' in Sims & Gerard (1985) is unauthenticated, although these authors cite Gates (1972) in their references and Gates (1972: 119) lists this species in Australia, again without reference. The only earlier report that I can find for this species in Australia is by Jamieson (1965: 40) where, after explaining how 'essential' it was not to confuse species, he proclaims:

'The British "Common Earthworm", *Lumbricus terrestris*, has been found to flourish in Australian earthworm farms and is of value'.

Reynolds (1977: 7, 101) explains how *L. terrestris*, although routinely collected at night for fishing bait and study in North America, cannot be commercially cultured economically because of its long life cycle, low reproductive rate, and large spatial requirements. Jamieson's report of this species in Australian worm farms is therefore highly dubious. Furthermore, since no specimens of *L. terrestris* are known in any reference collection in Australia, and since Jamieson (1981: 898-899) fails to mention this species amongst the six lumbricids he does report from Australia, then Jamieson's earlier claim is most likely erroneous.

The finding of *L. terrestris* brings to about 60 the author's (unpublished) tally of introduced earthworms in Australia*.

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*[Subsequently published:

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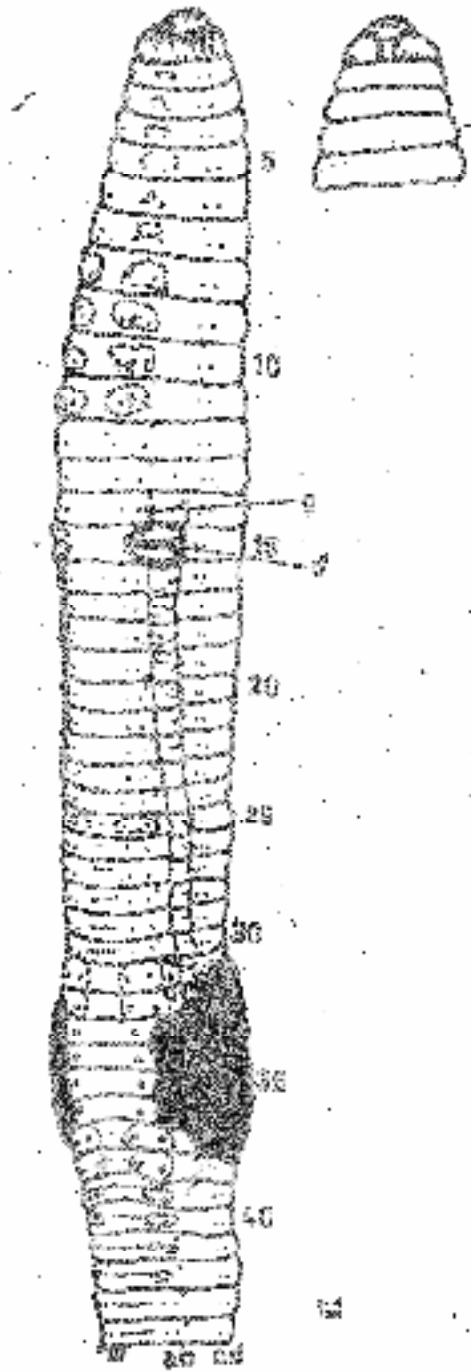


Fig. 1 Ventrolateral view of *Lumbricus terrestris* Linnaeus, 1758, and dorsal view of prostomium (QVM specimen 14:3648) [© R.J.B. 1997].