

## Two Species of Lugworm

by Chris Everson

British Marine Life Study Society Information Page

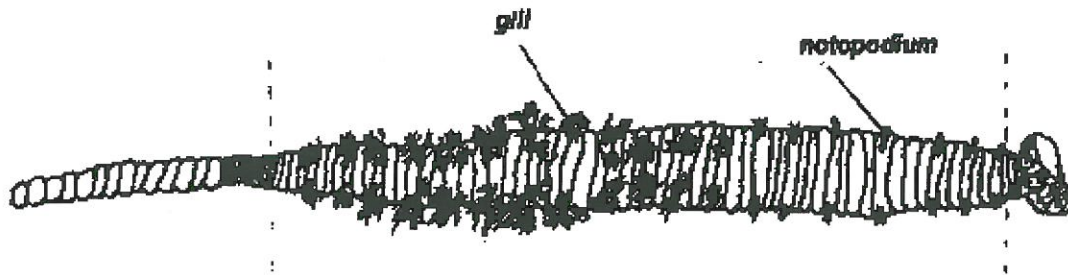
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The Lugworm, *Arenicola marina*, is extremely common around the British coastline, with most books on seashore life describing these animals in great detail. Sea anglers however, have known for many years that Lugworms do not all behave in the same way, they look different, have different habitats and casts and certainly appears to be more than a single species. This was proved correct, when, in 1993, two researchers from Swansea University reclassified *Arenicola* to include a new species known as *Arenicola defodiens*.



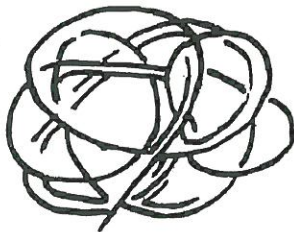
In addition to a number of genetic differences, their arguments to support this additional species were morphological, environmental and physiological. Amongst anglers, these species are better known as Black Lug *A. defodiens* and Blow Lug *A. marina*. Both species are common along areas of the Sussex coastline.

### The Lugworm

#### Differences

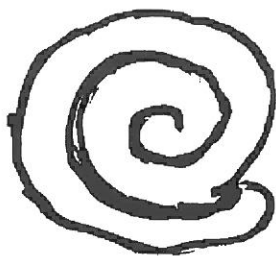
So, what are the differences between these two species? Using information from the findings of Cadman and Nelson Smith<sup>1</sup> and my own research, the following should provide an insight into the differing features and ecology of these two species.

The cast, which is the coil of defecated material lying on the sand surface, and frequently seen at low tide, can usually identify the species. Black Lug usually have a neat, round coiled cast, often like a Catherine wheel, while the Blow Lug cast is generally an untidy pile! Many Blow Lug casts may also have an adjacent saucer shaped feeding depression, created from their feeding method while resident in their 'U' shaped burrow.



Blow Lug cast

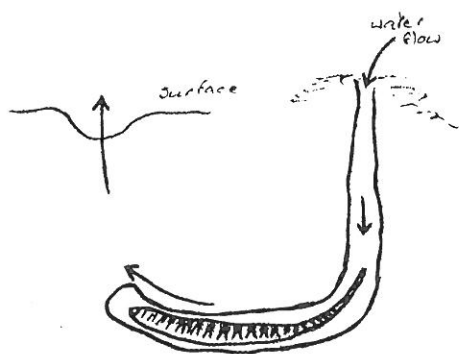




### Black Lug cast

### Burrows

The burrow of Black Lug appears to be vertical and will often descend to depths of up to a metre although most usually the worm can be found at depths between 40-70cm, which must make it the deepest of intertidal burrowers. I have rarely found Blow Lug deeper than 40 cm. Their different burrow depths and alignment could imply different feeding methods, as the method employed by Blow Lug of loosening soil at its head, thus transporting bacterial growth and organic matter from the surface area, would not appear to be copied by Black Lug.



### Blow Lug in burrow

### Aquaria

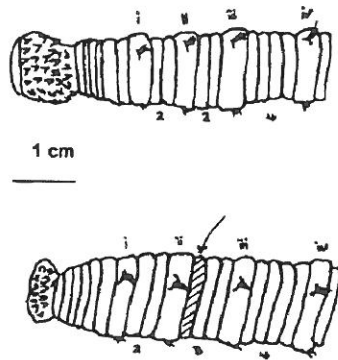
My experiments in aquariums have been unable to keep Black Lug alive in sand for more than 13 days and in that time they produced no casts (regardless of organic matter being placed in the water or on the sand surface). However, Blow Lug would start laying casts within 8 hours and continued for periods of up to 2 months before being released back to their capture area, with no fatalities whatsoever.

### Habitats

When both species are found together on the same stretch of shoreline, there is often a suggestion of zonation. Black Lug are usually found lower down the intertidal area, sometimes only visible on the larger spring low tides, while Blow Lug are found in greater numbers higher up the beach, and can often be observed on the smallest neap tides at low water.

### Identification

Black Lug is the larger species. I have collected a number in the past between 30 and 40 cm in length, although the average size is between 20 and 30 cm. Blow Lug average between 15 and 20 cm except in the nursery areas and rarely exceed 25 cm. Interestingly, immature Black Lug have not knowingly been found.



### Morphological pattern showing additional segment in Blow Lug

Nursery beds containing immature Blow Lug, identified by the tiniest of casts usually grouped together, are common in the latter part of the summer after larval settlement. Even on a worm no longer than 10 mm, species identification can be determined with the aid of a microscope by the presence of an additional 'segment' (see drawing), between the second and third notopodium. This difference is obvious in larger worms and can be seen with the naked eye. Another morphological difference is the structure of the gills, which does need the use of a microscope and requires a bit of practice!

It may be that immature Black Lug can be found below the low tide mark, as it is known that adults extend well into the sub-littoral. Clearly there is further research to be done. A further difference between these two species can be observed during handling. Black Lug usually eviscerates but Blow Lug does not. Again, the reasons for this are unknown, but may be a reaction to stress or a defensive action similar to that exhibited by some sea cucumbers.

From my own studies and building on research from the original study by Cadman and Nelson-Smith, there is a suggestion that Black Lug could be regarded as a substrate specialist. Ranges of salinities and average sand grain size appear to be narrower for Black Lug and observations additionally suggest that they are more likely to be found on the more exposed beaches, and consequently those with less detrital deposits.

### Distribution

At present I have identified the presence of Black Lug at many sites from Shoreham-by-Sea, Sussex, eastwards to the Thames estuary, but would be very interested in known locations westwards from Shoreham-by-Sea. I appreciate that some anglers are very protective about locations of their favourite bait, but any details would be treated for further data gathering only.

At least a further two species of lugworms are also found in sediments amongst rocky areas around Britain. These are *Arenicolides branchialis* and *Arenicolides ecaudata*<sup>2</sup>.

<sup>1</sup> Cadman, P.S. & Nelson-Smith, 1993. A new species of Lugworm: *Arenicola defodiens* sp. nov. Journal of the Marine Biological Association, Vol. 73, pp. 213-223

<sup>2</sup> Handbook of the Marine Fauna of North-west Europe, Edited by P.J. Hayward & R.S. Ryland.

### Weight of English Lugworms (notes)

#### Taxonomy

**Phylum:** Annelida  
(Segmented worms)

<b>Class:</b> Polychaeta (Bristleworms) <b>Family:</b> Arenicolidae <b>Genus:</b> Arenicola
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<a href="#"><u>Homepage</u></a>	<a href="#"><u>Index</u></a>	<a href="#"><u>News</u></a>	<a href="#"><u>Main Links</u></a>	<a href="#"><u>Top of the Page</u></a>
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