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Earthworm Society of Britain

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In the UK and Ireland 27 species of earthworm have been recorded living in natural environments. Earthworms are under-recorded and as a result we know very little about the true distribution of many of our species. In fact, distribution maps have only been published for a handful of species. The Earthworm Society of Britain (ESB) was set up to tackle this issue and now manages the National Earthworm Recording Scheme. The aims of this scheme are to train new earthworm recorders and produce new earthworm records.

On 17 October 2015 Dr Dan Carpenter led a team of experienced and trainee earthworm recorders to undertake earthworm sampling at Dinton Pastures (Berkshire). This report outlines some background information on earthworm ecology and the results of the sampling.

Earthworm Ecology

Compost earthworms

As their name would suggest, these are most likely to be found in a compost bin, but can also be found in manure heaps, sewage treatments works and other places with large amounts of organic matter. They prefer warm and moist environments with a ready supply of fresh organic material. They can very rapidly consume this material and also reproduce very quickly.

Compost earthworms tend to be bright red in colour and stripy. Compost earthworm species include *Eisenia fetida* and *Dendrobaena veneta*

Epigeic earthworms

Epigeic earthworms live on the surface of the soil in leaf litter. These species tend not to make burrows but live in and feed on the leaf litter. Epigeic earthworms are also often bright red or reddy-brown, but they are not stripy.

Epigeic earthworm species include *Dendrobaena octaedra*, *Dendrobaena attemsi*, *Dendrodrilus rubidus*, *Eiseniella tetraedra*, *Heliodrillus oculatus*, *Lumbricus rubellus*, *Lumbricus castaneus*, *Lumbricus festivus*, *Lumbricus friendi*, and *Satchellius mammalis*

Endogeic earthworms

Endogeic earthworms live in and feed on the soil. They make horizontal burrows through the soil to move around and to feed and they will reuse these burrows to a certain extent. Endogeic earthworms are often pale colours, grey, pale pink, green or blue. Some can burrow very deeply in the soil.

Endogeic earthworm species include *Allolobophora chlorotica*, *Apporectodea caliginosa*, *Apporectodea icterica*, *Apporectodea rosea*, *Murchieona muldali*, *Octolasion cyaneum* and *Octolasion lacteum*

Anecic earthworms

Anecic earthworms make permanent vertical burrows in soil. They feed on leaves on the soil surface that they drag into their burrows. They also cast on the surface, and these casts can quite often be seen in grasslands. They also make middens (piles of casts) around the entrance to their burrows. Anecic species are the largest species of earthworms in the UK. They are darkly coloured at the head end (red or brown) and have paler tails. Anecic earthworm species include *Lumbricus terrestris*, *Apporectodea longa* and *Aporrectodea caliginosa* (nocturna morph).

Study Sites

6 sites (see figure 1) were sampled across Dinton Pastures that represented a range of habitats, including a range of grassland, wetland, riparian and woodland habitats. An additional wood chip microhabitat was also sampled.

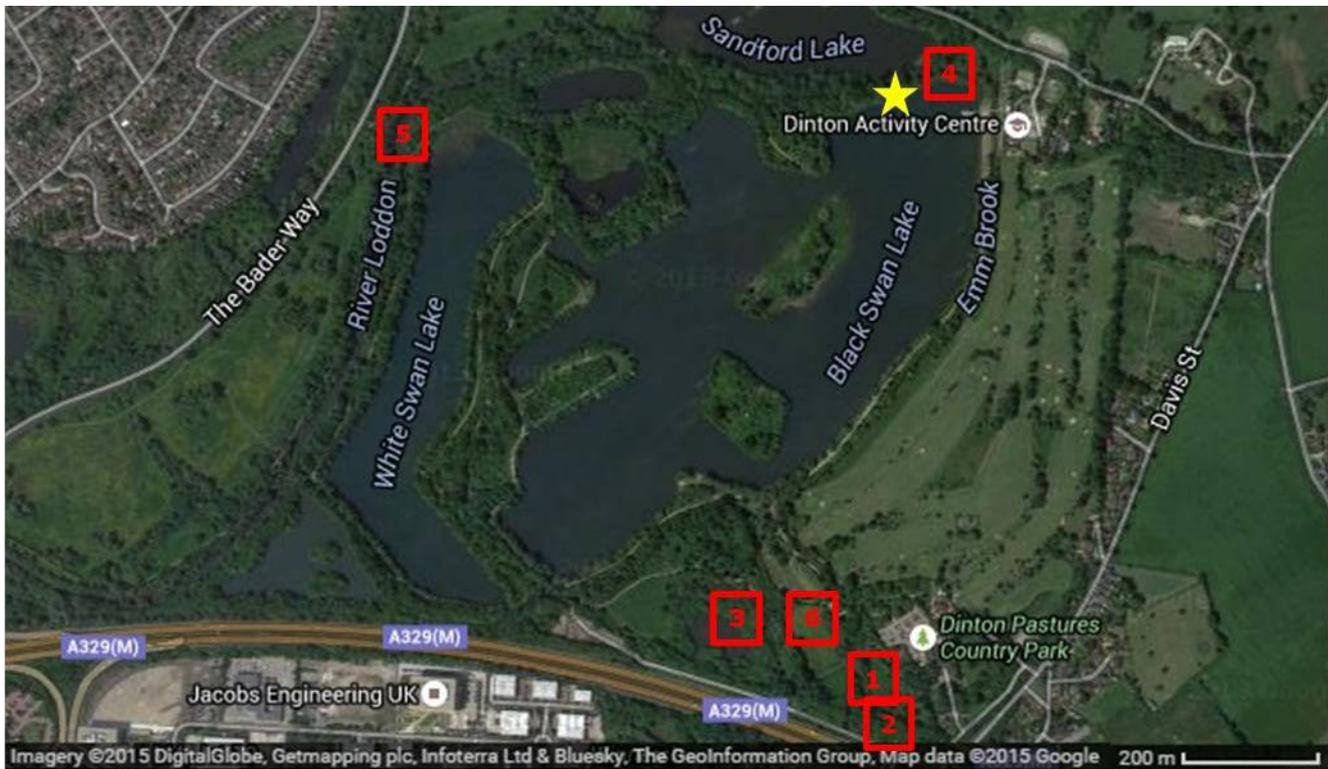


Figure 1 (above): Satellite map of Richmond Park showing the location of sampling sites. The red numbered squares show the location of the soil pit sampling sites. The yellow star indicates the location of the additional woodchip microhabitat that was sampled.

Sampling Method

The ESB's standard sampling protocol for earthworm sampling was followed in accordance with the National Earthworm Recording Scheme:

Soil Pit Sampling: 5 soil pits were excavated at each site measuring approximately 25 x 25 x 10cm. The contents of each pit were hand sorted and any earthworms were removed and preserved in 80% alcohol on site. In addition to the sampling, a six figure grid reference of the location and habitat details were recorded.

Microhabitat Searches: To improve the probability of finding epigeic and compost species of earthworm, microhabitats were also searched at several sites (microhabitats included in deadwood, under deadwood, in wood chippings, in deadwood and within a tree hollow).

For further details please see the ESB's 'Sampling Earthworms' webpage:

www.earthwormsoc.org.uk/earthworm-identification/sampling-earthworms

Identification

Earthworms were identified at the Natural History Museum (London) using binocular microscopes and the Field Studies Council *Key to the earthworms of Britain and Ireland* (Sherlock, 2012). All identifications were verified by experienced ESB recorders (Keiron Brown, Kerry Calloway, Dan Carpenter and Emma Sherlock).

Dinton Pastures Species List

In total 53 earthworm records were created during this sampling initiative (with 148 individual specimens successfully identified). The species list below lists the **13 species** that were recorded in Dinton Pastures.

(s) indicates that the species was recorded from hand-sorted soil pits.

(m) indicates that the species was recorded from microhabitat searches.

Species in red indicate species noted as rare in the Field Studies Council *Key to the earthworms of Britain and Ireland* (Sherlock, 2012).

Site 1: Neutral Grassland (SU78407172)

<i>Allolobophora chlorotica</i>	(s) (m)
<i>Allolobophoridella eiseni</i>	(m)
<i>Aporrectodea caliginosa</i>	(s) (m)
<i>Dendrodrilus rubidus</i>	(m)
<i>Lumbricus castaneus</i>	(s) (m)
<i>Lumbricus rubellus</i>	(s) (m)
<i>Octolasion lacteum</i>	(s)

Site 2: Deciduous Woodland (SU78417168)

<i>Allolobophora chlorotica</i>	(s)
<i>Aporrectodea caliginosa</i>	(s)
<i>Aporrectodea longa</i>	(m)
<i>Lumbricus castaneus</i>	(m)
<i>Lumbricus rubellus</i>	(m)
<i>Lumbricus terrestris</i>	(s) (m)

Site 3: Wet Woodland (SU78197183)

<i>Eiseniella tetraedra</i>	(s)
<i>Lumbricus rubellus</i>	(m)

Site 4: Deciduous Woodland (SU78527267)

<i>Aporrectodea caliginosa</i>	(s)
<i>Aporrectodea longa</i>	(m)
<i>Dendrodrilus rubidus</i>	(m)
<i>Eiseniella tetraedra</i>	(m)
<i>Lumbricus rubellus</i>	(m)

Site 5: Riverbank (SU77697254)

<i>Allolobophora chlorotica</i>	(s)
<i>Allolobophoridella eiseni</i>	(m)
<i>Aporrectodea caliginosa</i>	(s)
<i>Aporrectodea rosea</i>	(s)
<i>Dendrodrilus rubidus</i>	(m)
<i>Eiseniella tetraedra</i>	(s)
<i>Lumbricus rubellus</i>	(s) (m)
<i>Lumbricus terrestris</i>	(s)

Site 6: Amenity Grassland (SU78297183)

<i>Allolobophora chlorotica</i>	(s)
<i>Aporrectodea caliginosa</i>	(s)
<i>Aporrectodea caliginosa nocturna</i>	(s)
<i>Aporrectodea longa</i>	(s)
<i>Aporrectodea rosea</i>	(s)
<i>Lumbricus festivus</i>	(s)
<i>Lumbricus rubellus</i>	(s)
<i>Octolasion cyaneum</i>	(s)
<i>Octolasion lacteum</i>	(s)

Woodchip (SU78437263)

<i>Allolobophora chlorotica</i>	(m)
<i>Aporrectodea caliginosa</i>	(m)
<i>Aporrectodea caliginosa nocturna</i>	(m)
<i>Aporrectodea longa</i>	(m)
<i>Lumbricus rubellus</i>	(m)

Most of the species recorded are thought to be relatively common species with broad distributions, though some species that are thought to be either rare or very rare were recorded. However, please note that further investigation regarding the true distribution and abundance of individual earthworm species in the UK is needed required in order to establish the true status of UK earthworm species populations.

A. eiseni and *L. festivus* were both recorded and are considered rare species. Furthermore, a rare morph of *A. caliginosa* (the nocturna morph) was also recorded at two sites. Taxonomists are currently working on splitting three *A. caliginosa* morphs into separate species and it is likely that the nocturna morph will be named as a separate species in the near future. *E. tetraedra* is an earthworm commonly found in waterlogged sites and was found in both wetland habitats surveyed, as well as woodland adjacent to a stream.

National Earthworm Recording Scheme

All of the records have been submitted to the National Earthworm Recording Scheme and will be shared responsibly with external organisations, such as Local Biological Records Centres and the National Biodiversity Network. Earthworm records will be made freely available, alongside other wildlife records, to the general public.

Free downloadable PDF copies of our Earthworm Recorder Pack (as well as our earthworm field sampling form, earthworm identification features sheet and earthworm records submission sheet) are available to download from the downloads page of the ESB website (www.earthwormsoc.org.uk).

The ESB is always grateful to receive any new, or old, records. Please note that even single records of a species with no habitat information are still useful as geographic distribution data is still very limited with regards to earthworms.

Further Information

Carpenter D, Sherlock E, Jones DT, Chiminoides J, Writer T, Neilson R, Boag B, Keith AM, Eggleton P (2012) Mapping of earthworm distributions for the British Isles and Eire highlights the under-recording of an ecologically important group. *Biodiversity Conservation* 21:475-485

[Natural England \(2014\) Earthworms in England: distribution, abundance and habitats](#)

[Sims RW, Gerrard BM \(1999\) Earthworms. Synopses of the British Fauna \(New Series\). 39. London: Linnean Society of London](#)

[Sherlock E \(2012\) Key to the earthworms of the UK and Ireland. Field Studies Council](#)

Please contact the author of this report, Keiron Brown, at info@earthwormsoc.org.uk if you have any queries regarding this report.

Acknowledgements

We would also like to thank all 11 of the participants (see table 3 below) for all their contribution to the Dinton Pastures Country Park sampling initiative.

Table 1 (right): Volunteers involved in the sampling, identification and verification of specimens.

Recorders	Determiners	Verifiers
Bernard Baverstock	Bernard Baverstock	Keiron Brown
Keiron Brown	Keiron Brown	Kerry Calloway
Kerry Calloway	Kerry Calloway	Dan Carpenter
Dan Carpenter	Dan Carpenter	Emma Sherlock
Rachel Clark	Rachel Clark	
Ben Crabb	Ben Crabb	
Sasha Gorb	Sasha Gorb	
Irfaan Junaideen	Irfaan Junaideen	
Keith Lugg	Keith Lugg	
Emma Sherlock	Becky Wilson	

Finally, we would like to thank the British Entomological and Natural History society, in particular Marc Taylor, for allowing us to sample use their laboratory facilities and Chris Buggy and Simon Bartlam from Wokingham Borough Council for allowing us to sample at Dinton Pastures Country Park.

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