

# Worms: ecosystem engineers

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In gardens you can find three groups of worms: earthworms, nematodes and flatworms. Most of them are very useful but there are some, new, interlopers who are likely to cause problems.

## Earthworms

This first group of worms is familiar to us all. But did you know that there are 26 different species of earthworms in Ireland and each has a distinct habitat? Having earthworms in your garden is good for the soil as they burrow into the ground helping with drainage when it rains and aiding in aeration of the top soil.

Their diet consists of living and dead organic material which they gulp down together with soil. The organic matter is broken down and partly digested inside the worm. That which comes out the other end is further broken down by soil organisms.

Casts (worm poo) are a valuable source of plant nutrition and help stabilise the soil. So earthworms are “ecosystem engineers” enormously important for creating a healthy soil environment for plants.

There can be as many as 800 earthworms per m<sup>2</sup> in orchard soils, but numbers can be as low as five worms/m<sup>2</sup> when the soil is regularly cultivated. The high numbers in grassland explain why birds pick out worms of a lawn almost endlessly, without ever running out.

## Nematodes

The second group of worms are microscopic in size (0.1mm to 2.5mm). They can be found in all habitats of the world from marine (salt) to fresh water, and in soils, from polar-regions to the tropics. A 2013 survey of animal biodiversity reported over 25,000 nematode species.

The free-living species feed on materials as varied as algae, fungi, small animals, fecal matter, dead organisms, and living tissues and like



earthworms play an important role in the decomposition process and recycling of nutrients.

There are insect parasitic nematodes which kill garden pests such as cutworms and black wine weevils. On the other hand, plant parasitic nematodes, such as the potato-cyst nematode or the root-knot nematode, when not carefully managed, can wipe out crops.

One soil-living nematode, *Caenorhabditis elegans*, received global attention in 1998 when it became the first multicellular organism to have its whole genome sequenced. *C. elegans* made news in 2013 when specimens were discovered to have survived the Space Shuttle Columbia disaster.

## Flat-worms

Well-known examples of flatworms are flukes, tapeworms and bilharzia or snail fever, which is the second-most devastating parasitic disease in

tropical countries, behind malaria. In our gardens the only flatworms of significance are the invasive New Zealand flatworm *Arthurdendyus triangulatus* and the Australian flatworm *Australoplana sanguinea*, both of which prey on earthworms.

*A. triangulatus* is thought to have reached Europe in plant containers. It was first recorded in Belfast in 1963. It is easily transported accidentally in plant pots in adult or egg form and hence tends to be common in garden centres. As their food source is the beneficial earthworm, their presence could degrade soil quality. They are slowly spreading from gardens into agricultural lands.

## Want to know more?

If you are interested in hearing more about these fascinating creatures and seeing them on display, I will give a public talk in the visitors' centre in the National Botanic Gardens in Dublin at 3pm on Wednesday 15 May.