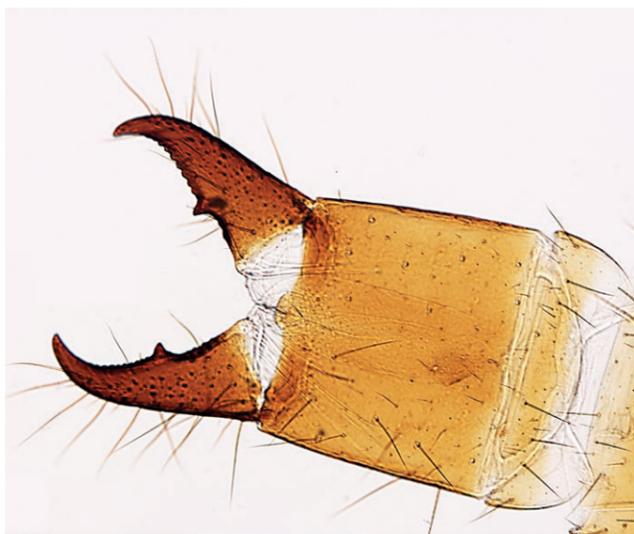


Mesofauna – Diplura

Morphology

Diplura are small wingless hexapods (see page 31), with body lengths ranging from 0.3 to 1 cm, although the largest species can be longer than 2 cm. Diplurans have a narrow and elongated body, and are generally white or colourless. The head has a pair of long and moniliform (a string formed of bead-like segments) antennae and no eyes. The abdomen ends with a pair of cerci, i.e. prominent abdominal appendages, which can contain silk glands. The cerci can have either a pair of pincers (Japygoidea) or can be filamentous (Campodeoidea). Some species of japygid Diplura are robust and darker in colour, and are often confused with earwigs (Dermaptera – see box to the right). However, Diplura have neither eyes nor wings. Fertilisation is similar to that found in proturans and collembolans (see pages 50-51): the males produce and deposit a large number of spermatophores, capsules containing spermatozoa, on the substrate that are then picked up by a female. The females lay eggs in clumps in the soil cavities or decomposing vegetation. Some species check the eggs and the larvae. Diplura are known to be able to regenerate lost body parts, such as legs, antennae and cerci. [57, 58]



Detail of the pincer-like structures of the dipluran *Catajapyx aquilonaris* belonging to the family of Japygidae. These abdominal appendages are scientifically known as cerci. (NS)

Taxonomy

The class Diplura (phylum Arthropoda, superclass Hexapoda) comprises nine extant families, the main ones being Japygidae and Campodeidae (each with more than 400 species).

Microhabitat

Diplura live in wood, leaf litter, under stones, rocks or logs, on the surface of, or in deeper layers of soil, in mosses or in termite and ant nests. Many species are herbivores and detritivores (feed on decomposing plant and animal parts) and feed on a wide range of plant material. However, some species have well-developed mandibles and eat nematodes (see pages 46-47), small arthropods, enchytraeids (see page 48), etc. They can also consume fungal mycelia (see box on page 39) and plant detritus. They are often part of the decomposer community, helping recycle dead plant material.

Diversity, abundance and biomass

There are approximately 1000 described species that are common inhabitants of most natural and human modified soils. They are distributed worldwide, from the tropics to temperate zones. They do not have specific habitat preferences and, generally, their population densities are not high (< 50 individuals per square metre).

Maternal care of diplura

- Male diplurans produce large numbers of spermatophores (up to 200 per week), probably because sperm only remain viable in the spermatophore for about two days.
- The eggs of campodeid and japygid diplurans are normally laid in a mass of up to 40, in clumps or on small stalks in little cracks or cavities in the ground.
- Female campodeid diplurans abandon their eggs, but japygid species are known to remain in the brood chamber with the egg cluster, protecting the eggs and the newborn larvae.

Diplurans are not earwigs

- Some diplurans in the Japygidae family may be occasionally confused with earwigs. This confusion is due to the presence in both groups of pincer-like abdominal appendages, scientifically known as cerci.
- Diplurans are not insects. Earwigs are insects of the order Dermaptera and live in similar habitats: moist places beneath stones, boards, sidewalks, debris or in the soil.
- The forcep-like appendages, i.e. cerci, of some diplurans are designed to break off near the base if they are mishandled. This behaviour is probably an anti-predatory adaptation. It is known as autotomy and is typical also of reptiles, such as lizards, and amphibians, such as salamanders. Diplurans are among the few terrestrial arthropods known to be able to regenerate lost body parts (legs, antennae and cerci) over the course of several moults.



Despite having similar forcep-like structures, (a) earwigs and (b) japygid diplurans are very distinct animals. (MH, KSC)



Campodeidae diplurans. (a) A live specimen shows the typical shape of this group. They are pale, eyeless hexapods and have two long abdominal appendages and antennae. (b) A live specimen of *Campodea augens* on moss. They can be found also in moist soil, wood, leaf litter and under stones. (AM, NS)