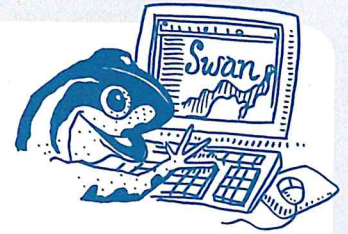


Estuarine invertebrates

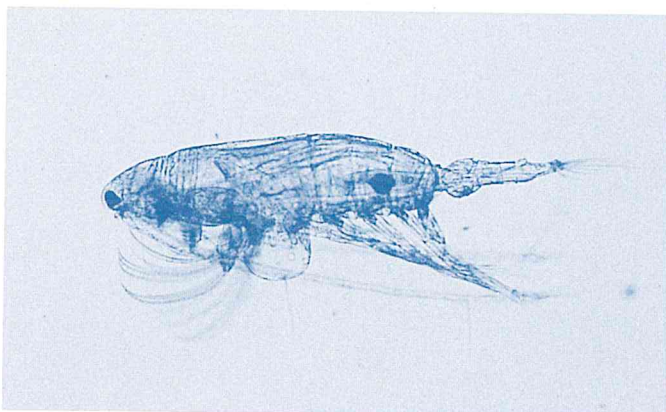


Invertebrates (animals without backbones) are an important part of the estuarine ecosystem since they are the food of most fish and wading birds. The diversity and abundance of invertebrates in a waterway are good indicators of river health because they live in the water for all or most of their lives.

There are many types of aquatic invertebrates. Macroinvertebrates are big enough to be seen. The main groups are worms, snails, crustaceans (e.g. prawns and crabs) and insects (e.g. beetles, bugs and flies). Microinvertebrates are barely visible to the naked eye.

Habitats

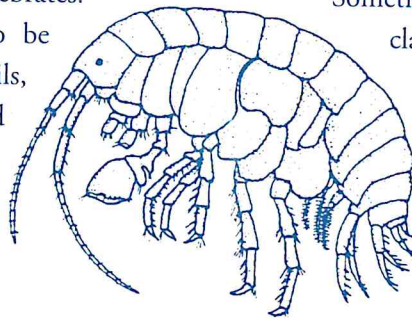
The habitats of invertebrates vary. Those invertebrates that float, drift or swim weakly along in the water column are known as zooplankton. Some types of invertebrates are found attached to the algae and seagrass of the estuary. Most invertebrates are bottom-dwelling (benthic) organisms, found in the top five centimetres of the sediment. Generally, invertebrates prefer the sandy, shallow, well-aerated conditions that are found in sediments around the estuary foreshore, rather than the fine, oxygen-depleted mud of the deeper waters.



zooplankton

Food

Free-swimming zooplankton generally feed on smaller zooplankton or phytoplankton. Bottom-dwelling invertebrates feed on microscopic food particles found on the surface of the sediment or in the gaps between sand grains, or on the protozoa and bacteria that decompose seagrass and algae.



amphipod

Sometimes macroinvertebrates are grouped or classified according to how they obtain their food. Predators (e.g. boring snails and crabs) prey on smaller animals, whereas filter feeders (e.g. mussels) take smaller particles of organic matter from the water. Scrapers (e.g. snails) scrape fine algal growth off hard surfaces, whereas collectors (e.g. long-tentacled worms and crabs) take smaller particles of organic matter like dead algae and broken-down plant material from sediment. Shredders (e.g. amphipods) break up larger particles from leaves, bark and other detritus.

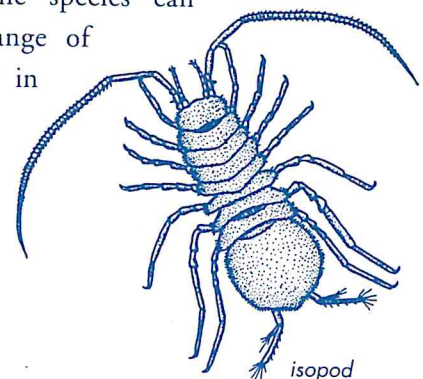
Note: Detritus is organic material, including animal waste products and the remains of animals, plants and microorganisms, together with the associated microbial community (bacteria and fungi).

Responses to salinity

The salinity of the water and the nature of the bottom sediments largely determine the types of invertebrates found in the estuary. Most species of invertebrates are marine organisms, so the variety of types of invertebrates decreases upstream.

Most invertebrates are quite immobile, so they cannot retreat to the sea when salinity levels are unfavourable. Species that cannot tolerate the lower salinities during winter die, and new stocks have to be recruited from larvae that come in with the returning seawater in spring and summer.

Only true estuarine species can survive the full range of salinity experienced in the estuary.



isopod

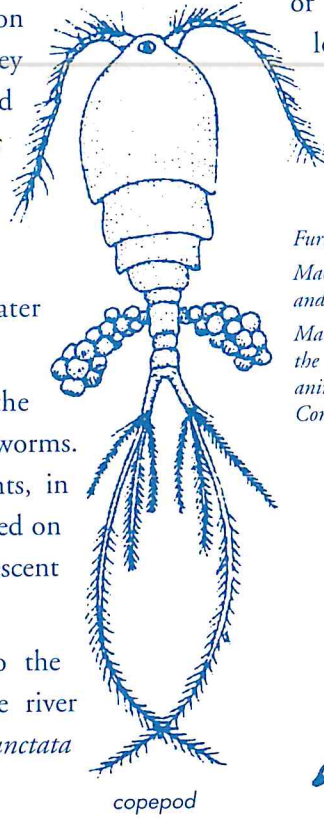
Types of aquatic invertebrates

The most obvious invertebrates in the estuary are large crustaceans (e.g. the decapods – king prawns, river prawns and blue manna crabs). Small crustaceans live in the shallows and amongst weeds, feeding on detritus and smaller plants and animals. They include amphipods, isopods, copepods and shrimps. The shrimp *Palaemonetes australis* is common among the weed and seagrass of the shallows. It has a wide tolerance to salinity differences, so it is found in both estuarine and freshwater environments.

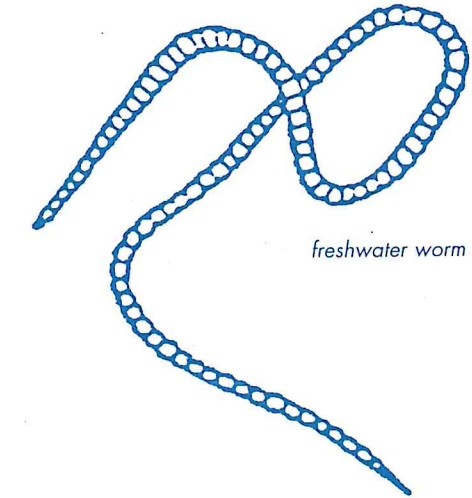
Annelids are mainly represented by the polychaetes, which are segmented marine worms. They can be found buried in the sediments, in burrows or tubes. They appear at night to feed on detritus. Polychaetes give off a phosphorescent glow at breeding time.

Two species of jellyfish, which belong to the coelenterates, are commonly found in the river system: the brown jellyfish *Phyllorhiza punctata* and the transparent *Aurelia*.

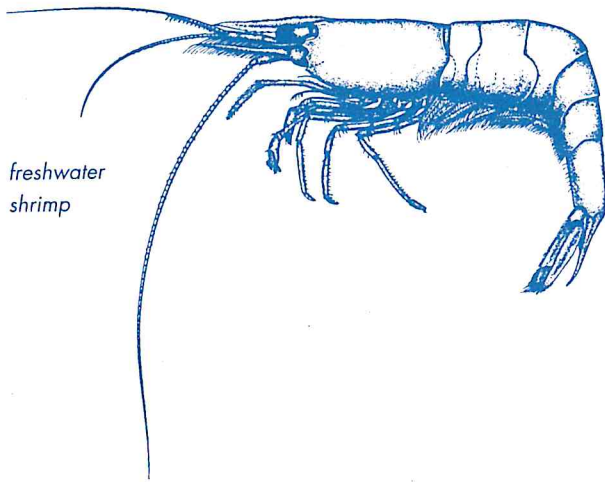
Molluscs include snails, periwinkles, abalone, sea hares and bivalves. A common bivalve mollusc is *Mytilus edulis planulatus*, the small black mussel. Bivalve molluscs are found attached to solid objects such as jetties and pylons, or buried slightly in the sediments. In the lower reaches of the Swan River the gastropod snail *Batillaria australis* is found attached to seagrass.



copepod



freshwater worm



freshwater shrimp

Further reading:

Macroinvertebrates and water quality, Water facts No 2, Water and Rivers Commission, 1998.

Managing our Rivers - a guide to the nature and management of the streams of south-west Western Australia (Chapter 5: River animals and their habitats) by Dr Luke Pen, Water and Rivers Commission, 1999.



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