Zooplankton Encyclopedia Article

Zooplankton

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Contents

Zooplankton Encyclopedia Article.....1

Contents.....2

Zooplankton.....3

Zooplankton

Zooplankton are small animals that occur in the water column of either marine or freshwater ecosystems. Zooplankton are a diverse group defined on the basis of their size and function, rather than on their taxonomic affinities.

Most species in the zooplankton community fall into three major groups—Crustacea, Rotifers, and Protozoas. Crustaceans are generally the most abundant, especially those in the order Cladocera (waterfleas), and the class Copepoda (the copepods), particularly the orders Calanoida and Cyclopoida. Cladocerans are typically most abundant in fresh water, with common genera including Daphnia and Bosmina. Commonly observed genera of marine calanoid copepods include Calanus, Pseudocalanus, and Diaptomus, while abundant cyclopoid copepods include Cyclops and Mesocyclops. Other crustaceans in the zooplankton include species of opossum shrimps (order Mysidacea), amphipods (order Amphipoda), and fairy shrimp (order Anostraca). Rotifers (phylum Rotifera) are also found in the zooplankton, as are protozoans (kingdom Protista). Insects may also be important, especially in fresh waters close to the shoreline.

Most zooplankton are secondary consumers, that is, they are herbivores that graze on phytoplankton, or on unicellular or colonial algae suspended in the water column. The productivity of the zooplankton community is ultimately limited by the productivity of the small algae upon which they feed. There are times when the biomass of the zooplankton at any given time may be similar to, or even exceed, that of the phytoplankton. This occurs because the animals of the zooplankton are relatively long-lived compared with the algal cells upon which they feed, so the turnover of their biomass is much less rapid. Some members of the zooplankton are detritivores, feeding on suspended organic detritus. Some species of zooplankton are predators, feeding on other species of zooplankton, and some spend part of their lives as **parasites** of larger animals, such as fish.

Zooplankton are important in the food webs of open-water ecosystems, in both marine and fresh waters. Zooplankton are eaten by relatively small fish (called planktivorous fish), which are then eaten by larger fish. Zooplankton are an important link in the transfer of energy from the algae (the primary producers) to the ecologically and economically important fish community (the consumers).

Species of zooplankton vary in their susceptibility to environmental stressors, such as exposure to toxic chemicals, acidification of the water, eutrophication and oxygen depletion, or changes in temperature. As a result, the species assemblages (or communities) of zooplankton are indicators of environmental quality and ecological change.