

CHIRONOMIDAE INTERACTIONS WITH OTHER ORGANISMS

Summary

Non biting midges (Chironomidae, Diptera) are the most ubiquitous, diverse and ecologically important group of benthic macroinvertebrates; therefore they belong to the most abundant organisms in freshwater bodies. Chironomids play a key role in energy transformation and elements cycling in water ecosystems (food webs) because they have adopted many different modes of feeding in the larval stages. In addition, some of them become involved in intimate associations (direct and sustained bodily contact between organisms) such as phoresy, commensalism and parasitism with other macroinvertebrates.

Chironomids occur as commensals on other aquatic insects, such as Ephemeroptera, Plecoptera, Odonata, Megaloptera, and even fish. The best known commensal association is that between the chironomid *Epoicocladus ephemerae* and mayfly *Ephemera danica*. There are four factors that are believed to favor the commensalism of the chironomid species. First, a constant supply of food collected on the mayfly body. Second, increased mobility of the commensal when it stays with the host. Third, the commensal life may supply better protection from disturbances, especially in running waters. Fourth, a small chironomid larva may avoid predation by small predators by adhering to larger hosts, as a result the potential number of predators capable of feeding on it is decreased.

Chironomid larvae (*Paratanytarsus*) were also found living in the mantle cavity of zebra mussels (*Dreissena polymorpha*) as well as inside the other bivalves and snails, but *Paratanytarsus* larvae were never observed feeding on the tissues of these macroinvertebrates. However, there are known chironomid taxa that are able to damage the tissue of their hosts. Among them there are *Symbiocladus* (ectoparasite of mayfly larvae), *Baeoctenus* and *Cryptochironomus* (lead parasitic life in freshwater bivalves and gastropods), and *Cardiocladus* (ectoparasite on the pupae of Hydropsychidae). So, accordingly to some biologists, chironomid commensalism may represent an intermediate stage in the evolutionary progress from a free living strategy (the majority of taxa) towards parasitism.

But chironomids are also known to be parasitized by a variety of taxa, including viruses, bacteria, fungi, protozoans (ciliates and eugregarines), mermithid nematodes and water mites. The impact of parasites may affect the whole host population if high prevalence of infection is observed.

Therefore, chironomid larvae, represent a very wide range of host-parasite/commensal relations with other aquatic organisms, incomparable to with other insects.