

Chapter 5

Minor groups and fossils

This chapter consists of many sections dealing with a great variety of taxa. Some taxa contain few parasites that have been little studied, others contain parasites with well-known and fascinating adaptations to a parasitic way of life. The approach chosen by different authors reflects this diversity: some sections out of necessity contain brief descriptions of morphological characters, others go into great detail in discussing behavioural adaptations, complex life cycles or epidemiological patterns.

Parasitism is a very ancient way of life, but few parasite fossils are known because most parasites are small and soft-bodied and do not easily fossilise. Most evidence is indirect, based on galls, cysts and drill holes interpreted as resulting from parasite activity. Nevertheless, some parasites have fossilised, including larval pentastomids and crustaceans. The section on fossil parasites in this Chapter covers the literature up to 2003.

By far most parasitic species belong to a few phyla, such as various protistans, Myxozoa, Crustacea, Platyhelminthes and Nematoda. However, in addition, some small phyla consist entirely of parasites, and many phyla contain at least some parasite species. Such groups are discussed in this Chapter. Small groups consisting entirely of parasites at least during part of their life cycle are the Mesozoa, Myzostomida, Nematomorpha, Pycnogonida (possibly with a few non-parasitic species), and Pentastomida. Of these, the mesozoans, myzostomids and pycnogonids are entirely marine, whereas the nematomorphs and pentastomids are predominantly terrestrial/freshwater parasites, only a few being found in the marine environment. Groups including at least some parasitic species are the sponges, cnidarians, ctenophores, polychaetes, leeches, nemerteans, rotifers (and *Seison*, long thought to be a rotifer), mites and ticks, insects, tardigrades, molluscs, echiurans, echinoderms and vertebrates. A fascinating phylum described only recently is the Cycliophora. Cycliophorans are probably ectocommensals rather than genuine parasites, living on the lip of lobsters. Like many genuine parasites restricted to specific hosts and microhabitats, they have an extremely complicated life cycle that ensures production of a huge number of offspring, necessary to guarantee infection of the very narrow microhabitat on one particular host species.

Many of the minor groups discussed in this Chapter, because of the few species involved and low prevalences and intensities of infection, are neither ecologically nor economically important. However, some include species of some significance. Parasitic sponges damage cultured oysters, and may be the most destructive organisms responsible for bioerosion of coral reefs. The parasitic hydrozoan *Polypodium* is the only intracellular metazoan parasite, it has a negative impact on caviar and the reproductive capacity of sturgeon. Some polychaetes are important pests in mollusc cultures, and marine leeches may be vectors of blood protistans transmitted to fish. Nemerteans may be important parasites (or perhaps predators) feeding on the eggs of