

Chapter 10

Economic and environmental importance

Almost all (if not all) groups of marine animals including the various invertebrates and vertebrates are hosts to parasites. Parasites of these groups have been discussed by various authors in the four volumes edited by Kinne (1980–1985). This chapter is restricted to discussions of parasitic infections of the more important groups.

Marine parasites are of very great ecological importance, as suggested by their great diversity, and by their often high prevalences and intensities of infection. However, very little is known about how they affect host populations in the oceans. An exception is the long-term study of salmon lice on Atlantic salmon not only in aquaculture but also in wild salmon populations, conducted because of the great economic importance of salmon. Mass mortalities caused by parasites have not been well documented for marine fish and invertebrates because of the large spaces in the oceans involved and the difficulties in monitoring such effects. Effects on marine birds are little understood and need much further study: mass mortalities of seabirds have been attributed to several causes but parasite examinations which could have revealed the role of parasites in the mortalities were not conducted. Effects on mammals such as whales are well documented, and hundreds of parasite species of mammals have been described; nevertheless, much needs to be done in this area as well.

Much greater effort has gone into the study of parasite diseases in aquaculture, which is not surprising in view of the enormous and rising economic value of aquacultured fish, molluscs and crustaceans, estimated at many billions (10^9) of dollars annually. For example, the commercial value of cultured salmonid fishes alone in 2001 was around US\$3.84 billion (US\$7.44 billion for all finfish). Disease, and much of it resulting from parasites, is the single most important factor threatening the aquaculture industry.

Beside these important negative aspects of marine parasites, this Chapter also discusses a more positive aspect of parasites: the use of parasites in pollution monitoring. Pollution may affect the composition of parasite communities, and some parasites store certain pollutants to a higher degree than their hosts; both these phenomena can be used for monitoring pollution.

Mass mortalities in the oceans

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Introduction

Observations of mass mortalities of aquatic organisms in the open ocean have long been reported by sailors and naturalists but have seldom been studied in any detail, usually due to their catastrophic, transient nature and the distance from scientific laboratories. Of those events