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PARASITIC *CRUSTACEA* OF MARINE FISHES

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A review of the literature since the last symposium shows that the subject matter of papers dealing with parasitic crustaceans in the marine environment has remained more or less the same. Most of the studies still concentrate on fauna and ecology. Many of the descriptions of new species of *Copepoda* and *Isopoda* reveal certain gaps in the knowledge of both groups of parasites. Another subject often mentioned is the phylogeny of both free-living and parasitic *Crustacea*. New proposals for the classification of parasitic *Copepoda* were presented by Kabata (1979). Avdeev (1985) proposed the same for *Flabellifera*, a suborder of *Isopoda*. He also presented his concepts on how *Isopoda* had become mesoparasitic, the zoogeography of *Cymothoidae*, the origin and expansion of fresh-water species, and the expansion of the species *Glossobius* in open oceans. According to him, the most important are the morphology of the mouth parts and pereopodia and their changes resulting from the parasitic way of life and localization on the host.

At the level of families and subfamilies, these features seem to have been chosen appropriately. On the other hand, taxonomic element like pleopodia, highly valued by Bruska (1981) and Rokicki (1984), is not so important to Avdeev. According to Avdeev's systematics, *Isopoda* are classified into temporal (*Aegidae*) and stationary (*Cymothoidae*) parasites, external parasites and mesoparasites; he also takes into account the parasite's habitat. The systematics proposed by him is logical and worth considering; it is simpler than that of Schioedte and Meinert (1879 - 1884) used hitherto. It will be known whether it is really better after future investigations and practical application.

There are fewer papers dealing with the problems of deep-sea fish parasites and Antarctic areas. A few papers include a synthesis covering larger groups of parasitic crustaceans and a key to their classification. Studies based on the use of electronic microscopes and laboratory experiments are rare.

Among the reports sent in, Reimer presents a rich collection of pepods from the coast of Mozambique. This area, rich in African water mainly from the Zambezi River, and influenced by the Indian Ocean, is characterized by favourable living conditions for many organisms, including fish and crustaceans. It is possible that a detailed examination of the material collected will permit the differentiation of more new species. It is interesting to note that Reimer found as many as 5 species from the genus *Hatschekia*, so much so the distribution of this genus is varied off the Atlantic coast of Africa (South Africa — Barnard 1955; shelf of north-western Africa — Ho and Rokicki, in press). The Mozambique Channel is an interesting area from the parasitic point of view; the materials are quite numerous and there is still a lot to be discovered.

Reflections on the dynamics of occurrence of *Eubrachiella antarctica* (Quidor 1906) in *Notothenia gibberifrons* are given by Rokicki and Skóra. Varied infestation in the individual age, lenght, and weight classes of *N. gibberifrons* may point to the instance of overfishing of some of its year classes. The incidence of infestation in *N. gibberifrons* is higher for South Georgia than for South Shetland. These differences may signify the existence of two different populations of these fish in these two areas.

One problem raised at every symposium — with no exception — concerns the influence of water salinity on some parasitic crustaceans.

Kononienko presents parasitic *Isopoda* from the Black Sea and the species *Gnathia bececoi* at a praniza stage, this species is a newly discovered constituent of the fauna of this area. In the brackish waters of the Black Sea, the author has observed a reduction in the number of parasitic *Isopoda* as compared with the Mediterranean and Atlantic. It is possible that in the Black Sea isopods — stenothermal crustaceans — died out during the Ice Age. It was quite difficult to repopulate this area with crustaceans from the Mediterranean because its waters had become desalted.

Rokicki's report deals with the copepods in salmonides in the Bay of Puck. The investigated powans (*Coregonus lavaretus*) were infested with the copepod *Salmincola extensus*, the rainbow trout with *Caligus lacustris*. These are fresh-water species also encountered in brackish waters. An increase in their tolerance of water salinity is to be expected.

Priebe's discovery of the genus *Sphyrion* in blue ling, *Molva dypterygia*, from the waters of eastern Greenland increases the number of host species infested by parasites from this genus. According to him, *Sphyrion lumpi* occurred during the period 1975 - 1985 in 100% of Norway haddock, *Sebastes marinus* off the Norwegian coast. Since the Norwegian coast is fairly long, the author will probably be more specific in his paper.

The parasite's cephalothorax penetrates deep into fish muscles causing extensive degenerate changes. Infested fish have to be used for fish meal production, which results in considerable economic losses. The problem of Sphyriosis has aroused the interest of other research centres, as may be seen in the numerous publications on this issue, e.g. by Gaevskaja (1983) to mention just a few. Joint efforts and the preparation of a map of the occurrence of *S. lumpi* would be very helpful to the fisheries of states fishing in the North Atlantic.

The report of Komasara and Lisińska also deals with parasites from the North Atlantic. Investigations centred on mackerel (*Scomber scombrus* L. 1758) and chub mackerel *Scomber colias* (Gmelin 1788). Two species of copepods were observed in these fish: *Caligus pelamydis* (Krøyer, 1863) and *Clavellisa scombri* (Kurz, 1877). It seems that a comparative approach to this problem would have increased the value of this study.

Observations on the influence of copepods on *Isurus oxyrhinchus* are the subject of the report by Tomasiewicz. He found that parasitic copepods had penetrated the shark's body as deep as the chondral tissue. Although the slow activity of the parasite may result in changes within the skeleton, it seems unlikely that small copepods are able to penetrate the thick skin of sharks.

The biology of the parasitic *Isopoda Anilocra capensis* on the basis of the biology of its host fish is the subject of the report by Rokicki. *A. capensis* is a stationary parasite found during a short period of its juvenile stage in free-living fish. For juvenile stages of crustaceans, their survival rate, entering the host, and the ecological conditions of fish, are most important. These factors influence the degree of infestation by a certain population of parasites.

Many factors are responsible for the great interest of the international community in the exploitation of the living resources of seas and oceans. However, exploitation should be accompanied with scientific investigations. Cooperation between parasitologists and Polish fishery enterprises has been very fruitful and should be continued.

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SKORUPIAKI PASOŻYTNICZE RYB MORSKICH

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W referacie przedstawiono zagadnienia dominujące w badaniach nad pasożytniczymi skorupiakami w środowisku morskim w ostatnich pięciu latach. Wśród prac nadesłanych na niniejsze Sympozjum wyodrębniono te, których tematem były: badania faunistyczno-ekologiczne pasożytniczych *Copepoda* i *Isopoda*, wpływ zasolenia wód na niektóre skorupiaki, pasożyty ryb morskich i dwuśrodowiskowych oraz zmiany anatomiczno-patologiczne i problemy sanitarne związane z występowaniem *Sphyrion lumpii* u ryb.