WIADOMOŚCI PARAZYTOLOGICZNE
T. 37 (1) 1991:137-140

PARASITIC *CRUSTACEA* OF MARINE FISHES*

JERZY ROKICKI

Department of Invertebrate Zoology, University of Gdańsk
81-378 Gdynia, Al. Piłsudskiego 46

PASOŻYTNICZE *CRUSTACEA* MORSKICH RYB

In the four years 1985-1989 since the last symposium the research on parasitic *Crustacea* in the marine environment, and the faunistic-ecological work are in the forefront. In addition new species have been described, mainly *Copepoda* and a somewhat smaller number of *Isopoda.* They come not only from distant regions of the Pacific or Australia but also from waters which have already been documented e.g. the copepod *Caligus dicentrarchi* from *Dicentrarchus labrax* caught at the Mediterranean coast of France (Languedoc) (Cabral and Raibaut 1986).

A number of papers on the morphological and anatomical structure and function of parasitic *Crustacea*, as also those redescribing species increased. In particular the revision of the genus *Hatschekia* has been done very thoroughly by Jones (1985). 68 species have been left in it, while 18 have been made synonymous with other species. Revisions have been carried out by Bruce (1986) for the genus *Mothocya* and other *Isopoda.*

The main subject of faunistic work deals with the world distribution of crustaceans occurring on commercially important and unimportant fish, molluscs and sea cucumbers bred in seas. Most attention has been given to *Copepoda* and *Isopoda*; less to *Branchiura, Amphipoda* and *Cirripedia.* Gajevskaja (1989)** reviews the parasitic *Crustacea*: *Copepoda, Isopoda, Branchiura, Amphipoda* and *Cirripedia* found on fish occurring in the north-east Atlantic. She concludes on effect of salinity on the occurrence of these parasites, their specificity and the zones of vertical distribution which merely hint at the tremendous ecological and biological diversity of both the parasites and their hosts in the marine

* Main lecture at the Section 2B of VI Symposium of Medical and Veterinary Acaroentomology, Gdańsk, 18-20 September 1989.

** Reports not cited in References are included in the Pap. VI Symposium on Medical and Veterinary Acaroentomology, Gdańsk, 18-20 September 1989.

environment. Najdenova (1989) presents 27 species of parasitic *Copepoda* of fish in the Black Sea and Sea of Azov, dividing them into those inhabiting poly-, meso-, and oligohaline waters. Mikailov and Ibrahimov (1989) divide the parasitic *Copepoda* of Caspian Sea fish into fresh-water, brackish-water and sea-water species. They also mention species with a narrow host specificity, e.g. *Thersitina gasterostei*, which occurs on the stickleback *Gasterosteus aculeatus*, and *Copepoda* found in several fish species. An interesting copepod is *Pseudotracheliastes stellatus*, which occurs only in the sturgeons (*Acipenseridae*).

Comparing the report of Mikailov and Ibrahimov with Najdenova's results one can see the great significance of salinity as the factor affecting parasitic *Copepoda*.

Tkachuk and Aleshkina's (1989) communication was about the occurrence of *Copepoda* in edible fish found off the south-west and south-east coasts of Africa. The first region is the Atlantic Ocean coast, the second is the Indian Ocean coast. They are separated by a belt of cold waters around the southernmost extremity of the African continent. Probably this is a barrier which makes the mutual penetration of parasitic *Isopoda* impossible. Of the 19 species that Tkachuk and Aleshkina found on the Indian Ocean side and the 35 species on the Atlantic Ocean side, only 5 species were common to both regions. This would confirm the minimal interpenetration of parasitic *Copepoda* of the two regions. A large number of fish species were examined (52 and 62 respectively), but there is such a diversity of ichthyofauna in these regions that further research is desirable and would yield interesting results.

Rokicki and Strömberg (1989) discussed the dynamics of ectoparasitic infestation of the saithe (*Pollachius virens*) from the North Sea, with respect to the annual cycle. 4 ectoparasite species were found on this fish. On the basis of 6 distinctive development stages in *Clavella adunca*, the authors attempted to establish the periods of its reproduction. In the North Sea the reproduction peak of this copepod probably occurs from late spring to early summer. An investigation of the relation between extensity and intensity of infestation and the age of the fish has shown that these values are highest for sexually mature fish, with older fish having a rather lower value.

Tsymbalyuk (1989) reported on parasitic *Copepoda* of commercially important invertebrates of Peter the Great Bay in the Sea of Japan. She mentioned the parasitic *Copepoda* infesting mainly the *Bivalvia* and *Echinodermata*. A knowledge of the *Copepoda* parasitizing invertebrates is of great importance to knowing the phylogeny of some groups of *Copepoda*.

Hristovski and Jardas (1989) found *Anilocra physodes (Isopoda)* in *Dentex dentex* in the Adriatic. During studies in the Neretva canal two fish were infested with 4 isopods. The parasites occured in pairs on the operculum of the fish. *A. physodes* is a Mediterranean species, although it has been recorded from the English Channel and off the coasts of Spain and Portugal. Trilles (1975) has found it off the Atlantic coast of Marocco, and Radujković et al. (1984) in the vicinity of Kotor. Mordvinova (1989) discusses the occurrence of parasitic *Isopoda* of the genus *Glossobius* in flying in the central Atlantic. She determined 4 species of *Isopoda*, and one genus. Particularly valuable to science is the confirmation of the occurrence of the species *Glossobius albinae* and *G. parexocoeti*. According to Bruska (1981) only *Glossobius* species among the entire order *Isopoda* occur in the pelagial of the neritic zone of oceans. This type of distribution derives from the phylogeny of *Isopoda* and was justified by Rokicki (1984). 45 species of *Copepoda* and 14 species of *Isopoda* from fish in the Adriatic have been found by Radujković (1989). He believes that future research should almost double this number.

The usual division of the body into 3 tagms based on segment homology within the *Crustacea* is not in accordance with the observed segmentation of the body. Kazachenko (1989) has divided parasitic *Copepoda* according to their body shape. He distinguished 8 groups to which he determined the families of *Copepoda*. This kind of work requires a good knowledge of the morphology, biology and phylogeny of *Copepoda*, but even so, I suspect that the author was not free from doubt as to the number of groups he formed.

When talking about the economic importance of parasites in the fish industry one has to take into account the serious loss of fish meat due to the presence of parasites. Likewise, parasitic *Crustacea*, especially the *Sphyriidae*, reduce the technological usefulness of fish (Priebe and Gaevskaja 1989). The problem of the localization of the copepod *Sphyrion lumpi* on the redfish (*Sebastes mentella*) is discussed by Rokicki and Sotkowski (1989). They have distinguished 3 types of localization of the parasite resulting in the following: presumably the highest mortality among fish; troublesome as regards filleting; impeding the fish's ability to maintain its hydrostatic balance.

REFERENCES

Bruce N. L. 1986. Revision of the isopod crustacean genus *Mothocya* Costa, in Hope 1851 (*Cymothoidae: Flabellifera*), parasitic on marine fishes. *J. Nat. Hist.* 20: 1089-1192.

Brusca R. C. 1981. A monograph on the *Isopoda Cymothoidae* (*Crustacea*) of the eastern Pacific. *Zool. J. Linn. Soc.* 73: 117-199.

Cabral P., Raibaut A. 1986. Decouverte d'un Copépode Caligide nouveau, parasite du tegument du loup, *Dicentrarchus labrax* (L., 1758) (*Pisces, Moronidae*) en elevage et en milieu naturel. *Bull. Soc. Zool. Fr.* 111: 123-130.

Jones J. B. 1985. A revision of *Hatschekia* Poche, 1902 (*Copepoda*: *Hatschekiidae*), parasitic on marine fishes. *N. Z. J. Zool.* 12: 213-271.

Radujković B. M., Romestand A., Trilles J. P. 1984. Les Isopodes parasites de la Faune Yougoslave. I. *Cymothoidae* parasites de poissons marins de la région d'Adriatique Méridionale. *Acta Adriat.* 26: 101-108.

Rokicki J. 1984. Pasożytnicze *Isopoda* ryb szelfu Północno-Zachodniej Afryki na tle ich rozprzestrzenienia. Zesz. Nauk. UG, Gdańsk.

Trilles J. P. 1975. Les *Cymothoidae* (*Isopoda, Flabellifera*) des collections du Muséum national d'Histoire naturelle de Paris. II. Les *Anilocridae* Schioedte et Meinert, 1881. Genres *Anilocra* Leach, 1818, et *Nerocila* Leach, 1818. *Bull. Mus. Natn. Hist. Nat. Paris*, 3, 290: 303-346.

Received on: 2 XI 1989