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Some Ecological Aspects of the Helminth Parasitism of the American Smelt, Osmerus Mordax (Mitchell)

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ZOOLOGY

Some Ecological Aspects of the Helminth Parasitism of the American Smelt, *Osmerus Mordax* (Mitchell)

The American smelt, *Osmerus mordax* (Mitchell), normally a native fish of the Atlantic coastal waters of North America, became, at some time in the past, landlocked in certain coastal lakes. From these it was introduced into the Great Lakes in recent years. It has proceeded to become exceedingly numerous in Lake Michigan and Lake Superior. Since this species was able to adapt itself so successfully to a fresh-water existence, it may be questioned whether or not the transition was accompanied by any changes in the biology of the fish.

The purpose of this study was to investigate one such aspect of the biology of the smelt—that of the parasites to which it plays host. The hypothesis was conceived that if a rigorous host specificity of the helminths which parasitize fishes existed, then the only helminths which would be found in smelt taken from fresh-waters would be of the same species as those which were found in smelt taken from salt-water. However, only those species of helminths which were able to complete their life cycles in fresh-water (if any such helminth species existed) would be found.

Data on helminth parasites reported from smelt taken from Atlantic coastal waters were gathered from the literature. The data regarding helminths from smelt taken in fresh-water include a compilation of data gathered in this study on a number of smelt from Lake Superior as well as the data available from the literature.

Parasites reported as occurring in smelt taken from Atlantic coastal waters:

Digenetic trematodes:

Nannoenterum baculum (Linton) Manter, 1931
Podocotyle olssoni Odhner, 1905
Brachyphallus crenatus (Rudolphi) Odhner, 1905
—Linton (1899 and 1940)

A nematode reported as belonging to the genus "Ascaris" reported by Linton (1899) to which no further reference was found in later literature.

Parasites reported as occurring in smelt taken from fresh waters:
Digenetic trematodes:

Azygia longa (Leidy, 1851) Manter, 1926
—Manter (1926)

Larval genus *Diplostomulum* Brandes, 1892
—Fischthal (1953)

Pseudophyllidean cestodes:

Ligula intestinalis (Linnaeus, 1758) Gmelin, 1790
—Linton (1899b)

Bothriocephalus sp. Rudolphi, 1808
—Fischthal (1952)

Acanthocephala:

Leptorhynchoides thecatus (Linton, 1891) Koslylev, 1924
—Fischthal (1952 and 1953)

Neoechinorhynchus sp. Hamann, 1905
—Fischthal (1952)

Echinorhynchus sp.
—this study

Nematoda:

Cystidicola stigmatura (Leidy, 1886) Ward and Magath, 1916
—Fischthal (1952) and this study.

From the above listing, although it contained in total a relatively small number of examinations, it would seem that the smelt was host to a different group of helminth parasites in its native salt-water from its new habitat. In addition, it was found that the helminth parasites of the smelt from Atlantic coastal waters had also been reported from other marine species of fishes; the helminth parasites to which the smelt played host in fresh-water were parasites of other species of fishes native to fresh-waters.

CONCLUSIONS

The data tend to indicate a low degree of host specificity among these parasites to a definitive host.

The biological limitations of the helminth species which were considered appeared to be other than vertebrate host specificity.

It seems safe to conclude that changes in the biology of the American smelt had accompanied its introduction into fresh-waters in regard to the species of helminth parasites to which it played host.

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