

Notes on Ectoparasitic Trematodes of Fishes

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The taxonomic study of monogenetic flukes from North American fresh-water fishes is very young. As late as 1933 there were definitely recognized only two valid species of *Gyrodactylus*, one of *Dactylogyrus*, and one of *Ancyrocephalus* which was later removed to the genus *Urocleidus*. At the present time, fifty-seven species belonging to the above and several genera of the sub-family *Tetraonchinae* have been reported for North America. Three of these, *Tetraonchus monenteron*, *Gyrodactylus elegans* and *Dactylogyrus anchoratus* were first described from Europe. Ectoparasites from salt-water fishes received earlier attention principally through the efforts of MacCallum and his co-workers.

Serious damage to fish by ectoparasitic flukes, especially under crowded hatchery conditions, has been frequently reported. This economic aspect is probably in part responsible for the early control phase of investigation in contrast to later taxonomic studies. Infestations with *Gyrodactylus* were reported by Atkins in 1901, Cooper 1915, Ward 1918, Van Cleave 1921, Moore 1923, Embury 1924, Guberlet Hansen and Kavanagh 1927, and Pratt in 1929. Viviparity which is characteristic of the genus *Gyrodactylus* has been cited by many authors as being conducive to the production of epidemics among fishes by members of this genus. This contention is supported by the less numerous records of outbreaks caused by oviparous species.

A report of serious losses among three to six weeks old "fry" by an unidentified species of *Dactylogyrus* by Hess in 1928 constitutes the first record of this genus for North America. In 1930 the same author cited an undetermined form of *Ancyrocephalus* infesting several species of native fishes in the states of Indiana and New York. In 1936 it was observed by the present writer that two black crappies (*Pomoxis sparoides*) out of a lot of sixteen which were transported by automobile from Lake Senachwine, Henry, Illinois, to the Laboratory at Urbana, were in poor condition on arrival. They showed signs of suffocation and loss of balance. Approximately six hours later these two fish died. On examination they were found heavily infested with *Cleidodiscus capax*. The rest of the fish appeared normal and when examined at a later date they were found only lightly infested with the same species of parasite. In the summer of 1936, yellow bass (*Morone interrupta*) from Lake Decatur, Decatur, Illinois, which consistently carry heavy infestations of *Onchocleidus interruptus*, were observed to die very quickly when transferred from the nets to metal containers, unless the water in which they were placed was previously cooled to a temperature below that from which they were taken. It has not been determined whether or not the above phenomena were due to the action of the gill parasites harbored by the respective hosts. However, MacCallum (1915) cites suffocation, caused by an outflow of mucus over the gills at the point

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of haptor attachment by species of *Microcotyle*, as partially responsible for death of fishes in the New York Aquarium. This phenomenon has been repeatedly observed for yellow bass and black crappies.

During the spring of 1937 an epidemic among blunt-nosed minnows (*Hyborhynchus notatus*) by *Dactylogyrus bychowskyi* was observed to kill over three hundred hosts in an aquarium at the University of Illinois. Uninfested steel colored minnows in the same tank were not affected. The flukes were found to exclusively infest the gills of the hosts. Scrapings from the fins and body surfaces were negative in all cases. As many as two hundred parasites were recovered from one fish whereas twenty-five fish examined a few hours after removal from neighboring streams, namely the Drainage Ditch and Embarrass River, harbored an average of five parasites each.

Fish culturists and conservation agencies responsible for rearing and distributing fishes have given practically no attention to the dangers of transporting gill parasites into new regions. Except for a few of the large species, the gyrodactylids are so small as to escape casual field inspections. Although detailed information as to the species involved and the specific action of each on the host has been generally lacking, it is believed that fewer losses would be sustained if hatcheries were rendered free of gyrodactylid parasites infesting the skin and gills of fishes, especially those used as breeders.

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