PEST/PARASITES AND DISEASES OF MILKFISH IN THE PHILIPPINES

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Attempts to increase productivity in fish farms, to improve stocks and acclimation of fish to new environments require detailed knowledge of parasites inhabiting the different localities.

Knowledge of the development and biology of the parasites of fishes is needed to devise successful prophylactic measures. With endoparasites, many effect their entry into the fish host by being swallowed with food. Invertebrate food fauna in the areas new to the fish may cause outbreaks or epizootics. On the other hand, ectoparasites develop externally and are more influenced by the conditions of the macroenvironment (environment of the fish host).

The parasite fauna in fishponds differ greatly from those inhabiting natural environments due to a number of factors: 1) reduced salinity and 2) methods involved in the management of pond fisheries which enhance mass infestation or infection.

However, conditions in pond fisheries allow for preventive and control measures of parasitic diseases. Methods of treatment can be done in confined areas but not in large bodies of water.

Upon arrival of the fry from the spawning grounds to fishponds, changes in their physiology are bound to have an effect on their resistance to parasitic diseases. The number of parasitic species in ponds is small compared with those harbored by the same fish in its natural environment. Parasites with direct life cycles usually survive in ponds as flagellates, ciliates, myxosporidians, coccidia, and parasitic arthropods.

This paper presents all known parasites of Chanos chanos (Forskal) in the Philippines. All came from affected farms in different parts of the country.

Major Parasitic Groups

Parasitic Copepods

Lernaea - Infected fingerlings from the Himlayan Filipino fishponds and that of the fish pens from Laguna de Bay have been referred to me for diagnosis. The copepods protrude wormlike from the nostrils or skin of the infected fish usually at the base of the fin. The visible portion is cylindrical, whitish, often with two eggs extending from its posterior end. When carefully dissected out of the fish, the modified head appears anchor-like, giving it the name "anchor worm." This parasite goes through developmental stages from fish to fish resulting in considerable damage to the host. Mass infestation results in great economic loss.

Salt solution of about 3-5 percent concentration was found effective for the larvae. However, because adilts were difficult to kill, dessication of infected ponds and liming was recommended before re-stocking of healthy fish.

Caligue - Very recently, I had the opportunity to diagnose the Caligue infected Sabalo reared in the SEAFDEC experimental tanks in Pandan. Caligue has its second pair of antennae provided with claws and two sucker-like organs located at the anterior end of the cephalotorax. The latter, being flattened, acts somewhat like an adhesive disc when applied to the surface of the water. The final metanauplius stage being negatively phototropic finds its host at the lower level near the bottom. The copepodid stage, generally known as chalimus is characteristic in caligids. It is attached to the tissues of the host by a long filament formed by the hardened secretion from a gland located in front of the eyes. The larvae undergo several molts before they become adults. When the adult male emerges from its final molt, it breaks off the thread and immediately searches for a female which remains attached until it is fertilized. Then it breaks away to lead a planktonic life. The caligids never stray far from their hosts, and are found wandering over the body and with the aid of a tubular mouthpart suck their feed from the fish.

The source of water for the Sabalo experimental tanks in Pandan is directly from the sea and is without adequate filters. Concentration of the planktonic caligids resulted in the infestation of the Sabalo and death of a number of them.

For treatment, I recommended the use of 1-3 percent formalin since it is not harmful to other organisms in the tank. Laviña used Neguven (Dylox), an acarocide, with positive results. However, Neguven (Dylox) in sea water dissipates faster.

Parasitic Isopods

Rocinella typicus and Ichthoxyenous are vicious killers. They kill not only the fry and fingerlings but also fish of marketable size. Observations under laboratory conditions showed that they attack, traumatise fish, and eventually kill them. The case of mass infestation of the Iloilo fishponds was referred to me. Mass killing of fish in the fishponds resulted in great mortality.

Direct life cycle and fast multiplication enhanced the intensity and incidence of infection. Recommendations were made to remove all infected fish. Survivors and non-infected fish were placed in clean ponds. All ponds with infected fish were dried and limed for several weeks before use.

Heterophyidiasis

The disease is caused by very small flatworms with indirect life cycle (Digenea) belonging to the family Heterophyidae. The larvae (metacercaria) of Haplorchis varium, Haplorchis yokogawaia and Procerovum calderoni have been found encysted in the muscles of the bangus obtained from the fishponds in the BFAR Dagatdagatan Experimental Station, Malabon, Rizal (1973, 1973a).

Wild birds, dogs, cats and man become infected by eating raw or not well cooked bangus. In man, the infection may cause mild diarrhea. However, continuous practice of eating not well cooked infected bangus may result in cardiac and visceral complications. To date, the only heterophyid life cycle known in the Philippines (Velasquez, 1973a) is that of Procerovum calderoni. The snail's intermediate host is Thiara riquetti. The eggs are eaten by the snail and develop into the early developmental stages in the hepatopancreas. Emerged cercariae penetrate and encyst in a suitable fish as the bangus.

Infection of fish can be avoided by proper waste disposal and strict observance of preventive measures.

Acanthocephalosis

The Acanthocephala form a clearly defined group of worms. They are cylindrical, provided with spines in the proboscis hence are called "spiny headed worms."

Sexes are separate. Intermediate hosts are arthropods.

Numerous worms were found in the intestinal walls of Sabalo from Nasugbu, Batangas and the BFAR Station in Mindoro.

Ulcerations of the intestinal wall was evident with the proboscis of the worm securely attached.

Conclusion

The composition of the parasitic fauna of Chanos chanos is affected not only by physiological and biological features of the host but by proper management in the case of pond fisheries.

Prophylactic measures, treatment, prevention and control should be in accordance with the ecological conditions existing in the locality. Chemotherapy of fish for human and farm animal consumption should be employed in accordance with Food and Drug rules and regulations.