

NUTRITIONAL (DIETARY) GILL DISEASE

and

Other Less Known Gill Diseases of
Fresh-water Fishes

By

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A. NUTRITIONAL GILL DISEASE

SOURCE AND RESERVOIR OF INFECTION

INTRODUCTION

Not applicable.

Nutritional gill disease is better known than the bacterial type. It can be reproduced at will experimentally by deficient nutrition. Other types of gill diseases are so far inadequately described.

MODE OF TRANSMISSION

Not applicable.

IDENTIFICATION

INCUBATION PERIOD

Not applicable.

Lack of appetite. Fish less active. Salmonid fishes head against the current or congregate near the inlet. Gill filaments and lamellae swollen and fused. Proliferation of epithelium believed to start at the base of lamellae. Typical gill-disease bacteria or parasites absent.

PERIOD OF COMMUNICABILITY

Not applicable.

CAUSE OF THE DISEASE

SUSCEPTIBILITY AND RESISTANCE

Not applicable.

Diet deficient in pantothenic acid.

RANGE

Not applicable.

OCCURRENCE

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West Virginia.

In hatchery raised salmonid fishes.

METHODS OF CONTROL

First treat as for bacterial gill disease, unless the presence of bacterial gill disease can positively be excluded. If no improvement, increase substantially the amount of beef liver in the diet. Milk, right type of dietary yeast, and distillers solubles are also good sources of pantothenic acid.

B. HEMORRHAGIC GILL DISEASE

Since very little is known about this disease only the following information is given.

IDENTIFICATION

The name of the disease is incorrect because the capillary vessels in the gills are not ruptured but only much distended producing globular or oval sacks filled with circulating blood (Wood and Yasutake, 1957) or with blood clots (Wolf, 1937). Gills appear peppered with lesions visible with naked eye or under low magnification.

CAUSE, TREATMENT OR PREVENTION

Unknown. Malnutrition or toxic substances are suspected as causes.

C. OTHER GILL DISEASES

Protozoan parasites, fungi, trematodes or other parasites may cause gill lesions and impair gill functions (Nigrelli, 1954; van Duijn, 1956; Wales, 1958). Diagnosis must be made by microscopic examination and treatment, if any, must depend on the type of parasite.

ANNOTATED BIBLIOGRAPHY

Only the most important references are listed. See also the bibliography for the Bacterial Gill Disease.

- * Davis, H. S.
1953. Culture and Disease of Game Fishes. University of California Press. Berkeley, Cal. pp. 281-282.
A concise description of the disease.
- * van Duijn, C., Jr.
1956. Diseases of Fishes. Water Life, Dorset House, London. Chapter II Diseases of the gills. pp. 59-75.
- Nigrelli, R. F.
1954. Tumors and other atypical cell growths in temperate freshwater fishes of North America. Trans. Am. Fish. Soc., Vol. 83, pp. 265-266.
Proliferation of gill tissues in response to bacterial and protozoan infections and malnutrition. All types of freshwater fishes included.
- * Wales, T. H.
1958. Two new blood fluke parasites of trout. California Fish and Game. Vol. 44, pp. 125-136.
- * Wolf, L. E.
1937. Blood clots in the gills of trout. Trans. Am. Fish. Soc., Vol. 66, pp. 369-371.
This is a disease condition more recently described also by Wood and Yasutake in Prog. Fish-Cult., Vol. 19, pp. 7-13, 1957. Cause and treatment unknown.
- * 1945. Dietary gill disease of trout. N.Y. Conserv. Dept., Fish. Res. Bull. 7, 30 pp.
- * 1951. Diet experiments with trout. Prog. Fish-Cult., Vol. 13, pp. 17-24.
Nutritional gill disease was produced experimentally on diets deficient in pantothenic acid.

* Papers indicated by an asterisk of special importance to fish culturists.