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TREATMENT OF FURUNCULOSIS WITH SULFAMERAZINE

It is a well known fact that, until recently, no reliable method of suppression or cure was known for furunculosis in fish. This disease is chronic at some of our hatcheries and appears occasionally in others. It has been responsible for much of the loss of brook and brown trout, particularly larger fingerlings, yearlings and adults. Treatment with sulfamerazine has been recently developed and is reported to be used successfully by the U. S. Fish and Wildlife Service, Wisconsin, Canada, and others. This report was prepared to acquaint fish culturists in Michigan with the latest information concerning the use of this drug in combating fish disease.

The treatment of furunculosis with sulfamerazine was developed by Drs. Gutsell and Snieszko in 1945 and 1946 at the U. S. Fish and Wildlife Service hatchery at Leetown, West Virginia, and reported by Dr. Gutsell in Science, Vol. 104, No. 2691, pp. 85-86. Further experimentation as to the correct dosage is under way. The first successful treatment employed doses that are now thought to be in excess of the least effective dose, and were thought by some biologists to produce sulfa poisoning in the treated fish. In the treatment procedure at the Grayling Hatchery, less than half the quantity of sulfamerazine recommended by Dr. Gutsell was used and apparently produced satisfactory results. However, no controls were available.

Dr. Gutsell recommended treating per pound of fish, while at Grayling we treated per pound of food used. The latter method is a more practicable one for general hatchery use.

Treatment 1.

Grayling Hatchery method (3 week treatment).

Treat with eight (8) grams sulfamerazine per 100 pounds of Food for three weeks.

Example: Treat 28,000 four-inch brown trout.
28,000 four-inch brown trout fed 125 pounds of food daily.
21 days—3 Sundays fish not fed = 18 days of treatment.

18 days x 125 pounds of food = 2250 pounds of food fed in 18 days.

$\frac{2250}{100}$ x 8 grams of sulfa = 180 grams (6.35 oz.) of sulfa for complete treatment.

Measuring the small quantities of sulfa required is a problem to be solved at each hatchery until some suitable device can be made up. One level teaspoonful of sulfamerazine weighs approximately eight grams and can be used with small error. The local druggist will be of aid in weighing the smaller quantities needed.

It is important that the drug be thoroughly mixed with the feed. No period of standing is required after mixing because the drug is not soluble in water. To help distribute the sulfa in the mixing process, a quart size Mason jar with a metal cap can be used. Holes are punched through the cap, inside to outside to turn the flaps outward so that the sulfa will not be retained in the jar. Holes should be so spaced to require considerable shaking to eject the contents of the jar. The jar is filled two-thirds full with water

and the quantity of sulfa required for the amount of food to be mixed is placed in the jar. The sulfa suspended in water in the jar is sprinkled into the food as it is being mixed. If dry food is available, the dry sulfa can be mixed well into it then added to the meat. A more thorough mix is obtained if smaller quantities of food (100 pounds or less) are mixed at one time. A mechanical mixer should be used when available.

A sharp decrease in mortality is usually noted after the first three or four days of treatment. This does not mean that the disease has been cured. According to Dr. Gutsell it takes about two weeks to cure furunculosis in most cases, and an additional week of treatment is recommended to be sure all "stubborn" cases are cured.

At the present time the effect of sulfamerazine on other diseases of fish is not known and until such information is available, sulfamerazine should be used only for treatment of furunculosis, unless otherwise recommended. Sulfamerazine is expensive (approximately fifteen dollars per pound) and should not be used indiscriminately.

A complete report of all treatments with sulfamerazine should be made to Dr. L. N. Allison at the Grayling Hatchery. The report should include number and species of fish in each pond affected, daily temperature of water, daily loss from onset of the mortality to return to normal loss, dosage of sulfa given and when given. The report should also include information on any improvements in mixing or application developed that might simplify the procedure.

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