

Trematodes on U.S. Catfish Operations

Background

Trematodes are parasites that infect many different fish species. Recently, one species of trematode, *Bolbophorus* sp., has caused significant losses to catfish producers.

Bolbophorus has a complex life cycle that relies on three specific hosts: American white pelicans; ram's horn snails; and fish. The cycle begins when an American white pelican infected with mature trematodes releases feces infested with trematode eggs into a pond. The eggs hatch and infect the first intermediate host, the ram's horn snail.

Infected snails release larval trematodes (cercariae) which in turn infect fish. Within the fish, trematode larvae develop and encyst in the flesh of the fish. The life cycle is completed when a pelican consumes the infested fish. The only way for fish to become infested with trematodes is through this complex life cycle. Fish-to-fish transmission is not possible; therefore, equipment previously used in ponds with infected fish cannot transfer enough larval trematodes to ponds with uninfected stocks to cause economically damaging infections.

The easiest way to prevent trematode infestation is to reduce snail populations within ponds and attempt to keep pelicans from establishing feeding/resting patterns on production ponds.

Trematodes on Fry/Fingerling Operations

The USDA's National Animal Health Monitoring System (NAHMS) Catfish 2003 study assessed the prevalence of trematodes on fry/fingerling and foodsize catfish operations in four States divided into two regions.* The survey of fry fingerling producers revealed that only 1.9 percent of all fingerling producers in both regions reported losing fry to trematode infestation. The percentage of fry/fingerling operations that reported trematode problems also was similar for operations that stocked 1 million fingerlings or less (1.4 percent of

operations) and for operations that stocked more than 1 million fingerlings (2.2 percent of operations).

Of those fry that did not survive to harvest, the percentage of fry reported lost to trematodes ranged from 0.1 percent on operations with stocking rates of 1 million or less to 0.9 percent on operations stocking more than 1 million fingerlings. The percentage of fry reported lost to trematodes differed by region. Operations in the East region reported that trematodes were responsible for 4.2 percent of fry loss while operations in the West region attributed 0.5 percent of fry lost to trematodes.

Snail problems were reported by 11.6 percent of all fry/fingerling operations. Similar percentages of producers in the West and East regions reported snail problems (13.1 percent and 8.3 percent, respectively). Snail control measures (lime, copper, weed control, biological control, and other measures) were implemented by 26.8 percent of all fry/fingerling operations. Specifically, copper (14.5 percent of operations); lime (8.6 percent of operations); and weed control (7.7 percent of operations) were the most common control measures used (Figure 1).

*Regions

East: Alabama, Eastern Mississippi

West: Arkansas, Louisiana, Western Mississippi (Delta)

Figure 1. Percent of Fry/Fingerling Operations by Measures Used to Control Snails in Fry/Fingerling Ponds

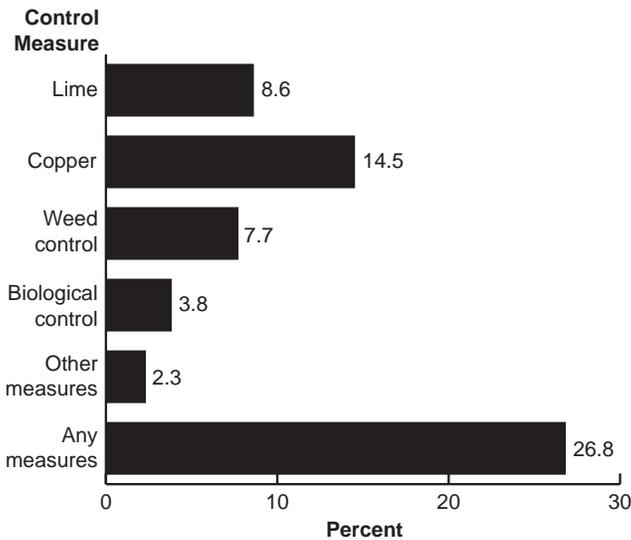
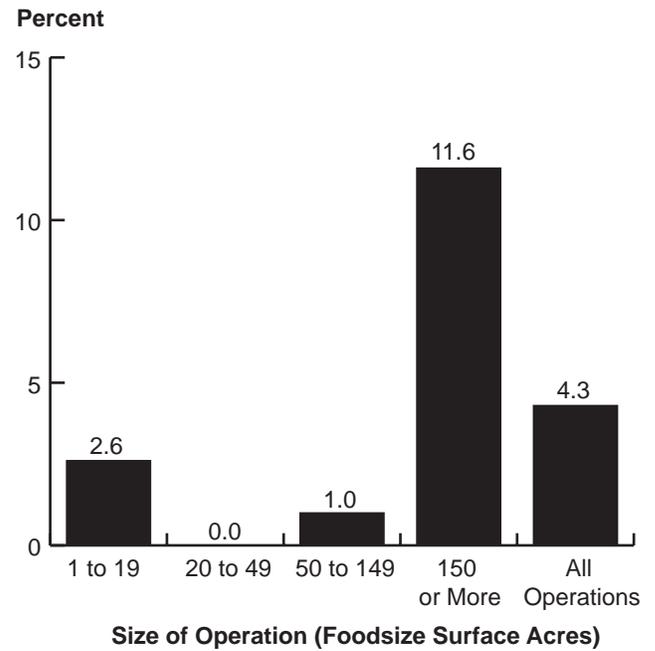


Figure 2. Percent of Foodsize Fish Operations that Experienced Any Trematode Outbreaks in 2002, by Size of Operation



Trematodes on Foodsize Fish Operations

Only 15.0 percent of foodsize fish producers reported being very familiar with trematodes; 39.7 percent were somewhat familiar; and 45.3 percent had only heard the name or did not know what trematodes were. A higher percentage of producers in the West region (68.7 percent) were either very or somewhat familiar with trematodes than producers in the East region (42.4 percent).

The percentage of foodsize fish operations that reported problems with trematodes varied by operation size. A higher percentage of operations with 150 or more foodsize surface acres (11.6 percent) reported trematode problems than operations with 50 to 149, 20 to 49, and 1 to 19 surface acres (1.0, 0.0, and 2.6 percent, respectively). For all operations, 4.3 percent experienced an outbreak of trematodes in 2002 (Figure 2).

Foodsize fish operations in the West region were more likely than operations in the East region to experience an outbreak of trematodes (8.4 percent and 1.0 percent, respectively).

More than 1 in 10 foodsize fish operations (12.7 percent) reported snail problems in 2002. A higher percentage of foodsize fish producers in the West region reported problems with snails than producers in the East region (19.0 percent and 7.2 percent, respectively).

Snail control measures in foodsize fish ponds were implemented by 19.9 percent of foodsize fish operations, but a higher percentage of operations in the West region (24.2 percent) used some control measure compared to operations in the East region (16.2 percent). Copper and lime were the most common control measures implemented on all operations (13.0 percent and 11.1 percent, respectively).

Recent research indicates that high chloride levels (2.5 parts per thousand) can control snail populations. To avoid health problems related to high nitrite levels, 53.3 percent of foodsize fish operations routinely added salt to ponds to maintain a desired chloride level. However, the average chloride level that producers maintained in their ponds was 104.6 parts per million, which is too low to control snails.

Conclusion

Bolbophorus infections are a relatively new problem for the catfish industry, as demonstrated by producers' relative lack of familiarity with the disease. This lack of familiarity may result in producers underestimating their trematode problems, since they may not recognize the disease or may not be monitoring their fish for it. Additionally, recent research indicates that *Bolbophorus* infections may increase fish susceptibility to other diseases, further adding to trematodes' impact on the catfish industry. More research is needed to describe the distribution of trematodes and their impact on catfish production in the United States.

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