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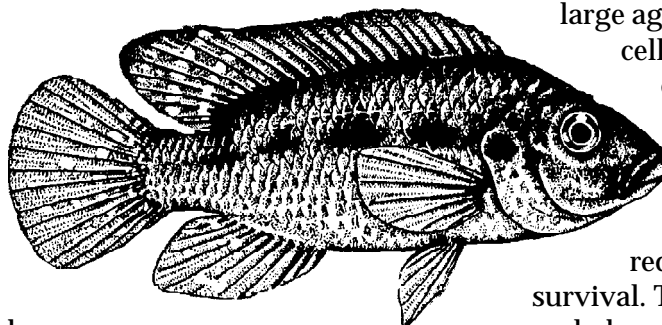
Tilapia

In recent years, many cultures have learned the value of tilapia (*Sarotherodon melanotheron* and *Oreochromis mossambica*) as a bountiful foodsource. Tilapia can also be found in expensive restaurants throughout the United States (usually called "monkfish"), and these fish are prized by gourmets and others for their unique flavor and texture.

The value of Hawaii's tilapia aquaculture crop has jumped nearly 600% in the past 10 years, from \$25,000 per year in 1984 to \$150,000 per year in 1994 (industry figures courtesy of the State of Hawaii Department of Land and Natural Resources, Aquaculture Development Program). However, this tremendous growth has not been without some significant problems. In the past few years, several farms on Oahu have experienced high mortality due to periodic blights. In response to these ailments, researchers working for the state of Hawaii Aquaculture Development Program and the University of Hawaii are trying to learn more about the ultimate cause of these widespread deaths and to devise cost-effective solutions to these problems.

The illness— Hawaii Tilapia Rickettsia-Like Organism Disease

In tilapia afflicted with Hawaii Tilapia Rickettsia-Like Organism Disease or HTRLO, the fish's vascular system becomes blocked with



large aggregates of inflammatory cells. This inflammation damages the fish gills that are responsible for respiration, and diminishes or blocks the transport of oxygen required for the animal's survival. The disease appears to be a seasonal phenomenon, occurring primarily in the winter months and for this reason, scientists hypothesize that HTRLO is a complex interaction between the rickettsia-like organism that causes the disease and one or more environmental factors, especially low temperatures.

Scientists studying HTRLO are seeking to understand the role that reduced temperature may play in predisposing a tilapia population to the disease, either by suppressing the fish's immune system or by altering the pathogen's ability to replicate itself. When a large number of tilapia are compromised by advanced-stage HTRLO disease, environmental changes, such as a slight reduction in a pond's oxygen-level, can suddenly induce high mortality.

What symptoms should I look for?

If a tilapia crop is experiencing high mortality, and if the fish have whitish streaks in their gills or appear pale in color, then the farm may have HTRLO.

New Research

Once a tilapia population has experienced an outbreak of HTRLO, the survivors appear to be relatively resistant to the disease. Future research will focus on the isolation in cell culture of the RLO and eventually on developing a vaccine that will expose tilapia to the HTRLO, with the goal of preventing or reducing mortality in cultured stocks.

Scientists are also seeking to better substantiate the inferred link between lower temperatures and the susceptibility of a tilapia population to HTRLO. Research in this area will focus on better understanding the nature of the pathogen and its natural prevalence in a pond environment.

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Where should I turn for help?

If your tilapia crop is experiencing any of the symptoms mentioned above, please contact one of the groups listed below for further assistance:

- Aquaculture Development Program
at Anuenue Fisheries Research Center
1039 Sand Island Parkway
Honolulu, Hawaii 96819-4347
(808) 845- 9561 Phone
(808) 845- 4334 Fax
- The University of Hawaii Sea Grant
Extension Service
1000 Pope Road, MSB 226
Honolulu, Hawaii 96822
(808) 956-8191 Phone
(808) 956- 2858 Fax