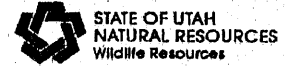


The Ichthyogram

Newsletter of the Fisheries Experiment Station

Utah Division of Wildlife Resources



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Spring 1992

1991 Inspections Up - Legislature Cuts Funding

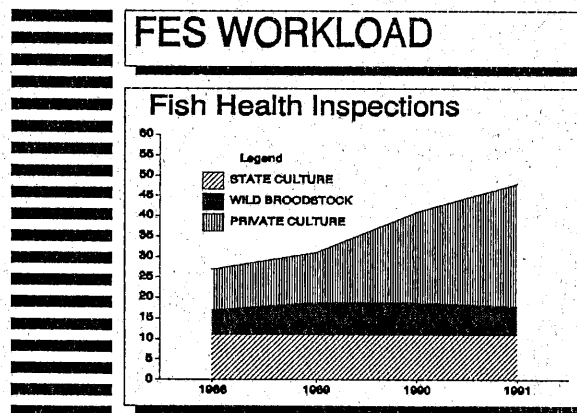
As plans for the 1992 fish health inspection year begin, the tally for 1991 is complete. It revealed another year of record inspections in Utah, up substantially again from the year before. This represents the fourth year of large increases in inspection workloads, resulting principally to private aquaculture and in 1991, whirling disease. During this period, state and wild broodstock inspections have remained constant or declined slightly.

Due to the increased workload, the fish disease diagnostic laboratory was virtually inoperative for several months in 1991. Despite that, the number of

diagnostic cases submitted was unchanged from 1990. In many cases, however, the level of investigation was limited to pathogen detection in the laboratory. Fish pathologists at FES have expressed alarm at this trend, since fish health problems at state facilities rarely involve infectious agents. As a result, these problems often require more investigation into environmental stressors. Surprisingly, the number of submissions from private aquaculture and universities were significantly increased from previous years.

The outlook for 1992 is for increases in some areas, slight declines in others. In response to direct request, some private fish culturists have voluntarily reduced their requests for second inspections to ship fish to California. In

contrast, kokanee salmon and Bear Lake cutthroat at Strawberry Reservoir and remnant populations of Colorado River cutthroat from southern Utah will be inspected for the first time in 1992.



To meet this expected demand for services, plans are being made to utilize state hatchery personnel again in 1992. Other plans include seasonal workers to help southern regional biologists collect samples for whirling disease investigations, eliminating unnecessary testing and contracting out laboratory services for state hatcheries. Pathologists are hopeful that these measures will

(1991 Inspections - continued)

allow them more time and availability when fish health problems do occur for state and private fish culturists.

Meanwhile, the Utah state legislature cut \$658,000 of general fund money from the Division of Wildlife Resources's budget in February. A portion of the funds for salaries and supplies relating to private fish culture inspection were included in this budget cut. The long-term implications of this move are unclear, but preliminary plans are to make up the deficit with restricted funds. These funds originate from sales of licenses to fishermen and hunters in Utah.

Whirling Disease Investigations Continue

Investigators at the Fisheries Experiment Station are continuing to test fish for the presence of *M. cerebralis* as plans for a renewed eradication effort for the parasite are considered. Recent testing has demonstrated that both the Loa and Egan state culture facilities are negative for the parasite. In the Great Basin drainage, fish from a contaminated private facility which tested lightly positive last year showed very high concentrations of spores in February 1992.

Regional biologists and fish pathologists have identified a list of high priority waters in the area which are scheduled for testing as soon as weather permits in the spring. UDWR director Tim Provan has made seasonal workers available to regional biologists to help in the collection of samples. Fish from other lower priority waters in the area will also be sampled during regular spring census and tested for the parasite later in the year. State hatchery facilities have taken extra precautions in sanitation and security to prevent spread of the parasite. Both Loa and Egan hatcheries have installed special devices to further prevent any incursion of fish from contaminated waters. Visitors are no longer allowed on the grounds except in special prearranged cases. Sentinel fish are being installed in settling ponds for quarterly

testing.

UDWR officials and private fish culturists are in the final stages of completing a memorandum of understanding that will allow for the continued operation of private hatcheries while efforts to eradicate the parasite proceed. Both private aquaculture facilities in the Great Basin drainage have been evacuated of fish and concrete portions disinfected.

A final strategy for the Fremont River drainage will have to be made after testing of upstream waters during the summer. It seems likely that the Mill Meadow and Forsyth reservoirs will be depopulated along with remnant fish in Spring Creek and Fremont River. This is in keeping with the original plan to keep the affected waters as fish-free as possible and prevent further spread of whirling disease to downstream fish culture sites.

They Gotta Have It, Uh-huh!

Have you ever been fishing on a slow day and wished there was something you could put on your lure that would just make fish strike? If you fish for catfish, your prayers may be answered. Researchers at Louisiana State University have discovered a simple compound that gives catfish an uncontrollable urge to bite, according to an article from Science News (14:28). The compound, called "Gotta Bite", was serendipitously discovered while studying how catfish sense amino acids. Taste researchers study catfish because they have a very sensitive sense of taste.

(Gotta Have It - continued)

In the December CHEMICAL SENSES, physiologist John Caprio and Slovenian animal behaviorist Tine Valentincic report that catfish taste but do not smell "Gotta Bite". Catfish do not taste the same amino acids they smell, or smell the same amino acids they taste, according to research Caprio conducted in 1977.

At low levels of "Gotta Bite", the fish began a series of rapid turns, apparently searching for the food like a cat that gets a whiff of tunafish. As the concentration increased, the fish went into a frenzy, gobbling up and spitting out gravel, and snapping at the glass walls of the aquarium.

The potential of the compound was not lost upon the researchers. Louisiana State University has applied for patents for using Gotta Bite. It may not be long before you see coated fishing lures and fish feed supplemented with the stuff that drives catfish crazy.

New Research Biologist at FES

Please join us in welcoming Tom Bosakowski as a new wildlife biologist at the Fisheries Experiment Station. He will be working with Eric Wagner as a researcher on various trout survivability studies. Tom recently completed his Ph.D. in biology at Rutgers University while working as an associate scientist in the department of toxicology and pathology at Roche Research Center in Nutley, New Jersey.

In addition to his toxicology and pathology research, Tom has also published extensively on raptors (birds of prey) and is eager to start observing Utah raptors on his weekends and holidays. Tom is also an avid trout fisherman and has enjoyed fishing for trout in his home state as well as the fabled Catskill Mountains in New York and many rivers of northern Oregon. He also enjoys walleye, pike and lake trout fishing

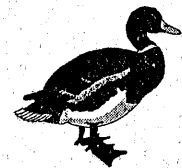


which he has done on numerous trips to northern Quebec and Ontario. Tom is excited about getting his line wet and is very enthusiastic about his new role in helping to improve trout production in Utah.

Whirling Disease Spread by Birds?

Results of research recently published in a fish health journal¹ have demonstrated that under laboratory conditions, spores of *Myxobolus cerebralis* can survive transit through mallard ducks to infect *Tubifex* worms and ultimately cause clinical whirling disease in rainbow trout. Further experiments also demonstrated the spores can remain viable and infectious when passed through the digestive tract of northern pike or exposed to environmental conditions of -20° C.

The results confirm the findings of earlier researchers and emphasizes the resiliency of these spores.



While the role of birds in creating or spreading epizootics outside the laboratory has not been demonstrated, the possibility must be considered in eradication and control programs.

¹ El-Matabouli, M. and Hoffman, R.W. Effects of freezing, aging, and passage through the alimentary canal of predatory animals on the viability of *Myxobolus cerebralis* spores. *Journal of Aquatic Animal Health*. 3: 260-262. 1991.

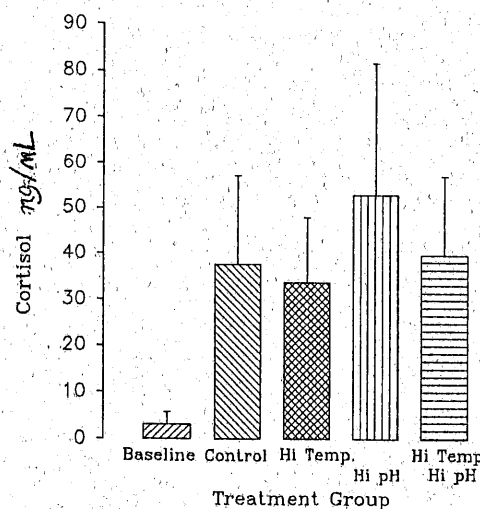
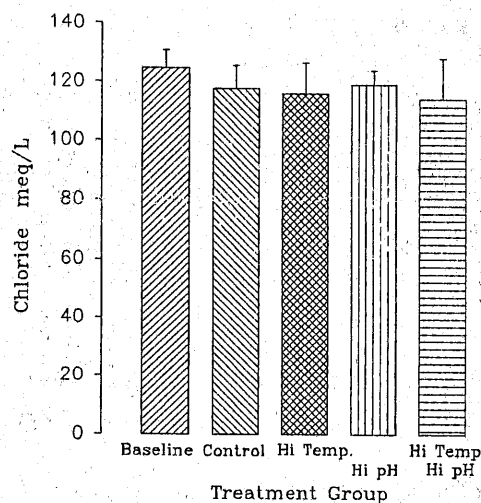
PH & TEMP CHANGES: SYNERGISTIC?

Fish are often stocked into streams and lakes where the water quality is quite different from that in the hatchery where they were raised. Temperature and pH are two of the most important water quality parameters. Past research has determined the lethal limits for a variety of species and has demonstrated the stressful effects of sub-lethal changes in pH and temperature. Combinations of water quality changes have rarely been evaluated.

At the Fisheries Experiment Station, an experiment was conducted to evaluate the effects of sub-lethal changes in pH and temperature after transport. The experiment was designed to evaluate the stress response (cortisol and chloride) to changes in both pH and temperature or an increase in either variable alone. The first time this experiment was tried (see Ichthyogram 1(2):3) fish were stocked into plastic tanks. The results indicated that the

combination of pH and temperature caused greater mortality than either variable alone. Concerns about water quality in the tanks and changes in pH due to CO₂ production prompted us to repeat the experiment in raceways. The pH of the "high pH" treatments was 9.1 to 9.2 and the high temperature was 16 to 18° C (70.5 - 71.5°F). Control temperature and pH were 16.5°C (61°F) and 7.9. In this experiment, only one mortality occurred (pH - temperature treatment). The cortisol and chloride figures illustrate the stress response. Cortisol differences were only significantly higher than controls in the high pH treatment. Chloride concentrations did not differ from controls in any of the treatments except baseline, taken prior to loading the fish. Current results indicated no synergistic effect of pH and temperature, and that high pH was more stressful than a change in temperature or a combination of high temp and high pH. Further experiments are planned to evaluate the response of fish to various combinations of temperature and pH.

Eric Wagner



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