

CITY AND VIL THE BRAINERD DAILY DISPATCH

"CENTRAL MINNESOTA'S DAILY NEWSPAPER"

In the Heart of the Lake Region

Dial
829-4705

Member of The
Associated Press

United Press-International
Telephoto Service

BRAINERD, MINNESOTA 56401, SUNDAY, NOVEMBER 21, 1976

SINGLE
COPY 15 CENTS

VOL. 99D—NO. 92

Ten Mile Lake's Tullibeets Attract Lots Of Attention

By CAROL BUCKMANN
Staff Correspondent

The "Tilton Hilton" buzzed with activity as fisheries experts gathered for the spawning run of the tiny tullibeets of Ten Mile Lake.

There is probably no other non-game fish in Minnesota that has attracted so much current attention from noted experts as these small, silvery fishes that spawn by the millions along the shores of Ten Mile Lake in late October or early November.

The nucleus of activities of fisheries technicians from the University of Minnesota and the Department of Natural Resources (DNR) early this month was the "Tilton Hilton," the lake home of Warren Goss, president of the Ten Mile Lake Association and retired chemical engineer.

Ten Mile is unique in many respects, including a set of characteristics that keep the tullibee population from growing beyond about five inches in length.

They are the smallest strain of tullibeets known to exist anywhere.

The fall run of these fish has been observed and netted but not widely discussed by the year-around residents at Ten Mile for as long as anyone can remember. Their exact identity and how they got there have been a mystery.

Noted fisheries scientist Professor James C. Underhill of the U of M's Zoology Department has identified them as dwarf tullibee and believes their small size is due to the ecology of Ten Mile.

Underhill is especially interested in the inherited characteristics of these fish and the environmental elements that determine these characteristics.

An on-going study was started by Underhill, assisted by graduate student James Erickson, a PhD candidate, during the 1975 spawning run and samples were collected for analysis in university laboratories.

Underhill, Erickson and two other fisheries experts from the university, William Schmidt and Craig Anderson, were back several times to Ten Mile last summer to net the tiny tullibeets at various depths to learn more about their seasonal habitat preferences and movements. Another study is being done by Merle Johnson, cold water DNR fisheries biologist, Bemidji. From the standpoint of cold water fisheries biology, he wants to find out if immature trout will feed on these fish.

Johnson theorizes that the tullibeets might also be more attractive to predatory birds such as loons and mergansers than small trout.

Although this year's spawning run did not materialize in the manner expected, enough tullibee were taken in trap nets for experimental transplanting into Newman Lake, a reclaimed trout lake southwest of Bemidji.

John Kollar, area DNR fisheries manager, and his crew have been studying the fall spawning run of these fish since 1973. Kollar joined Underhill, Erickson and Johnson for this year's conclave at the Tilton Hilton.

Underhill is gathering data that can be used by a graduate student as basic background for a two to three-year study towards a PhD or M.A.

"We're trying to find out what there is about this lake that keeps the tullibee from growing larger. They reach maturity at a very small size. I'm beginning to believe the reason is environmental rather than genetic," said the professor.

Underhill speculates that whitefish in Ten Mile may be occupying the same position as the larger tullibee would otherwise occupy. Whitefish in Ten Mile grow to 20 inches and larger while the tullibee remain small.

The opposite occurs at Lake Itasca where tullibeets grow to four or five pounds, but without competition with whitefish.

The dwarf tullibeets have presumably evolved in Ten Mile Lake. The massive glaciers that once covered Minnesota are vital links to the past and to the origin of the tullibeets in Ten Mile.

Underhill says the tullibeets may have been left behind when the glaciers retreated. He says a core sample taken from the lake's deepest part would reveal information about when the lake was formed and give other clues about the lake's evolution.

Ten Mile is the deepest lake in this part of Minnesota. The deepest known point is 208 feet. According to Underhill, plunge basins, some hundreds of feet deep, were gouged out by the ancient glaciers. Water that formed in these basins under the glaciers stayed after the icy masses retreated.

Ten Mile is thought to have been formed by one of these plunges.

In 1974, Kollar and his crew from the DNR transplanted several thousand tiny tullibee to Hazel Lake, an 11-acre reclaimed trout lake eight miles east of Ten Mile, to observe whether they would thrive there and provide forage food for trout.

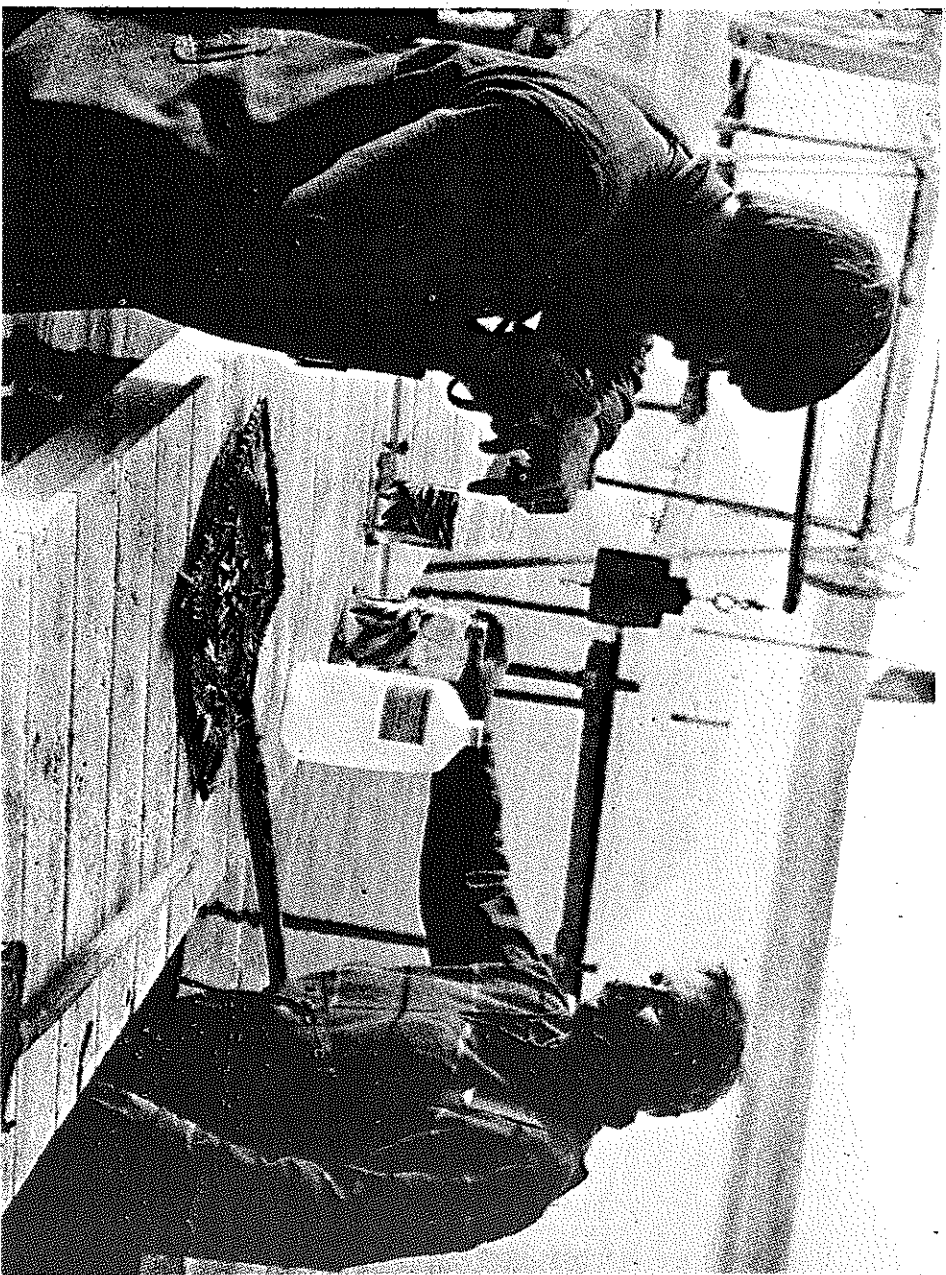
Kollar's experiments produced astonishing results. His last netting last fall proved the little fish do grow larger in a different environment. Those taken in test nets had more than doubled in size from when they were netted from Ten Mile.

From this experiment, Underhill says he believes the tullibeet have greater growth potential than they exhibit at Ten Mile and that the experiment in Hazel Lake obviously produced changes in the small fish.

Food habits, distribution and competition with whitefish may be part of the overall difference.

"I don't think any two lakes are comparable. Each is a unique environment," said Underhill.

The little tullibeets are a reflection of the uniqueness of Ten Mile. The tiny, silvery fish are part of the population complex of the lake, made possible by the lake's particular environmental characteristics. Underhill wants to find out where the most logical places for production of the little tullibeets are located in Ten Mile. He also wants to know if this year's peak spawning run occurred in a different part of the lake than last year's impressive run along the shore at Goss' property.



IT STILL REMAINS a mystery as to why the tullibeets of Ten Mile Lake remain much smaller than tullibeets in other lakes. Trying to find the answer to that mystery are experts in the field like graduate student Jim Erickson, left, and Dr. James Underhill, a professor at the University of Minnesota.

"We don't know if the run occurs all around the lake or if the tullibee have adapted to using the entire lake during other seasons. We haven't set nets at all the environmental columns of Ten Mile," commented Underhill.

Last year's run was spectacular. At dusk, October 31, there were ribbons of fish moving counter-clock-wise. It was a continuous parade of fish, swimming leisurely in a seemingly endless river of little silvery, shimmering tullibeese. Test netting by Underhill and the graduate students during the summer revealed tullibee almost everywhere but mostly below the thermocline. There were all sorts of small tullibee in the deep water sets, 100 feet and deeper. Few were taken in shallower sets, but there were lots of whitefish.

Another interesting feature of the Ten Mile tullibeese is their apparent ability to adjust to water pressures. They resemble a strain of tullibeese in Lake Superior, but the Ten Mile tullibeese do not suffer embolism and "blow-up" when hauled from depths of over 20 feet as is the case with the Lake Superior tullibeese.

Even when hauled from depths of 200 feet the Ten Mile tullibeese did not suffer embolism.

The tullibeese also resemble those in Snowbank and Burntside lakes near Ely, but are a little smaller and more slender. Merle Johnson said, tullibeese from these two lakes will be netted with trap nets for comparison with the dwarfs from Ten Mile.

Johnson said the dwarf tullibeese are similar but not identical to varieties found in lake trout lakes and that this species has potential for being a good forage food for trout.

"It is logical that the tullibeese may absorb quite a bit of the predation on small stocked trout by predatory birds. We're showing some food between the predator and the trout, a positive approach whereby we're using nature, not fighting it," said Johnson.

Whether or not the birds will feast on the tullibee is a hypothetical question and the only way to support the theory is to compare trout survival rates.

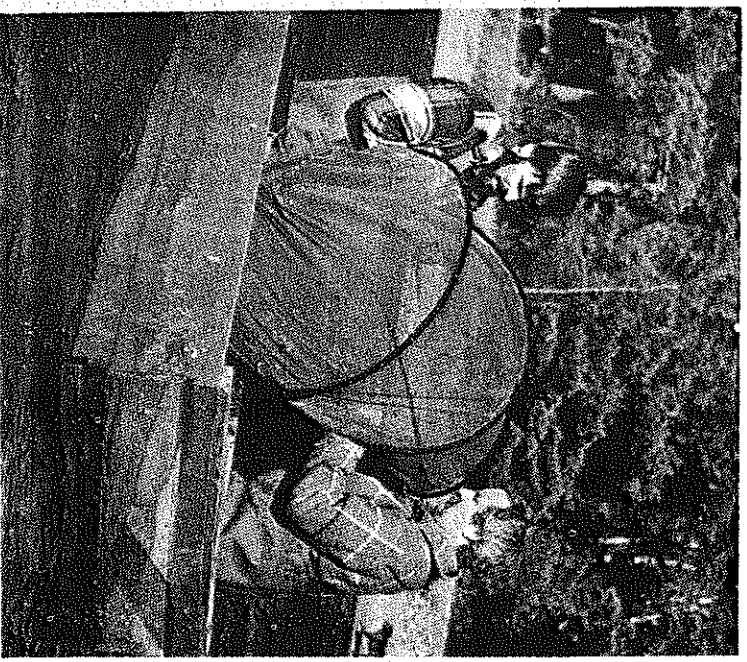
"It is an empirical approach to fish management that might have a variety of results. We don't feel we will be harming the production of trout," Johnson stressed.

"There are so many variables to this sort of experiment. You need a lot of case histories in any fish management technique before any final determination can be made of its value," added the fisheries researcher.

The low water level is believed to have contributed substantially to the low number of tullibee taken in the test nets at Ten Mile this year.

The lake is about two feet lower than at the same time last year, or about 2½ feet below normal. Goss reports that the springs that feed the lake appear to be delivering little water into the lake and some have stopped flowing.

Goss has been plotting profiles of temperature and dissolved oxygen which indicate how conditions develop in Ten Mile as the season progresses. The top layer of the lake gets heavier and heavier as the water cools in the fall and finally the lake becomes uniform from top to bottom when the turnover is completed.



GRADUATE STUDENT Jim Erickson and Professor James C. Underhill, both of the University of Minnesota, dump some dwarf tullibeese from a trap set into a live box for study on Ten Mile Lake.

The scientists wonder whether the occurrence of the turnover is related to the timing of the tullibee spawning run. The turnover occurred on Oct. 21 this year.

Goss telephoned Underhill and Kollar immediately when he saw or heard of any indication that the spawning run was commencing.

In making the oxygen and temperature determinations, Goss used a sophisticated instrument provided to him by Underhill, plus 200 feet of cable. It is an oxygen electrode meter which has a temperature dial so it is possible to find the limits of the thermocline as well as oxygen profiles.

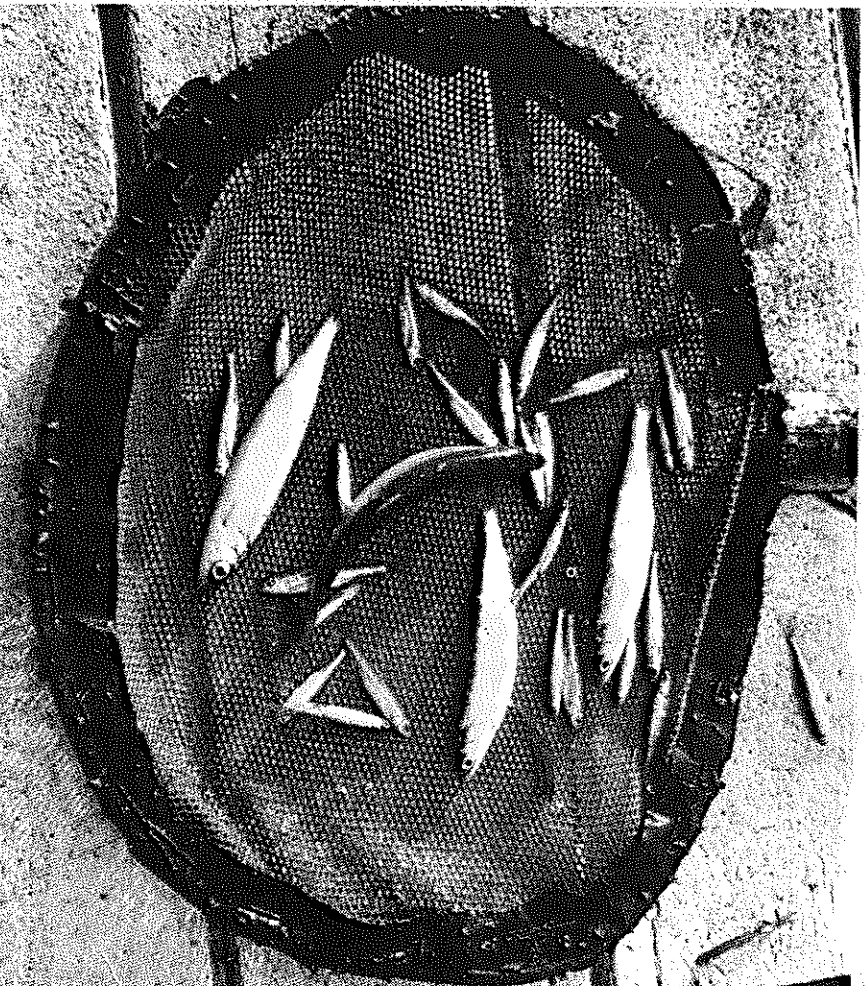
"This is a neat experiment," said Underhill who added that an advantage to studying the Ten Mile tullibeese is the wealth of information already gathered about the lake.

Last year, Goss was responsible for attracting a team of scientists from FMC research laboratories to sample the lake and conduct chemical and biological analysis in FMC's laboratories in Princeton, N. J.

Dr. Scott Coleridge and one of his colleagues from FMC research laboratories were back this year to conduct further samplings.

Another advantage to the Ten Mile tullibee studies is the hospitality of the Tilton Hilton where Goss serves as host, chef and active participant in the test nettings.

"The Tilton Hilton is always available with boats, gear and how ever many helping hands are needed for these interesting studies," said Goss.



THE TRAP NETS produced some of these tiny fish for study by the experts.