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SAMPLING TENDERFOOT LAKE

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30 June 1978
Biology 569
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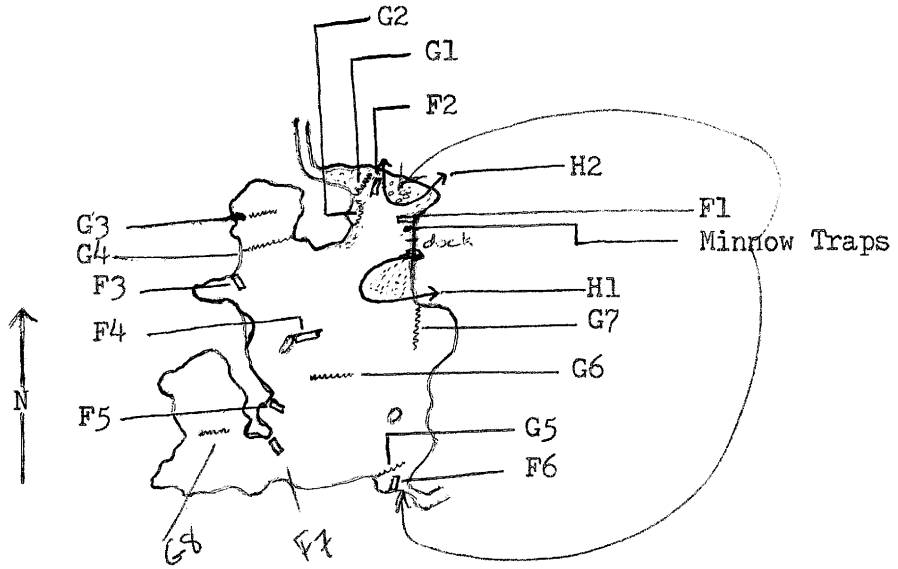
Several preliminary studies should be performed prior to the actual assessment of fish production in Tenderfoot Lake. First the local Director of Natural Resources should be advised of the possible study. He or she might know of problems with working in the lake and would also ready the necessary permits. Property owners around the lake should also be told of the study. The obvious problem with Tenderfoot Lake is that it has public access. All capture methods would have to be clearly marked day or night. Ideally other people would not disrupt the sampling.

Good points.

Certain chemical and physical data would aid in maximizing trapping yields. A general lake survey would indicate major aquatic macrophyte areas, tributaries, outlets, coves and protected areas, shady areas, and some submerged obstructions. A contour map of the lake would indicate sills and underwater banks and basins. Temperature and oxygen profiles would give data which later could be correlated with the fishes caught. Also it would be a waste of time to place capture devices in water with dissoved oxygen levels below 3.0 ppm. Acidity, alkalinity, hardness, nitrates, phosphates, and pH affect fish directly (fish must maintain certain body chemical levels) and indirectly via the food chain. Plankton tows and benthic samples samples would suggest major food sources. To give an accurate picture of the lake's environmental conditions, the chemical and biological sampling methods would be repeated over the course of a year. All these conditions and their seasonal variations affect fish

FIGURE I
TENDERFOOT LAKE
NET PLACEMENT



KEY

Experimental Gill Nets

Fyke Nets

Haul Seine

Reeds

Waterlilies

growth.

Capture device placement and type depends on the species of fish known to exist in Tenderfoot and the lake's hydrography. The sampling methods need to be as efficient as possible and varied. This insures maximum catches and maximum species while concurrently negating to an extent the inherent selectivity of each type of gear. How to actually set gear is thoroughly described in Methods for Assessment of Fish Production in Fresh Waters by W.E. Ricker (Oxford: Blackwell Scientific Publications,1971), pp.17 - 39. All further references are from this book.

Unfortunately, three other considerations enter the picture: time, number of crew, and finances. A multimillion dollar survey of Tenderfoot might end up damming and draining the lake. Assuming an UNDERC crew of 12 people, 2 motorboats, 2 rowboats, 7 experimental gill nets, 6 fyke nets, 1 haul seine, several minnow traps, ~~and~~ one fine mesh purse seine, and 3 weeks of actual survey time, the nets and traps could be placed as illustrated in figure I.

The haul seine with "scotch boards" (p. 29) could be pulled through the reed bed south of the dock and through the weedy cove north of the dock. Evidently the haul seine works best at night.(p. 29) The purse seine and both motor boats would be used to sample the surface of Tenderfoot, again best yeilds ~~are~~ would be obtained at night. The haul and purse seines could be used a few times each during the first week. The fyke nets would be placed near weedy areas along the shoreline. F2 and F6 are to be placed near an inlet and an outlet respectivly. The minnow traps could go in quiet and accessible positions along the shore. Experimental gill nets G2 and G4 are placed on sills while G1 and G5 are at an outlet and an inlet. G5 would have to be especially well marked. G7 juts across a cove. G3 and G6 sample deep swimming fishes. The nets and traps should be ~~inspected~~ inspected twice a day in order to determine population movements. Clumping of data should be watched for and other sampling methods introduced if it occurs.

All fishes caught will need to be identified, separated, weighed, measured (~~forked~~ and total length), sexed, and aged (If large numbers of fish are caught, only a stratified random sample of each species needs to be aged.). Gut analysis of a reasonable number of fish will need to be performed also. All data must be thoroughly labeled according to net of capture, time, and date. At least the length and weight, and preferably these along

with all the other data collected, should be kept together for individual fish.

Analyzing the data should reveal the species of fish in the lake and their relative numbers, size and age classes, length frequencies, and the condition factor for each species in the lake. Stomach analysies should correlate with the food sources and illustrate fish preferences. Trends in the size of fish and their stomach contents should be noted. Net placement would show habitat preferences while the AM and PM samples would show fish migration patterns. The species caught along with the chemical data would show what species of fish do best in water of certain characteristics. All this should show the health of the fish populations in Tenderfoot and of Tenderfoot Lake itself.