

INTERNAL REPORT 152

DYNAMICS OF LIMNETIC FEEDING FISH: III LAKE CHESTER MORSE

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FIELD PROCEDURES AND METHODS OF ANALYSIS

Sampling at Lake Chester Morse is conducted at weekly intervals to tag fish. Tags (both serially-numbered Floy dart tags and serially-numbered Korn fingerling tags) are attached to rainbow trout, *Salmo gairdneri* and Dolly Varden, *Salvelinus malma* captured by either fyke (frame) nets or by hook and line. Estimates of the two populations will be made using both the Peterson and Schnabel methods of calculation.

In addition to the tagging program gill nets have been used at approximately 2-mo intervals to obtain stomach samples and to determine fecundity and spawning time.

Task Objectives

The objectives of this study are to determine the population sizes, age and growths, length-weight relationships, fecundity, sex ratios, mortality rates, and feeding habits. Biomass and production of the two species will be estimated from this information.

Expected Results

Preliminary analysis of collected data is now being done with the goal being the achievement of the objectives previously outlined. From January 1973 through August 1973 a total of 872 rainbows were tagged and 45 fish were recaptured. Three hundred and twenty-two Dolly Varden were also tagged and 47 fish were recaptured in this same time period.

Peterson estimates from the August data result in population estimates of 4650, 8138, 15,752 rainbows and 1684, 3015, 6147 Dolly Varden. A Schnabel estimate over the 8-mo sample period results in population sizes of 9830 rainbows and 1305 Dolly Varden. Preliminary returns seemed to show a differential percentage according to size groups of tag return, however, a chi square test was used at the 0.05 level where there were no significant differences in the percent returns of the various size (length) groups. Aging has been started and as soon as it is completed the numbers of each group will be calculated.

Gear selectivity has resulted in sampling the larger fish in the populations. Figures 1 and 2 show the extent of this selectivity for the three main types of gear used. A Lake Merwin type floating trap was used for seven weeks (18 Sept 1973 to 6 Nov. 1973) and initial analysis showed it to be less selective against the smaller fish (Figure 3).

The feeding habits of pygmy whitefish, *Prosopium coulteri*, by A. Repsys, and the age, growth, and fecundity study by R. Wydoski will be incorporated in the discussion of this significant food item of Dolly Varden. Rainbow data will be used in Bartoo's basic population dynamics model to further discuss this population. The results of the fish populations dynamics study will be used with data collected by other investigators to build a carbon flow chart of Lake Chester Morse.

SAMPLING

This weekly fish sampling program at the lake was ended on 6 Nov. 1973. Presently, no further sampling is anticipated until the data are analyzed and a definite need for additional sampling is demonstrated.

DATA STORAGE

All data are stored in notebooks and record sheets in the Fisheries Research Institute. It is anticipated that data amenable to card punching will soon be recorded on standard forms to be punched.

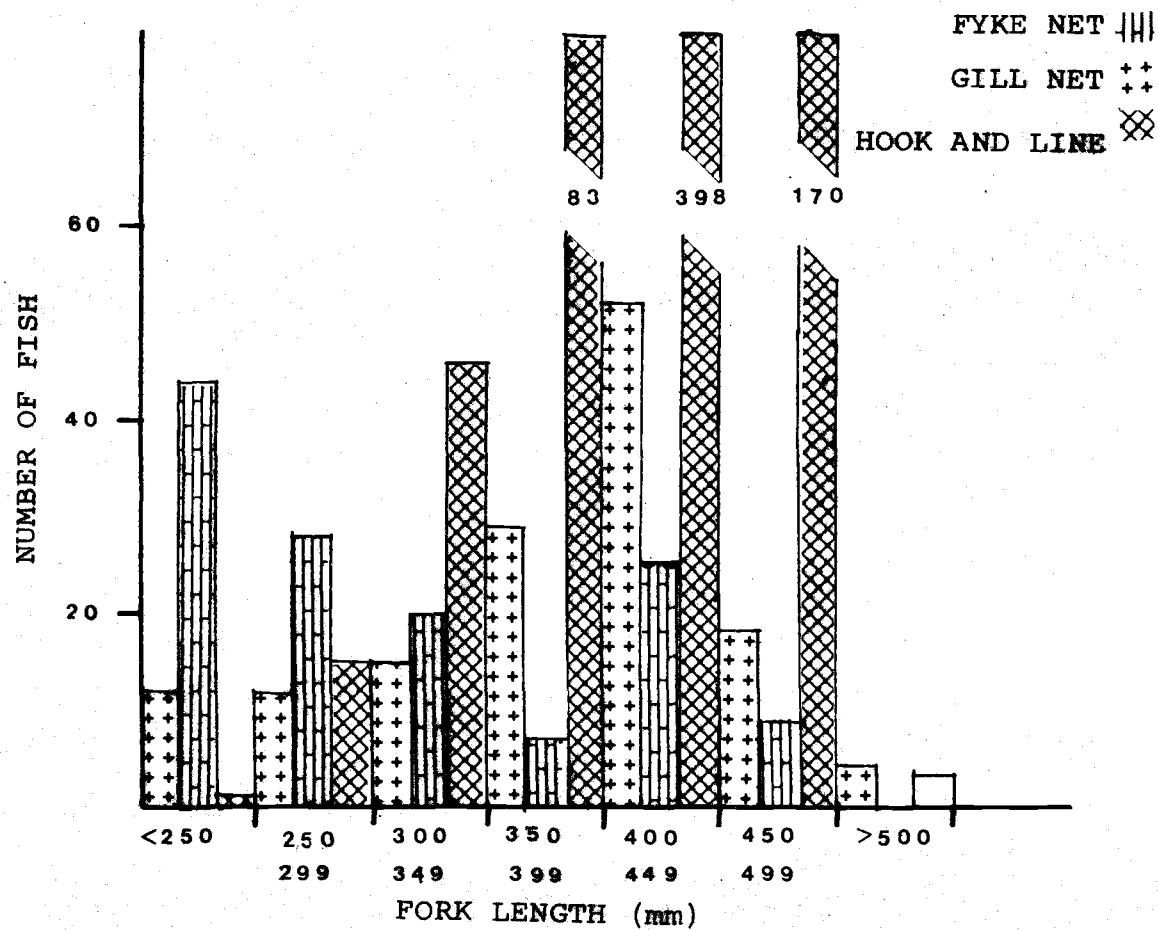


FIGURE 1. GEAR SELECTIVITY OF RAINBOW TROUT.

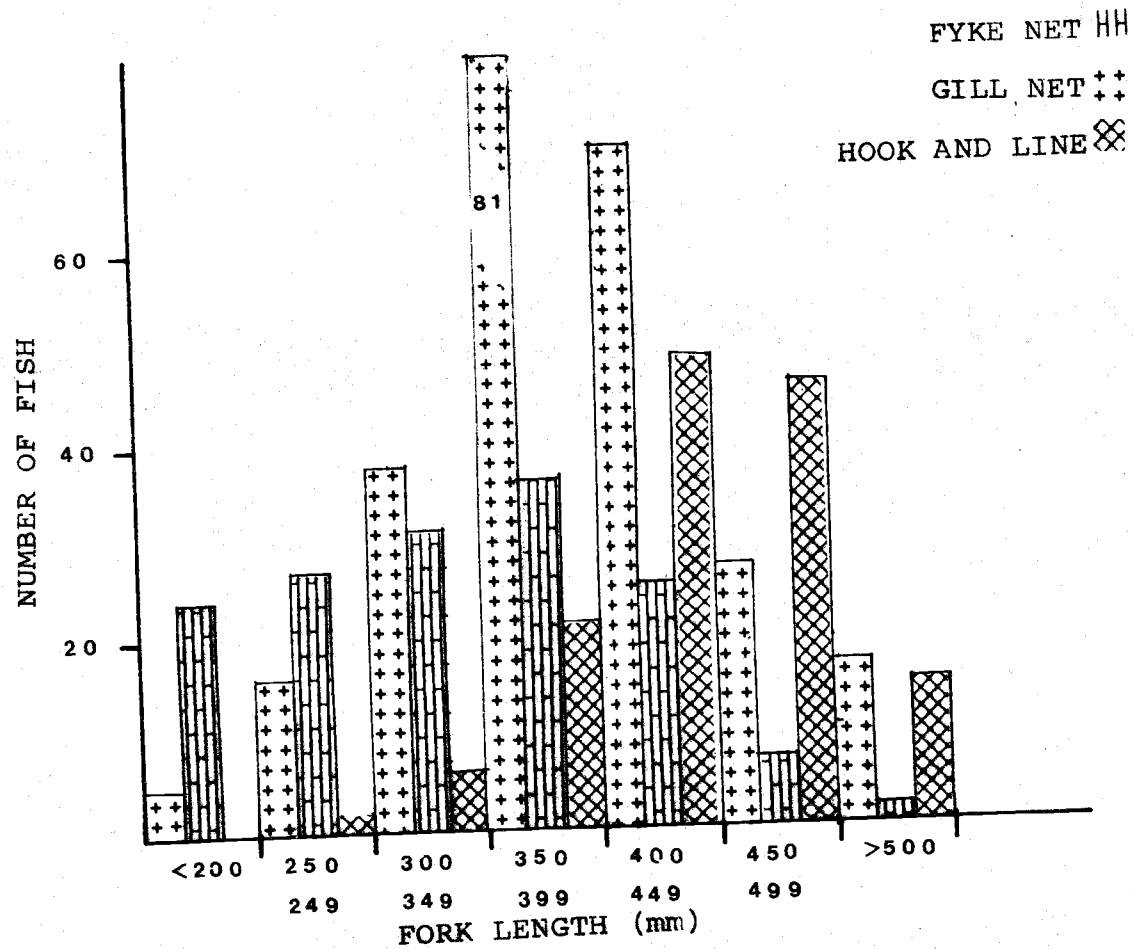


FIGURE 2. GEAR SELECTIVITY OF DOLLY VARDEN.

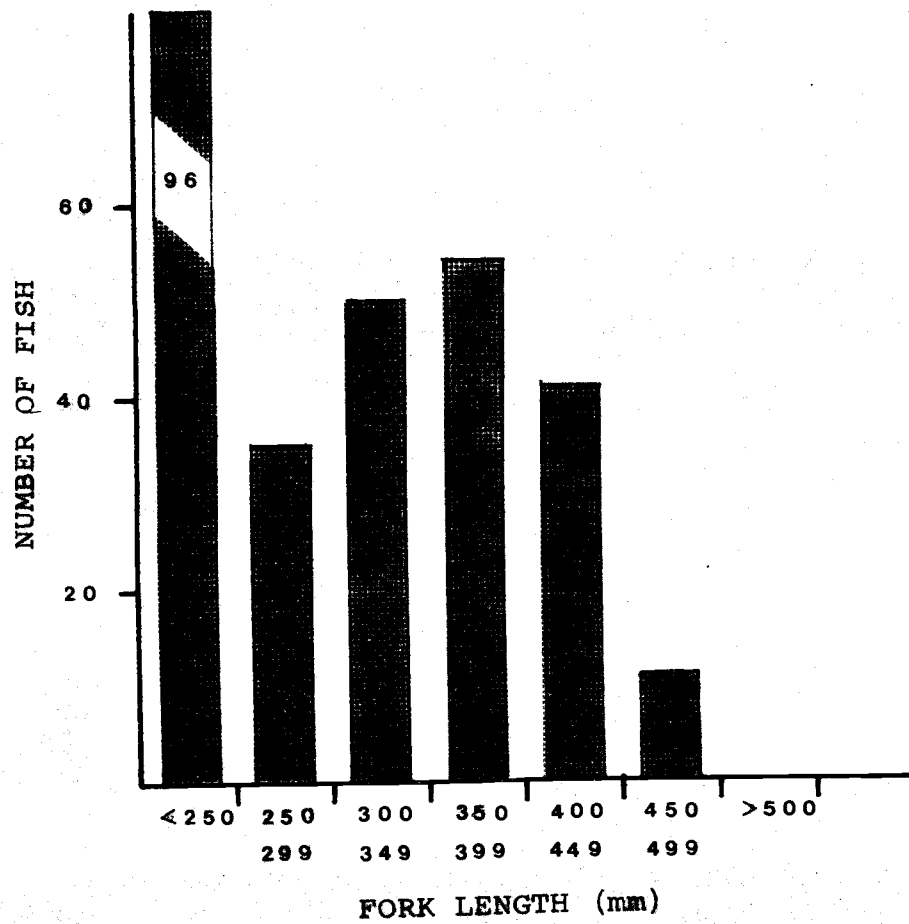


FIGURE 3. TRAP SELECTIVITY (RAINBOW ONLY).