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Assessment and Evaluation of the Lake Trout Sport Fishery in Great Bear Lake, N.W.T., 1984-85

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IN GREAT BEAR LAKE, N.W.T., 1984-85

by

M.M. Roberge and J.B. Dunn

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TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| ABSTRACT/RÉSUMÉ | vii |
| INTRODUCTION | 1 |
| STUDY AREA | 1 |
| PROTECTION AND REGULATIONS | 1 |
| METHODS AND MATERIALS | 2 |
| General | 2 |
| Experimental netting | 2 |
| Standard creel census | 2 |
| Intensive creel census | 2 |
| Biological sampling | 2 |
| Total allowable harvest | 3 |
| Data analysis | 3 |
| RESULTS AND DISCUSSION | 3 |
| Great Bear Lake | 3 |
| Dease Arm (1984) | 3 |
| Experimental netting | 3 |
| Standard creel census | 3 |
| Intensive creel census | 3 |
| Evaluation and recommendation | 4 |
| McTavish Arm - north (1984) | 4 |
| Experimental netting | 4 |
| Standard creel census | 4 |
| Intensive creel census | 4 |
| Evaluation and recommendation | 5 |
| McTavish Arm - south (1984) | 5 |
| Experimental netting | 5 |
| Standard creel census | 5 |
| Intensive creel census | 5 |
| Evaluation and recommendation | 5 |
| McVicar Arm - north (1984) | 6 |
| Experimental netting | 6 |
| Standard creel census | 6 |
| Intensive creel census | 6 |
| Evaluation and recommendation | 6 |
| Smith Arm (1985) | 7 |
| Experimental netting | 7 |
| Standard creel census | 7 |
| Intensive creel census | 7 |
| Evaluation and recommendation | 7 |
| PROGRAM EVALUATION AND RECOMMENDATIONS | 7 |
| SUMMARY | 8 |
| ACKNOWLEDGMENTS | 8 |
| REFERENCES | 8 |

LIST OF TABLES

| <u>Table</u> | <u>Page</u> |
|--|-------------|
| 1 Summary of harvests, catch per unit effort, and instantaneous total mortality rate for each lake trout stock, Great Bear Lake, 1972-1985 | 11 |
| 2 Summary of catch and mean length, by use, of lake trout caught in the intensive creel census, Great Bear Lake, 1984-85 | 12 |
| 3 Summary of effort expended during the intensive creel census, Great Bear Lake, 1984-85 | 13 |

| <u>Table</u> | <u>Page</u> |
|--|-------------|
| 4 Summary of catch per unit effort for lake trout in the intensive creel census, Great Bear Lake, 1984-85 | 14 |
| 5 Catch and catch per unit effort for fish caught by experimental gill nets, Dease Arm, Great Bear Lake, 1984 | 17 |
| 6 Biological data by length interval for lake trout caught by experimental gill nets, Dease Arm, Great Bear Lake, 1984 | 18 |
| 7 Biological data by age group for lake trout caught by experimental gill nets, Dease Arm, Great Bear Lake, 1984 | 20 |
| 8 Biological data by length interval for angled and retained lake trout, Dease Arm, Great Bear Lake, 1984 | 22 |
| 9 Biological data by age group for angled and retained lake trout, Dease Arm, Great Bear Lake, 1984 | 24 |
| 10 Catch and catch per unit effort for fish caught by experimental gill nets, McTavish Arm (north), Great Bear Lake, 1984 | 28 |
| 11 Biological data by length interval for lake trout caught by experimental gill nets, McTavish Arm (north), Great Bear Lake, 1984 | 29 |
| 12 Biological data by age group for lake trout caught by experimental gill nets, McTavish Arm (north), Great Bear Lake, 1984 | 31 |
| 13 Biological data by length interval for angled and retained lake trout, McTavish Arm (north), Great Bear Lake, 1984 | 33 |
| 14 Biological data by age group for angled and retained lake trout, McTavish Arm (north), Great Bear Lake, 1984 | 35 |
| 15 Catch and catch per unit effort for fish caught by experimental gill nets, McTavish Arm (south), Great Bear Lake, 1984 | 39 |
| 16 Biological data by length interval for lake trout caught by experimental gill nets, McTavish Arm (south), Great Bear Lake, 1984 | 40 |
| 17 Biological data by age group for lake trout caught by experimental gill nets, McTavish Arm (south), Great Bear Lake, 1984 | 42 |
| 18 Biological data by length interval for angled and retained lake trout, McTavish Arm (south), Great Bear Lake, 1984 | 44 |

| <u>Table</u> | <u>Page</u> | <u>Figure</u> | <u>Page</u> |
|---|-------------|---|-------------|
| 19 Biological data by age group for angled and retained lake trout, McTavish Arm (south), Great Bear Lake, 1984 | 46 | perimental nets, Dease Arm, Great Bear Lake, 1984 | 19 |
| 20 Catch and catch per unit effort for fish caught by experimental gill nets, McVicar Arm (north), Great Bear Lake, 1984 | 48 | 5 Areas generally fished in Dease Arm, Great Bear Lake, 1984 | 21 |
| 21 Biological data by length interval for lake trout caught by experimental gill nets, McVicar Arm (north), Great Bear Lake, 1984 | 49 | 6 Length and age frequency distributions for angled and retained lake trout, Dease Arm, Great Bear Lake, 1973-1984 | 23 |
| 22 Biological data by age group for lake trout caught by experimental gill nets, McVicar Arm (north), Great Bear Lake, 1984 | 51 | 7 Subarea locations used in the intensive creel census program, Dease Arm, Great Bear Lake, 1984 | 25 |
| 23 Biological data by length interval for angled and retained lake trout, McVicar Arm (north), Great Bear Lake, 1984 | 53 | 8 Length frequency distributions by subarea for lake trout caught by angling, Dease Arm, Great Bear Lake, 1984 | 26 |
| 24 Biological data by age group for angled and retained lake trout, McVicar Arm (north), Great Bear Lake, 1984 | 55 | 9 Experimental net locations, McTavish Arm (north), Great Bear Lake, 1984 | 27 |
| 25 Catch and catch per unit effort for fish caught by experimental gill nets, Smith Arm, Great Bear Lake, 1985 | 61 | 10 Length and age frequency distributions for lake trout caught by experimental nets, McTavish Arm (north), Great Bear Lake, 1984 | 30 |
| 26 Biological data by length interval for lake trout caught by experimental gill nets, Smith Arm, Great Bear Lake, 1985 | 62 | 11 Areas generally fished in McTavish Arm (north), Great Bear Lake, 1984 | 32 |
| 27 Biological data by age group for lake trout caught by experimental gill nets, Smith Arm, Great Bear Lake, 1985 | 64 | 12 Length and age frequency distributions for angled and retained lake trout, McTavish Arm (north), Great Bear Lake, 1975-1984 | 34 |
| 28 Biological data by length interval for angled and retained lake trout, Smith Arm, Great Bear Lake, 1985 | 66 | 13 Subarea locations used in the intensive creel census program McTavish Arm (north), Great Bear Lake, 1984 | 36 |
| 29 Biological data by age group for angled and retained lake trout, Smith Arm, Great Bear Lake, 1985 | 68 | 14 Length frequency distributions by subarea for lake trout caught by angling, McTavish Arm (north), Great Bear Lake, 1984 | 37 |

LIST OF FIGURES

| <u>Figure</u> | <u>Page</u> | <u>Figure</u> | <u>Page</u> |
|--|-------------|--|-------------|
| 1 Map of Great Bear Lake depicting management areas for the lake trout sport fishery | 10 | 18 Length and age frequency distributions for angled and retained lake trout, McTavish Arm (south), Great Bear Lake, 1972-1984 | 45 |
| 2 Catch curves depicting instantaneous total mortality rate for lake trout, Great Bear Lake, 1984-85 | 15 | 19 Experimental net locations, McVicar Arm (north), Great Bear Lake, 1984 | 47 |
| 3 Experimental net locations, Dease Arm, Great Bear Lake, 1984 | 16 | 20 Length and age frequency distributions for lake trout caught by experimental nets, McVicar Arm (north), Great Bear Lake, 1984 | 50 |
| 4 Length and age frequency distributions for lake trout caught by ex- | | 21 Areas generally fished in McVicar Arm (north), Great Bear Lake, 1984 | 52 |

| <u>Figure</u> | <u>Page</u> | <u>Appendix</u> | <u>Page</u> |
|---|-------------|---|-------------|
| 22 Length and age frequency distributions for angled and retained lake trout, McVicar Arm (north), Great Bear Lake 1972-1984 | 54 | 3 Example of a standard creel census form | 73 |
| 23 Subarea locations used in the intensive creel census program, Neiland Bay Outpost Camp, McVicar Arm (north), Great Bear Lake, 1984 . . . | 56 | 4 Example of an intensive creel census form | 74 |
| 24 Length frequency distributions by subarea for lake trout caught by angling, Neiland Bay Outpost Camp, McVicar Arm (north), Great Bear Lake, 1984 | 57 | 5 Summary of information on sample dates, sample locations, set duration, depth, and catch per unit effort by area for experimental gill net sets, Great Bear Lake, 1984-85 . | 75 |
| 25 Subarea locations used in the intensive creel census program, Bear Island Outpost Camp, McVicar Arm (north), Great Bear Lake, 1984 . . . | 58 | 6 Summary of weight-length relationships for each fish species, Great Bear Lake, 1984-85 | 76 |
| 26 Length frequency distributions by subarea for lake trout caught by angling, Bear Island Outpost Camp, McVicar Arm (north), Great Bear Lake, 1984 | 59 | 7 A description of the relative stages of maturity used for northern fishes | 77 |
| 27 Experimental net locations, Smith Arm, Great Bear Lake, 1985 . . . | 60 | Biological data for angled and retained fish, Dease Arm, 1984: | |
| 28 Length and age frequency distributions for lake trout caught by experimental nets, Smith Arm, Great Bear Lake, 1985 | 63 | 8 Arctic grayling by length interval . | 78 |
| 29 Areas generally fished in Smith Arm, Great Bear Lake, 1985 | 65 | 9 Arctic grayling by age group | 78 |
| 30 Length and age frequency distributions for angled and retained lake trout, Smith Arm, Great Bear Lake, 1973-1985 | 67 | 10 Northern pike by length interval . | 79 |
| 31 Subarea locations used in the intensive creel census program, Smith Arm, Great Bear Lake, 1985. | 69 | 11 Northern pike by age group | 79 |
| 32 Length frequency distributions by subarea for lake trout caught by angling, Smith Arm, Great Bear Lake, 1985 | 70 | Biological data for angled and retained fish, Dease Arm, 1985: | |
| LIST OF APPENDICES | | | |
| <u>Appendix</u> | <u>Page</u> | 12 Lake trout (taxidermist sample) by length interval | 80 |
| 1 Summary of methods used to calculate catch, effort, and catch per unit effort statistics from experimental gill nets and a standard creel census | 71 | 13 Lake trout (taxidermist sample) by age group | 81 |
| 2 Summary of standard creel census and fishing season statistics by area and sport fishing lodge, Great Bear Lake, 1984-1985 | 72 | Biological data for angled and retained fish, McTavish Arm (north), 1984: | |
| | | 14 Lake whitefish by length interval . | 82 |
| | | 15 Lake whitefish by age group | 82 |
| | | 16 Arctic grayling by length interval . | 83 |
| | | 17 Arctic grayling by age group | 84 |
| | | 18 Northern pike by length interval . | 84 |
| | | 19 Northern pike by age group | 85 |
| | | Biological data for angled and retained fish, McTavish Arm (south), 1984: | |
| | | 20 Lake whitefish by length interval . | 85 |
| | | 21 Lake whitefish by age group | 85 |
| | | 22 Arctic grayling by length interval . | 86 |
| | | 23 Arctic grayling by age group | 86 |
| | | 24 Northern pike by length interval . | 87 |
| | | 25 Northern pike by age group | 87 |

| <u>Appendix</u> | <u>Page</u> |
|--|-------------|
| 1 Summary of methods used to calculate catch, effort, and catch per unit effort statistics from experimental gill nets and a standard creel census | 71 |
| 2 Summary of standard creel census and fishing season statistics by area and sport fishing lodge, Great Bear Lake, 1984-1985 | 72 |

| <u>Appendix</u> | <u>Page</u> |
|---|-------------|
| Biological data for angled and retained fish, Smith Arm, 1985: | |
| 26 Lake trout (taxidermist sample) by length interval | 88 |
| 27 Lake trout (taxidermist sample) by age group | 88 |
| 28 Lake whitefish by length interval . | 89 |
| 29 Arctic grayling by length interval . | 89 |
| 30 Arctic grayling by age group . . . | 90 |
| 31 Northern pike by length interval . | 90 |
| 32 Northern pike by age group . . . | 91 |

ABSTRACT

Roberge, M.M., and J.B. Dunn. 1988. Assessment and evaluation of the lake trout sport fishery in Great Bear Lake, N.W.T., 1984-85. Can. Manuscr. Rep. Fish. Aquat. Sci. 2008: vii + 91 p.

Data from standard creel census surveys are compared to those conducted during the 1970's. The intensive creel census program provides information, on a subarea basis, on the size of trout being exploited and catch per unit effort data for each management area. Included is a comparison between the size of trout between subareas and between those utilized for shorelunch to those kept (reported in the standard creel census). Data from the experimental netting program provided information on various lake trout population parameters. Recommendations are made on an initial total allowable harvest for lake trout by management area, future monitoring programs and research studies.

Keywords: creel census; harvest statistics; population assessment; sport fishing; total allowable harvest.

RÉSUMÉ

Roberge, M.M., and J.B. Dunn. 1988. Assessment and evaluation of the lake trout sport fishery in Great Bear Lake, N.W.T., 1984-85. Can. Manuscr. Rep. Fish. Aquat. Sci. 2008: vii + 91 p.

On compare les données de relevés standard de pêche sportive à celles obtenues en 1970. Ce programme intensif de relevés de pêche sportive fournit de l'information par sous-secteur sur la taille des truites capturées et par secteur de gestion sur l'indice de prises par unité d'effort. On y inclus une comparaison entre sous-secteurs de la taille des truites ainsi qu'entre les truites consommées sur le rivage et celles conservées (donc rapportées par le relevé de pêche sportive). Les données d'un programme de pêche expérimentale au filet fournissent de l'information sur différents paramètres des populations de truites grises. On recommande des limites initiales au niveau de captures de truites grises pour chaque secteur de gestion et des programmes de contrôle et de recherche.

Mots-clés: relevés standard de pêche sportive; évaluation de population; pêche sportive; limite du niveau total des captures.

INTRODUCTION

Lake trout (Salvelinus namaycush) is one of the more important commercial and sport fishes in Canada (Martin and Olver 1980). It is considered to be one of the most important sport fish species in the Northwest Territories, particularly in Great Bear Lake (Falk et al. 1973). Prior to 1960, Great Bear Lake contained large stocks of unusually large-sized lake trout (Yaremchuk 1986). During this time limited exploitation by the subsistence fishery based out of Fort Franklin occurred (Miller 1947). Sport lodge development occurred during the 1960's with the establishment of five lodges scattered within four of the five arms of the lake (Figure 1). Harvest levels in the sport fishery were not recorded until the 1970's.

The Department of Fisheries and Oceans (DFO) conducted investigations on the status of the lake trout sport fishery in Great Bear Lake from 1972 to 1980. Summaries of the data collected during the studies are presented in Falk et al. (1973, 1974a, 1974b, 1975, 1982), Gillman and Roberge (1982), and Moshenko and Gillman (1978a, 1978b, 1983). Yaremchuk (1986) integrated these data and provided interpretations on the status of lake trout in the vicinity of each lodge during the nine year study. As well, this previous data was analysed for information on the relations between exploitation level and lake trout growth rates and maturation.

In 1984, based on the program evaluations and recommendations made by Yaremchuk (1986), the DFO initiated a two-year follow-up investigation on the status on lake trout exploited by the lodge-based sport fishery. Alternate monitoring methods from those used during the 1972-1980 period consisted of sampling the areas with gill nets supported by a standard creel census and collecting data (using lodge guides) on all fish caught (including those fish released) by a sample of anglers from each lodge.

The Great Bear Lake Working Group recommended the development of a management strategy with the objective of maintaining a 'high quality trophy' fishery for lake trout (DFO 1985). The Working Group recommended that part of the strategy should be the regulation of the number of fish harvested which may be achieved through a variety of processes including the development of a special license system. Information necessary in the development of a license system for the maintainence of a high quality fishery includes total allowable harvest levels for lake trout.

This report presents the data collected from the 1984-1985 investigations from the experimental gill netting, the standard creel census, and the intensive creel census programs. This information, along with the analysis of the 1972-1980 period (Yaremchuk 1986), is used to evaluate the status of lake trout in the areas utilized by the lodge-based sport fishery and to estimate initial total allowable harvest levels for a long-term sustainable sport fishery for trophy lake trout.

STUDY AREA

Great Bear Lake is an extremely oligotrophic lake. The lake has a water surface area of 30 397 km² with a mean depth of 71.7 m. Water clarity is high with maximum Secchi transparencies of 30 m. Dissolved solids are low (78.4 to 81.0 ppm) and pH ranges between 7.8 and 7.9 (Johnson 1975). A detailed limnological description of the lake is presented by Yaremchuk (1986).

Lake trout are widely distributed in Great Bear Lake. Johnson (1975) suggests that lake trout are basically sedentary with minimal long distance movements. Johnson (1975) and Miller and Kennedy (1948) found that lake trout reach greatest densities in depths <24 m. Young trout <100 mm are found to inhabit rocky shorelines, inflowing streams, and deeper waters (<55 m). Adults (>200 mm) were found to utilize all regions of the lake. Miller and Kennedy (1948) found adults to prefer non-marshy bays (excluding spawning runs). They were less numerous in the colder open lake and warmer turbid river mouths and were least abundant in marshy bays. Miller and Kennedy (1948) found evidence of morphologically distinct groups which they believed to be the result of environmental differences.

Miller and Kennedy (1948) indicate that the variation in the degree of infection of the parasite, Triaenophorus crassus, in various parts of the lake suggest that adult lake trout stay in the region of their natal bay. Johnson (pers. comm.) records trout being tagged in the vicinity of a lodge and subsequently being recaptured as much as 25 years later in the same vicinity. Trout tagged from 1978 to 1980 were recaptured in the same area as tagged indicating that lake trout stocks probably do not intermix (unpublished data and Falk et al. 1982). Therefore, since lake trout are basically sedentary and because of the isolation of each lodge and the utilization, generally, of distinct fishing areas, six management areas for lake trout are recognized: Dease Arm, McTavish Arm (north), McTavish Arm (south), McVicar Arm (north), Keith Arm and Smith Arm (Figure 1). It is not known, however, if these stocks located in the various arms intermix during breeding.

PROTECTION AND REGULATIONS

Under the Northwest Territories Fishery Regulations prior to 1974, the daily catch and possession limits for lake trout in Great Bear Lake were 5 and 10, respectively. In 1974, these limits were reduced to 3 and 5. In 1979, the catch and possession limits were further reduced to 2 and 3 with the additional limitation to possession of one lake trout in excess of 70 cm fork length to protect the "trophy" fishery (Gillman and Roberge 1982).

The existing management strategy for the lodge-based sport fishery is an indirect control on access to the fishery by a licensing system on the numbers and bed capacities of the lodges

along with the above special catch and possession limits (DFO 1985). The areas fished by a lodge are indirectly controlled by lodge location and directly by lodge self-regulation. There has been no recent lodge expansion in terms of the establishment of a new lodge; however, there has been an increase in the number of outpost camps in the recent past. This has resulted in an expansion of fishing into new areas of the lake in pursuit of large fish and may include the exploitation of the same area by more than one lodge.

METHODS AND MATERIALS

GENERAL

DFO personnel were stationed at sport fishing lodges on Great Bear Lake from the beginning of their fishing season to near the end in order to collect standard creel census information, oversee an intensive creel census program, and conduct an experimental netting program. Investigations were carried out over two years, 1984 and 1985. In 1984, four management areas and lodges were surveyed: Dease Arm (Great Bear Lake Lodge), McTavish Arm-north (Arctic Circle Lodge), McTavish Arm-south (Bransons Lodge), and McVicar Arm-north (Great Bear Lodge-Bear Island Outpost and Neiland Bay Outpost). Smith Arm (Trophy Lodge) was surveyed in 1985. Boundaries used for each management area are depicted in Figure 1.

EXPERIMENTAL NETTING

Experimental netting was conducted using standard gangs composed of 50 m lengths each of 38, 64, 89, 114 and 139 mm (stretched mesh) nylon gill nets. Nets were set randomly at a number of different locations in areas utilized by each lodge (Figures 3, 9, 15, 19, 27). The gill nets were usually set in the late evening and lifted in the early morning to minimize fish mortalities as well as to prevent an overlap with the anglers fishing in the same area. The catch was recorded by mesh size and by species, and the fish were sampled later for biological analysis. Fish species other than lake trout (lake whitefish and cisco) were subsampled when the catch were large. Any fish caught live and in good condition were measured for fork length and released.

Scientific names of those fish caught follow Scott and Crossman (1973): lake trout, *Salvelinus namaycush* (Walbaum); lake whitefish, *Coregonus clupeaformis* (Mitchell); cisco, *Coregonus* sp.; lake cisco, *Coregonus artedii* (Lesueur); northern pike, *Esox lucius* (Linnaeus); round whitefish, *Prosopium cylindraceum* (Pallas); and Arctic grayling, *Thymallus arcticus* (Pallas).

STANDARD CREEL CENSUS

A standard creel census (Falk et al. 1974) was carried out at each lodge and in conjunction with the lodge operation in regards to the best time to collect catch and effort information. The procedure was similar at each lodge as only

the guides were interviewed and the time of the interview was usually around 1800 h (supper time). The guides were questioned on the fishing success of their clients since the last interview (included the previous nights fishing as well as that day's fishing). The questions the guides were asked were:

- 1) The anglers' names and where they were from (province/state);
- 2) The hours spent fishing by each angler excluding travel time; and
- 3) The number by species of fish caught by each angler and the use of each fish as to whether it was kept (e.g. trophy fish), released or eaten for shorelunch.

When possible, the general area fished that day was also noted. The retained catch (kept) was sampled whenever possible for later biological analysis. An example of a creel census form is provided in Appendix 3.

INTENSIVE CREEL CENSUS

An intensive creel census program was developed and initiated at four of the five lodges (excluding Bransons Lodge) to determine the number and size range (fork length) of the exploited segment of the trout stocks. These data as well as effort information (hours fished) were collected on an subarea-specific basis. The program involved using four fishing guides from each lodge to record angling information as the event occurred. These guides were supplied with a small binder containing an area map and record forms (Appendix 4) and a measuring trough. On the forms the guides recorded the date and the anglers name(s). Additional information collected was done on a subarea basis. This included the hours spent fishing, the number by species of all fish caught, and the use (kept, released, or shorelunch) by individual fish. As well, the fork length of each fish caught was measured to the nearest 1 cm. The forms were collected by DFO personnel at the end of each fishing day (or every second day). Prior to the start of the program a letter explaining the program was given to each angler and the choice was theirs to volunteer participation in the program.

BIOLOGICAL SAMPLING

Fish from the anglers creel and from gill nets were sampled for fork length (± 1 mm), round weight (± 50 g), aging structures (scales and otoliths), sex, stage of maturity, and stomach contents. Sex and relative stage of maturity were determined by examination of the gonads. Relative stages of maturity were coded according to the stages described in Appendix 7. Trophy fish (usually large fish kept for mounting) were sampled only for length and weight when available. Trophy lake trout sent to Hawkins Taxidermist, Winnipeg, Manitoba, were sampled for fork length, sex, and sagittal otoliths, (Appendices 12, 13, 26, 27).

Sagittal otoliths were taken from lake trout and scales were taken from ciscoes, lake whitefish, round whitefish, Arctic grayling, and northern pike as described by Hatfield et al.

(1972). Age determinations were made as described in Roberge and Dunn (1985).

TOTAL ALLOWABLE HARVEST

Yaremchuk (1986) suggested that the allowed harvest rates required to sustain a "high quality trophy" lake trout sport fishery on Great Bear Lake be 0.040-0.095 fish/used hectare (area actually being fished). Using these rates and taking into consideration the loss to the population through a release mortality of 7% (Falk et al. 1974c), an initial total allowable harvest (TAH) for lake trout was estimated.

The total allowable harvest is the number of fish allowed to be harvested and includes all fish retained for either shorelunch or trophies. A preliminary estimate was calculated using the following formula:

$$TAH = (UH) \times (HR) - (RMR)$$

where:

UH = utilized hectare (area specific)

HR = harvest rate (0.040 - 0.095)

RMR = release mortality rate (7%)

Additional data on prior harvest levels and lake trout stock status were then evaluated and an initial value for the TAH was determined.

DATA ANALYSIS

A micro Vax II computer was used to manipulate the data. The Statistical Analysis System (1985) was used to generate length, weight, sex, age, and maturity summaries and to perform basic calculations and statistical analysis. Weight/length relationships were determined using the following power equation:

$$\log_{10} W = a + b (\log_{10} L)$$

where:

W = weight in grams

L = length in centimeters

a = Y-intercept

b = slope of the regression line

The standard deviation of the coefficient $b(S_b)$ was also calculated. Relative condition factor (K) was calculated using the following formula:

$$K = \frac{W \times 10^5}{L^3}$$

where:

W = weight in grams

L = length in centimeters

Instantaneous total mortality rate (Z) represents the number of fish which would die in any small interval of time (Ricker 1975). Z was calculated from the least squares regression line fitted to the descending limb of catch curves. Catch curves were fitted by eye and only that portion of the curve that appeared linear was included in the analysis. Moderate fluctuations in recruitment in different year classes tend to create an irregular shaped catch curve. To reduce these irregularities, samples

from successive years were combined (Ricker 1975). Ricker (1975) indicated that the modal age in the catch curve will commonly lie quite close to the first year in which recruitment can be considered effectively complete. Therefore, only the next older and subsequent age groups from the modal age were used.

Length and age frequencies were constructed to display catch composition. Duncan's multiple range test was used to determine significant differences in age and length within and between subareas and areas.

RESULTS AND DISCUSSION

GREAT BEAR LAKE

Harvests, yields per utilized hectare, catch per unit effort, and instantaneous total mortality rates are presented by management area in Table 1 for all available standard creel census samples. Data from the intensive creel census samples on catch and mean length (by use), effort, and catch per unit effort are presented in Table 2, 3, and 4, respectively. Catch curve instantaneous total mortality rates (Z) by management area are presented in Figure 2.

DEASE ARM (1984)

Experimental netting

Lake trout and lake whitefish were the two main fish species netted (Figure 3) with lake trout comprising 77% of the total catch (Table 5). Catch per unit effort for lake trout was calculated to be 0.77 fish/100 m gill net/24 h, (Table 5).

Mean length of lake trout netted was 625 mm (Table 6) and modal length was 625-649 mm (Figure 4). Mean weight was 2.3 kg and K value was 1.07 (Table 6). Mean age was 19.3 yr (Table 7); however, a unimodal age group was not found (Figure 4). Total instantaneous mortality rate (Z) was estimated to be 0.34 (Figure 2).

Standard creel census

The areas (54 400 ha) generally fished by anglers from Great Bear Lake Lodge are presented in Figure 5. Total number of lake trout harvested was approximately 3900 fish (Table 1). Yield per utilized hectare was 0.07 fish/used hectare. Table 1 indicates that the number of trout harvested from 1972 to 1984 has decreased as did the yield/used ha. However catch per unit effort doubled during the same time period.

Mean length of lake trout retained by anglers from Great Bear Lake Lodge was 664 mm (Table 8) with a modal length of 625-649 mm (Figure 6). Mean weight was 1.65 kg (Table 8). Mean age was 21.0 yr (Table 9) and modal age was 22 yr (Figure 6). Total instantaneous mortality rate (Z), estimated using data from kept fish only, was 0.39 (Table 1).

Intensive creel census

The subareas which were utilized are depicted in Figure 7. There were 610 lake trout

caught (Table 2) in 621 hours of fishing (Table 3) during the program. The majority of effort was expended in subareas 2 and 3 while the highest catch per unit effort was found in subareas 1 and 4 (Table 4).

The mean length of trout caught was 60.7 cm (Table 2). There was a significant difference ($P<0.05$) in the size of trout caught between subareas (Table 10). Trout from subareas 2 and 3 had similar distributions ($P>0.05$) but were significantly smaller ($P<0.05$) than trout caught in either subareas 1 or 4 (Figures 7).

Lake trout eaten for shore lunch were significantly smaller ($P<0.05$) than those fish kept (55.8 cm and 67.3 cm, respectively) (Table 2).

Evaluation and recommendation

Data from the gill net samples indicated there was a significant difference ($P<0.05$) in the mean length of lake trout from Dease Arm as compared to that for trout from all other areas surveyed. Trout were smaller than trout from Smith Arm or McVicar Arm (north) but larger than trout from McTavish Arm (north and south). The mean age was significantly older ($P<0.05$) than that for trout from McTavish Arm (north and south) but similar to the other two areas surveyed.

There has been a general trend toward a decrease in the mean length of trout in the standard creel census samples since 1972 as well as a decrease in the modal length since 1977. Mean age and modal age have also decreased since the 1970's. There was a marked absence of fish older than 30 yr from 1972 to 1984.

The decrease in mean length (and subsequently the mean age) is believed to be due to a decline in the population and not to a change in angler selectivity. Data from the intensive creel census program indicated that the size of trout caught from the two major fishing areas (subareas 2 and 3) appeared to have declined in relation to the other subareas fished when comparison was made between the size of fish caught and the catch per unit effort values. The large mean length in the standard creel census is therefore probably the result of the retention of only large sized fish from subareas 2 and 3 and from other less heavily exploited subareas.

Instantaneous total mortality rate (Z), as determined from the standard creel census samples, increased from 1973 to 1984. The Z from the gill net samples is higher than that recommended by Yaremchuk (1986) for a population that has stabilized (0.34 and 0.24, respectively) indicating that the population is still in a decline.

The decrease in mean length and age, the decline in the availability of trout >30 yr, and the increase in Z illustrates the fishing down of the standing stock of lake trout in the Dease Arm. It is also an indication that the trout population has not yet stabilized and is continuing the decline as identified by Yaremchuk (1986).

Therefore, in order to sustain the 'trophy quality' sport fishery for lake trout in the Dease Arm and taking into consideration the past harvest levels, the decline in size and age, the increase in Z , and the continuation of the stabilization process, the initial total allowable harvest for lake trout for the area is estimated to be 2000 fish.

McTAVISH ARM - NORTH (1984)

Experimental netting

Lake trout was the main fish species netted (Figure 9) and comprised 97% of the total catch (Table 10). Catch per unit effort for lake trout was calculated to be 2.14 fish/100 m gill net/24 h. (Table 10).

Mean length of lake trout netted was 476 mm (Table 11) and modal length was 575-599 mm (Figure 10). Mean weight was 1.3 kg and K value was 1.10 (Table 11). Mean age was 13.9 yr (Table 12) and modal age was between 8 and 12 yr (Figure 10). Total instantaneous mortality rate (Z) was estimated to be 0.27 (Figure 2).

Standard creel census

The areas (48 900 ha) generally fished by anglers from Arctic Circle Lodge and Outpost Camp and Bransons Lodge are depicted in Figure 11. Total number of lake trout harvested was >2345 fish (Table 1); this does not include the harvest of trout taken by anglers utilizing either the Arctic Circle Outpost Camp nor those from Bransons Lodge. Minimum yield per utilized hectare was 0.05 fish/hectare. Table 1 indicates that the number of fish harvested from 1975 to 1984 decreased and the catch per unit effort decreased by approximately half.

Mean length of lake trout retained by anglers from Arctic Circle Lodge was 606 mm (Table 13). Bimodal length were found at 425-449 mm and 625-649 mm (Figure 12). Mean weight was 2.97 kg (Table 13). Mean age was 16.6 yr (Table 14) and modal age was 14 yr (Figure 12). Total instantaneous mortality rate (Z), estimated using data from kept fish only, was 0.24 (Table 1).

Intensive creel census

The subareas which were utilized are depicted in Figure 13. There were 1496 lake trout caught (Table 2) in 1551.5 hours of fishing (Table 3). The majority of effort was expended in subarea 2 while the highest catch per unit effort was found in subarea 5 (Table 4).

The mean length of trout caught 49.6 cm (Table 2). The only significant difference ($P<0.05$) in the size of trout caught between subareas was found in subarea 5 (Figure 14). Trout caught from subareas 1 to 4 had similar size distributions ($P>0.05$).

Lake trout eaten for shorelunch were significantly smaller ($P<0.05$) than those fish kept (47.3 cm and 62.2 cm, respectively) (Table 2).

Evaluation and recommendation

Data from the gill net samples indicated that the size of lake trout from McTavish Arm (north) were significantly smaller ($P<0.05$) (except for southern McTavish Arm) and younger ($P<0.05$) than trout from any other area surveyed.

Mean length of lake trout from the standard creel census samples increased from 1975 to 1984 but this was probably the result of the retention of only large sized fish as indicated from the intensive creel census samples. Data from the intensive creel census program indicated that the size of trout caught was significantly ($P<0.05$) smaller than trout kept and reported in the standard creel census. Data also indicated that the size of trout caught in the major fishing area (subarea 2) was significantly smaller ($P<0.05$) than that for fish caught in the area west of the Outpost Camp (subarea 5), an area of recent exploitation. The smaller size in subarea 2 as compared to subarea 5 may be an indication of the effects of a heavy exploitation when comparison is made not only with the size of trout caught but also the reduced catch per unit effort values.

Bimodal length distribution was evident in the 1984 standard creel census samples only; the presence of the smaller modal length may be an indication of fluctuations of year class strength or a decline availability of 'trophy quality' sized fish (Yaremchuk 1986). Mean age decreased from 1975 to 1984 as did the modal age indicating that the population has not yet attained a stable structure (Yaremchuk 1986). There is also an absence of fish older than 25 yr in 1984 compared to that found in 1975 indicating that the large sized trout in the original standing stock has been fished down.

Instantaneous total mortality (Z), as determined from the standard creel census samples, increased from 1975 to 1984. The Z from the gill net samples is slightly higher than that recommended by Yaremchuk (1986) for a stabilized population of lake trout from Great Bear Lake. Therefore, the lake trout population from McTavish Arm (north) is probably still in a decline.

The stock of lake trout in northern McTavish Arm appears to have declined between 1975 and 1984 as indicated by the shift in the length distribution towards smaller sized fish, the decrease in the mean and modal age, disappearance of trout older than 25 yr, and the increase in Z . This conclusion is supported by the comparatively low mean length and age found in the gill net samples as well as the small mean length of trout from the intensive creel census samples.

Therefore, in order to sustain the 'trophy quality' lake trout sport fishery in the McTavish Arm (north) and taking into consideration the past harvest levels, the decline in the size and age distributions, the increase in Z , and the continuation of the stabilization process, the initial total allowable harvest for trout from the area is estimated to be 1500 fish.

MCTAVISH ARM - SOUTH (1984)

Experimental netting

Lake trout was the main fish species netted (Figure 15) and comprised 97% of the total catch (Table 15). Catch per unit effort for lake trout was calculated to be 0.34 fish/100 m gill net/24 h (Table 15).

Mean length of lake trout netted was 491 mm (Table 16). A modal length was apparent at 550-599 mm with a secondary mode at 325-349 mm (Figure 16). Mean weight was 1.8 kg and K value was 1.15 (Table 16). Mean age was 15.6 yr (Table 17) and modal age was 20 yr (Figure 16). Total instantaneous mortality rate (Z) was estimated to be 0.26 (Figure 2).

Standard creel census

The areas (44 100 ha) generally fished in the McTavish Arm (south) in 1984 are presented in Figure 17. Total number of lake trout harvested was <2560 trout (Table 1). Maximum yield per utilized hectare was 0.06 fish/used hectare. Table 1 indicated that the number of fish harvested and yield per utilized hectare fluctuated during the 1970's but have remained constant since 1978. However the catch per unit effort has decreased from 1973 to 1984.

Mean length of lake trout retained by anglers from Bransons Lodge was 663 mm (Table 18) and modal length was 625-649 mm (Figure 18). Mean weight was 3.91 kg (Table 18). Mean age was 19.8 yr (Table 19) and modal age was 22 yr (Figure 18). Total instantaneous mortality rate (Z), estimated using data from kept fish only, was 0.31 (Table 1).

Evaluation and recommendation

Data from the gill net samples indicated that the mean length of lake trout from McTavish Arm (south) was significantly smaller ($P<0.05$) than that for trout caught in most other areas of Great Bear Lake but similar to that found for trout from McTavish Arm (north). The mean age was significantly younger ($P<0.05$) from all other areas surveyed except for that found for trout from McTavish Arm (north).

Mean length of lake trout from the standard creel census samples increased from 1974 to 1978 but subsequently decreased in 1984. If it is assumed that anglers from Bransons Lodge retain only the largest fish caught as shown in the intensive creel census samples from other areas, then the decrease in mean length may be due to a decrease in the availability of 'trophy quality' lake trout in southern McTavish Arm. Mean ages displayed the same pattern as described for mean lengths. Modal ages fluctuated between 1974 and 1984, however there is a marked absence of fish older than 24 yr in 1984 compared to previous years. Total instantaneous mortality rates increased significantly from 1978 to 1984, which is likely an indication of increased exploitation.

The stock of "trophy" size fish in McTavish Arm (south) was exhausted by 1972 (Falk et al. 1973). This conclusion was further supported by Yaremchuk (1986). The increase in mean length and age in the standard creel census samples during the 1970's is probably attributable to an increased release of smaller sized fish. The decrease in mean length and age and the increase in Z during this same time was an indication that the stock was still stabilizing. The continued decrease in 1984 of the length and age of trout and the increase in Z indicate that the stock is still in a decline and, as yet, has not stabilized. This is supported further by the relatively small size and age of trout caught in the gill nets.

Therefore, in order to sustain the 'trophy quality' lake trout sport fishery in the McTavish Arm (south) and taking into consideration the past harvest levels, the decline in the size and age of trout, the increase in Z, and the continuation of the stock to stabilize, the initial total allowable harvest for lake trout from the area is estimated to be 1500 fish.

McVICAR ARM - NORTH (1984)

Experimental netting

Lake trout, lake cisco, and lake whitefish were the main species of fish netted (Figure 19). Lake trout comprised 57% of the total catch (Table 20). Catch per unit effort for lake trout was calculated to be 0.26 fish/100 m gill net/24 h (Table 20).

Mean length of lake trout netted was 690 mm (Table 21) and modal length was 625-699 mm (Figure 20). Mean weight was 4.1 kg and K value was 1.16 (Table 21). Mean age was 20.4 yr (Table 22) and modal age was 22 yr (Figure 20). Total instantaneous mortality rate (Z) was estimated to be 0.22 (Figure 2).

Standard creel census

The areas (27 000 ha) generally fished by anglers from Great Bear Lodge (Bear Island and Neiland Bay Outpost Camps) are depicted in Figure 21. Total number of lake trout harvested from northern McVicar Arm in 1984 was 1626 fish. Yield per utilized hectare was 0.06 fish/used hectare. Table 1 indicated that the number of trout harvested may be similar to that found in 1979 while the catch per unit effort has increased.

Mean length of lake trout retained by anglers from Great Bear Lodge was 782 mm (Table 23) and modal length was between 600 mm and 699 mm (Figure 22). Mean weight was 6.23 kg (Table 23). Mean age was 23.5 yr (Table 24), however a unimodal age was not apparent (Figure 22). Total instantaneous mortality rate (Z), estimated using data from kept fish only, was 0.29 (Table 1).

Intensive creel census

The subareas utilized are depicted in Figures 23 and 25. There were 238 lake trout caught (Table 2) in 377 hours of fishing (Table

3) by anglers from Neiland Bay Outpost Camp. The majority of effort was expended in subarea 2 while the highest catch per unit effort was found in subarea 1 (Table 4).

There were 367 lake trout caught (Table 2) in 535 hours of fishing (Table 3) by anglers from Bear Island Outpost Camp. The majority of effort was expended in subarea 2 while the highest catch per unit effort was found in subarea 5 (Table 4).

The mean length of lake trout caught during the intensive creel census program were 61.5 cm and 70.5 cm from Bear Island and Neiland Bay Outpost Camps, respectively (Table 2). The only significant difference ($P<0.05$) in mean length of trout caught between subareas for Bear Island Outpost Camp was found in subarea 1 (Figure 26). There was no significant difference ($P>0.05$) in the size of trout caught between subareas for Neiland Bay Outpost Camp (Figure 24).

Data on the size of trout kept were too small for comparison to those trout either released or eaten for shorelunch at either Bear Island or Neiland Bay Outpost Camps.

Evaluation and recommendation

Data from the gill net samples indicated that there was a significant difference ($P<0.05$) in the mean length and age of trout from McVicar Arm (north) compared to that for trout from the other areas surveyed. Trout were larger than those from Dease and McTavish (north and south) arms but similar to trout from Smith Arm. The mean age was significantly older ($P<0.05$) than that for fish from McTavish Arm (north and south) but similar to that for trout from all other areas surveyed.

Mean length of lake trout from the standard creel census samples decreased during the 1970's but increased in 1984, as did modal lengths. Yaremchuk (1986) has suggested that the increase is probably due to a change in the lodge policy towards the retention of "trophy" fish only. The data from the intensive creel census indicates no difference in the size of trout kept and released by anglers from the Neiland Bay Outpost Camp although a difference was found for the Bear Island Outpost Camp. This may be an indication that the increase length in 1984 may be stabilizing. Mean age fluctuated from 1973 to 1984 while modal age increased. Heavy harvests of trout younger than 10 yr were taken in during the 1970's but not in 1984. Total instantaneous mortality rate decreased from 1973 to 1984.

There was no evidence during the 1970's that the trout stock in McVicar Arm (north) was stabilizing (Yaremchuk 1986). The large harvest of trout caused a decline in the mean length and age of lake trout in the late 1970's. Despite the small standard creel census sample size and the fact that the lodge policy changed to include the retention of only one "trophy" fish per angler, it is believed that the trout stock in northern McVicar Arm is stabilizing. The relatively large mean length and age of trout caught in the gill nets and the size of fish samples in the intensive creel census supports

this and indicates that a supply of 'trophy quality' trout is still available.

Therefore, in order to sustain the 'trophy quality' lake trout sport fishery in the McVicar Arm (north) and taking into consideration the past harvest levels, the relatively large mean length and age of trout, and the decrease in Z, and the probable stabilization of the trout population, the initial total allowable harvest for trout from the area is estimated to be 1500 fish.

SMITH ARM (1985)

Experimental netting

Lake whitefish and lake trout were the two main species of fish netted (Figure 27). Lake trout comprised 36% of the total catch (Table 25). Catch per unit effort for lake trout was estimated to be 0.50 fish/100 m gill net/24 h. (Table 25).

Mean length of lake trout netted was 680 mm (Table 26) and modal length was 650-674 mm (Figure 28). Mean weight was 3.3 kg and K value was 1.13 (Table 26). Mean age was 20.3 yr (Table 27) and modal age was 24 yr (Figure 28). Total instantaneous mortality rate (Z) was calculated to be 0.27 (Figure 2).

Standard creel census

The areas (49 600 ha) generally fished by anglers from Trophy Lodge and Bransons Outpost Camp are depicted in Figure 29. Total number of lake trout harvested was >2965 fish; this did not include the harvest by anglers from Bransons Outpost Camp (Table 1). Minimum yield per utilized hectare was 0.06 fish/used hectare. Table 1 indicated that the number of trout harvested is larger than that found in 1980 and the catch per unit effort has decreased since that time.

Mean length of lake trout retained by anglers from Trophy Lodge was 655 mm (Table 28) and modal length was 650-674 mm (Figure 30). Mean weight was 3.41 kg (Table 28). Mean age was 18.6 yr (Table 29) and modal age was 15 yr (Figure 30). Total instantaneous mortality rate (Z), calculated using data from kept fish only, was 0.26 (Table 1).

Intensive creel census

The subareas utilized are depicted in Figure 31. There were 1520 lake trout caught (Table 2) in 1847 hours of fishing (Table 3). The majority of effort was expended in subarea 1 while the highest catch per unit effort was found in subarea 4 (Table 4).

The mean length of lake trout caught during the intensive creel census program was 66.0 cm (Table 2). There was no significant difference ($P>0.05$) in the size of trout caught between subareas (Figure 32), although the mean length of trout from subarea 5 was relatively larger than that reported for all other subareas.

Lake trout eaten for shorelunch were significantly smaller ($P<0.05$) than those fish kept (61.1 cm and 71.1 cm, respectively).

Evaluation and recommendation

There was a significant difference ($P<0.05$) in the mean length of lake trout between Smith Arm and Dease Arm and McTavish Arm (north and south) as well as in mean age with trout from McTavish Arm (north and south). The majority of trout were between 575 mm and 724 mm and ages 16 yr and 24 yr.

Mean length of lake trout from the standard creel census samples fluctuated between 1973 and 1985. Modal length remained relatively unchanged during this same time period while secondary modes of smaller fish appeared and disappeared. Mean age has remained relatively constant since 1980 while modal age has decreased from 1980 to 1985; secondary modal ages appeared and disappeared from 1973 to 1985. There were notable fewer fish older than 27 yr in 1985. Total instantaneous mortality rate fluctuated from 1973 to 1985.

Yaremchuk (1986) believed that the lake trout stock in the Smith Arm had stabilized by 1980 and that the variation in mean length and age resulted from the presence and absence of secondary modes consisting of smaller and younger fish. These secondary modes were believed due to angler selectivity. The intensive creel census indicates that anglers from Trophy Lodge retain only the largest lake trout caught which probably is the result of the increase in mean and modal length in 1985. The significant decrease in the modal age in the standard creel census sample, the small secondary mode in the gill net catch, and the relatively high Z may be the result of continued comparatively higher harvests and that the trout population has yet not completely stabilized. However, the gill net catch indicated that there is a supply of 'trophy quality' trout still available.

Therefore, in order to sustain the 'trophy quality' lake trout sport fishery in the Smith Arm and taking into consideration the past harvest levels, the relatively large length and age of trout, and the probable stabilization of the population, the initial total allowable harvest for trout from the area is estimated to be 2 500 fish.

PROGRAM EVALUATION AND RECOMMENDATIONS

Yaremchuk (1986) stated that the standard creel census program is a poor method for monitoring the trout populations due to the sampling bias introduced by the high and varying release rate. An unknown proportion of the observed advances in mean length and age may be due to the release of a greater proportion of smaller, younger fish rather than to increases in the population means. Also changes within the standard creel census program over time hinders the interpretation of size and age data. Positive trends in mean length and age may be due to changes in sampling bias towards

larger, older fish and not to effects of exploitation. The effects of depletion of exploited stocks on sample length and age distributions also may be masked in the data collected from a standard creel census program by the presence of fish from new areas into which the fishery has expanded. The alternate method introduced in 1984 was the intensive creel census program which collected data on all fish caught and not just those kept. The data from the program indicated that, in fact, the size of trout kept (as reported in the standard creel census) was usually significantly larger than that reported for all trout caught thus proving that the standard creel census data is often unreliable when determining the effects of exploitation on the population. Therefore, it is recommended that the intensive creel census program be conducted to monitor the effects of exploitation with a possible frequency of every five years. Sampling of the retain (kept) catch, to obtain length, weight, and age data for the determination of relations between these parameters and for catch curve analysis, can be obtained within this program.

Reporting the data from the intensive creel census program by subarea indicated that there are size differences within a management (stock) area. This may be an indication of more than one stock within an area. Future examination of stock identification including the collection of genetic and meristic/morphometrics data would be required to further delineate trout stocks from Great Bear Lake.

Harvest estimates are necessary for the prediction of population responses and the regulation of the fishery (Yaremchuk 1986). Data from the intensive creel census program suggests that there may be more than one trout stock within a management area; therefore annual harvest statistics of each management area should be collected on a subarea basis. Thompson et al. (1988) suggests that an angler diary program may be a better method to obtain harvest statistics.

Sampling of the trout population with gill nets supported the data collected in the intensive creel census and provided additional measurements of various population parameters which were not able to be determined from standard creel census samples. These detailed studies of the population dynamics of lake trout are required to measure changes in population parameters and to determine optimum yield. Possible frequency of sampling is every 5-10 years.

SUMMARY

1. Standard creel census is often biased due to angler selectivity and an intensive creel census would be more reliable when determining the effects of exploitation on the population. It is suggested that it be conducted every 5 years.
2. Intensive creel census data indicates that there is a significant difference in the size of fish between its uses as well as between subareas within a management area.

3. Gill net data provide information on various population parameters not available from creel census data. It is suggested that data be collected on a frequency of 5-10 years.
4. Annual monitoring of harvest for each management area should be conducted on a sub-area basis.
5. Recommended initial total allowable harvest (TAH) for lake trout by management area is as follows:

| | |
|-----------------------|------------|
| Dease Arm - | 2 000 fish |
| McTavish Arm (north)- | 1 500 fish |
| McTavish Arm (south)- | 1 500 fish |
| McVicar Arm (north)- | 1 500 fish |
| Smith Arm - | 2 500 fish |

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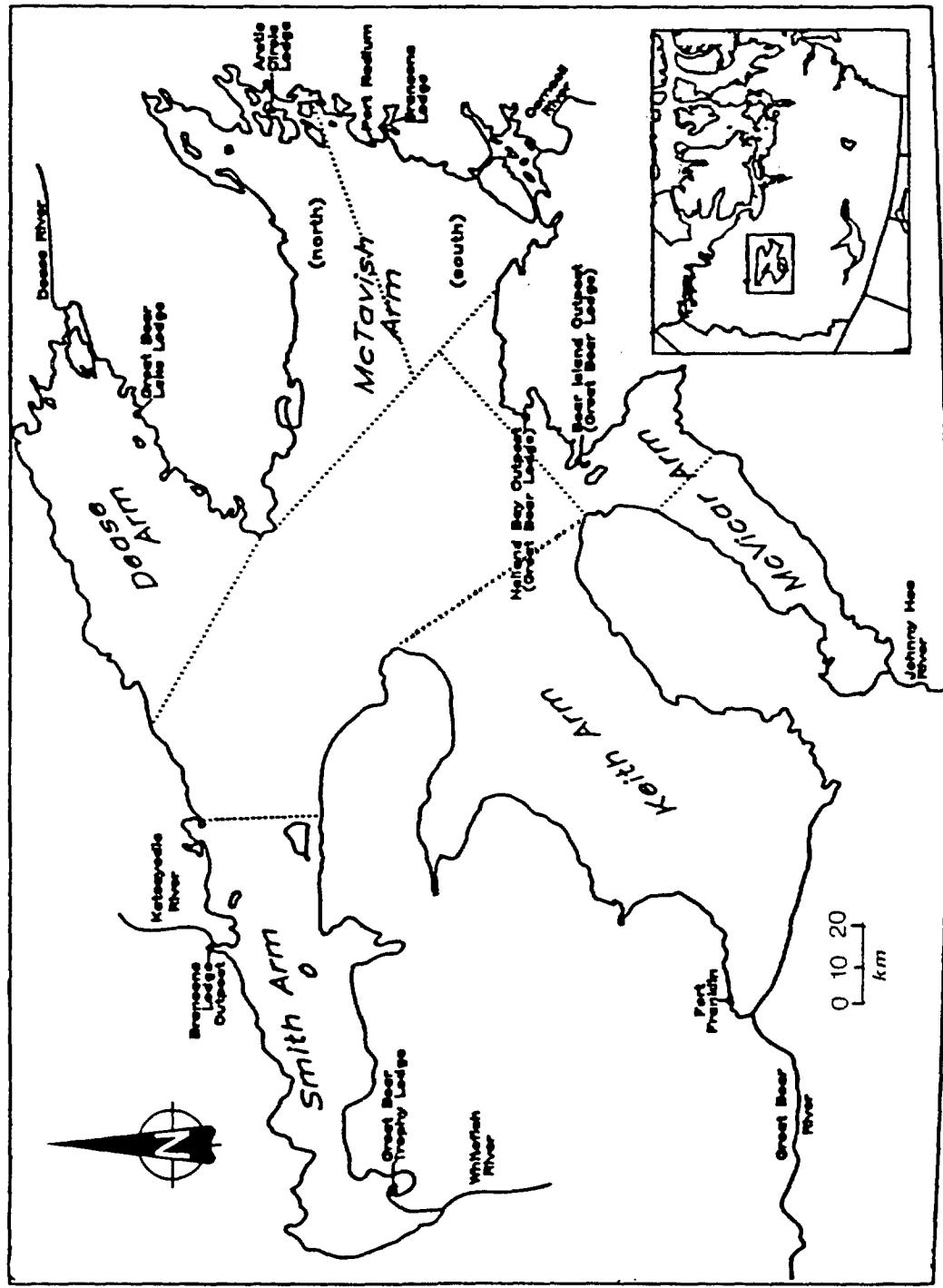


Figure 1. Map of Great Bear Lake depicting management areas for the lake trout sport fishery.

Table 1. Summary of harvest, catch per unit effort (CPUE), and instantaneous total mortality rate (Z) for each lake trout stock, Great Bear Lake, 1972-1985.

| Area | Year | Harvest (no.) | | CPUE | | Total Instantaneous Mortality Rate (Z) |
|----------------------|------|--------------------|--------------------|-------------------------|------------------------|--|
| | | Total | /Utilized hectare | No. Caught /Angler-hour | No. Caught /Angler-day | |
| Dease Arm | 1972 | 6828 | 0.12 | - | - | 0.34 |
| | 1973 | 5494 | 0.10 | 0.74 | 3.68 | 0.08 |
| | 1977 | 3413 | 0.06 | 0.56 | 3.30 | 0.27 |
| | 1984 | 3932 | 0.07 | 1.05 | 6.11 | 0.39 |
| McTavish Arm (North) | 1975 | 2325 | - | 1.75 | 10.90 | 0.20 |
| | 1984 | >2345 ¹ | >0.05 ¹ | 1.01 | 5.38 | 0.24 |
| McTavish Arm (South) | 1972 | 3635 | 0.07 | - | - | 0.36 |
| | 1973 | 3716 | 0.07 | 0.75 | 4.51 | - |
| | 1974 | 3963 | 0.08 | 0.93 | 5.20 | 0.12 |
| | 1978 | 1935 | 0.04 | 0.83 | 5.40 | 0.17 |
| | 1984 | <2564 ² | <0.06 ² | 0.74 | 4.36 | 0.31 |
| McVicar Arm (North) | 1972 | 2496 | 0.21 | - | - | 0.19 |
| | 1973 | 2292 | 0.19 | 0.66 | 5.17 | 0.50 |
| | 1974 | 1757 | 0.17 | - | - | - |
| | 1979 | >1026 ³ | >0.09 ³ | 0.78 | 3.83 | - |
| | 1984 | 1626 | 0.06 | 1.02 | 5.72 | 0.29 |
| Smith Arm | 1972 | 3709 | 0.12 | - | - | - |
| | 1973 | 3850 | 0.12 | 0.83 | 4.49 | - |
| | 1976 | 2758 | 0.09 | 0.65 | 3.10 | 0.25 |
| | 1980 | 2497 | 0.07 | 1.23 | 5.40 | 0.22 |
| | 1985 | >2965 ⁴ | >0.06 ⁴ | 0.88 | 4.99 | 0.26 |

¹Does not include harvest from Arctic Circle Outpost Camp and harvest by anglers from other lodges (Bransons and Great Bear Lake lodges).

²Unknown portion of total harvest was removed from McTavish Arm (north).

³Only includes harvest from one camp.

⁴Does not include harvest from Bransons Outpost Camp.

Table 2. Summary of catch and mean length, by use, of lake trout caught in the intensive creel census.
Great Bear Lake, 1984-85.

| Area | Subarea | Kept | | Released | | Shore Lunch | | Total | |
|---|------------|------|------------------|----------|------------------|-------------|------------------|-------|------------------|
| | | No. | Mean Length (cm) | No. | Mean Length (cm) | No. | Mean Length (cm) | No. | Mean Length (cm) |
| Dease Arm (Great Bear Lake Lodge) | 1 | 2 | 64.00 | 39 | 61.97 | 4 | 61.25 | 45 | 62.0 |
| | 2 | 28 | 63.07 | 150 | 57.19 | 27 | 55.41 | 205 | 57.77 |
| | 3 | 15 | 70.47 | 104 | 55.73 | 46 | 54.63 | 165 | 56.77 |
| | 4 | 18 | 71.61 | 171 | 66.19 | 6 | 63.33 | 195 | 66.60 |
| | Area Total | 63 | 67.30 | 464 | 60.61 | 83 | 55.83 | 610 | 60.65 |
| North McTavish Arm (Arctic Circle Lodge) | 1 | 4 | 63.25 | 20 | 50.60 | 11 | 46.55 | 35 | 50.77 |
| | 2 | 100 | 61.44 | 996 | 47.29 | 161 | 47.19 | 1257 | 48.40 |
| | 3 | 4 | 76.25 | 34 | 44.91 | 8 | 44.63 | 46 | 47.59 |
| | 4 | 1 | 55.00 | 24 | 45.75 | 3 | 50.33 | 28 | 46.57 |
| | 5 | 10 | 64.80 | 117 | 62.68 | 3 | 59.33 | 130 | 62.76 |
| | Area Total | 119 | 62.24 | 1191 | 48.76 | 186 | 47.29 | 1496 | 49.64 |
| McVicar Arm (Great Bear Lodge: Neiland Bay Outpost) | 1 | 3 | 77.33 | 92 | 70.36 | 16 | 67.06 | 111 | 70.07 |
| | 2 | 3 | 65.67 | 99 | 71.72 | 15 | 64.73 | 117 | 70.67 |
| | 3 | - | - | 9 | 74.78 | 1 | 58.00 | 10 | 73.10 |
| | 4 | - | - | - | - | - | - | - | - |
| | Area Total | 6 | 71.50 | 200 | 71.23 | 32 | 65.69 | 238 | 70.49 |
| McVicar Arm (Great Bear Lodge: Bear Island Outpost) | 1 | 2 | 63.50 | 26 | 55.85 | 4 | 51.50 | 32 | 55.78 |
| | 2 | 1 | 68.08 | 69 | 62.98 | 25 | 63.80 | 207 | 63.40 |
| | 3 | - | - | 45 | 60.76 | 5 | 61.00 | 50 | 60.78 |
| | 4 | 3 | 76.33 | 38 | 61.53 | 9 | 58.22 | 50 | 61.82 |
| | 5 | - | - | 10 | 60.30 | 1 | 52.00 | 11 | 59.55 |
| | Unknown | - | - | 15 | 53.93 | 2 | 42.50 | 17 | 52.59 |
| | Area Total | 18 | 68.94 | 303 | 61.32 | 46 | 60.15 | 367 | 61.54 |
| Smith Arm (Trophy Lodge) | 1 | 57 | 68.33 | 501 | 63.73 | 68 | 60.16 | 626 | 63.76 |
| | 2 | 16 | 69.88 | 124 | 64.80 | 17 | 58.88 | 157 | 64.68 |
| | 3 | 14 | 70.86 | 143 | 66.09 | 17 | 59.29 | 174 | 65.81 |
| | 4 | 21 | 74.43 | 248 | 64.89 | 23 | 62.96 | 292 | 65.42 |
| | 5 | 22 | 76.27 | 228 | 72.64 | 20 | 65.85 | 270 | 72.43 |
| | Unknown | - | - | 1 | 60.00 | - | - | 1 | 60.00 |
| | Area Total | 130 | 71.12 | 1245 | 65.97 | 145 | 61.14 | 1520 | 65.95 |

Table 3. Summary of effort expended during the intensive creel census, Great Bear Lake, 1984-85.

| Area | Effort | Subarea | | | | | Area Total |
|---|--|--------------------|---------------------|-------------------|-------------------|-------------------|-------------|
| | | 1 | 2 | 3 | 4 | 5 | |
| Dease Arm (Great Bear Lodge) | Anglers Angler Days Angler Hours | 6 6 20.0 | 33 49 224.0 | 53 67 270.0 | 22 24 107.0 | - - - | - - - |
| North McTavish Arm (Arctic Circle Lodge) | Anglers Angler Days Angler Hours | 9 14 57.0 | 71 254 1309.0 | 11 11 86.0 | 4 6 22.0 | 10 14 77.5 | - - - |
| McVicar Arm (Great Bear Lodge: Neiland Bay Outpost) | Anglers Angler Days Angler Hours | 17 25 136.0 | 16 39 225.0 | 4 4 16.0 | - - - | - - - | - - - |
| McVicar Arm (Great Bear (Lodge: Bear Island Outpost) | Anglers Angler Days Angler Hours | 9 13 68.0 | 18 57 303.0 | 11 14 77.0 | 18 18 75.0 | 2 2 12.0 | - - - |
| Smith Arm (Great Bear Trophy Lodge) | Anglers Angler Days Angler Hours | 78 148 779.0 | 33 41 212.0 | 36 52 234.5 | 42 57 298.5 | 44 55 323.5 | 2 4 - |

Table 4. Summary of catch per unit effort for lake trout in the intensive creek census, Great Bear Lake, 1984-85.

| Area | Subarea | Lake Trout (number) | | /Angler Hour |
|--|------------|------------------------|----------------|-----------------|
| | | /Angler | /Angler Day | |
| Dease Arm (Great Bear Lake Lodge) | 1 | 7.50 | 7.50 | 2.25 |
| | 2 | 6.21 | 4.18 | 0.92 |
| | 3 | 3.11 | 2.46 | 0.61 |
| | 4 | 8.86 | 8.13 | 1.82 |
| | Area Total | 5.35 | 4.12 | 0.98 |
| | | | | |
| North McTavish Arm (Arctic Circle Lodge) | 1 | 3.89 | 2.50 | 0.61 |
| | 2 | 17.70 | 4.95 | 0.96 |
| | 3 | 4.18 | 4.18 | 0.55 |
| | 4 | 7.00 | 4.67 | 1.32 |
| | 5 | 13.00 | 9.29 | 1.68 |
| | Area Total | 14.25 | 5.00 | 0.97 |
| McVicar Arm (Great Bear Lodge: Neilland Bay Outpost) | 1 | 6.53 | 4.44 | 0.82 |
| | 2 | 7.31 | 3.00 | 0.53 |
| | 3 | 2.50 | 2.50 | 0.63 |
| | 4 | - | - | - |
| | Area Total | 6.43 | 3.50 | 0.64 |
| | | | | |
| McVicar Arm (Great Bear Lodge: Bear Island Outpost) | 1 | 3.56 | 2.46 | 0.47 |
| | 2 | 11.50 | 3.63 | 0.68 |
| | 3 | 4.55 | 3.57 | 0.65 |
| | 4 | 4.55 | 2.78 | 0.67 |
| | 5 | 5.50 | 5.50 | 0.92 |
| | Unknown | 8.50 | 8.50 | - |
| Smith Arm (Trophy Lodge) | Area Total | 6.92 | 3.46 | 0.69 |
| | 1 | 8.03 | 4.23 | 0.80 |
| | 2 | 4.76 | 3.83 | 0.74 |
| | 3 | 4.83 | 3.35 | 0.74 |
| | 4 | 6.95 | 5.12 | 0.98 |
| | 5 | 6.14 | 4.91 | 0.84 |
| Unknown | 0.50 | 0.25 | - | - |
| | Area Total | 6.47 | 4.26 | 0.82 |
| | | | | |

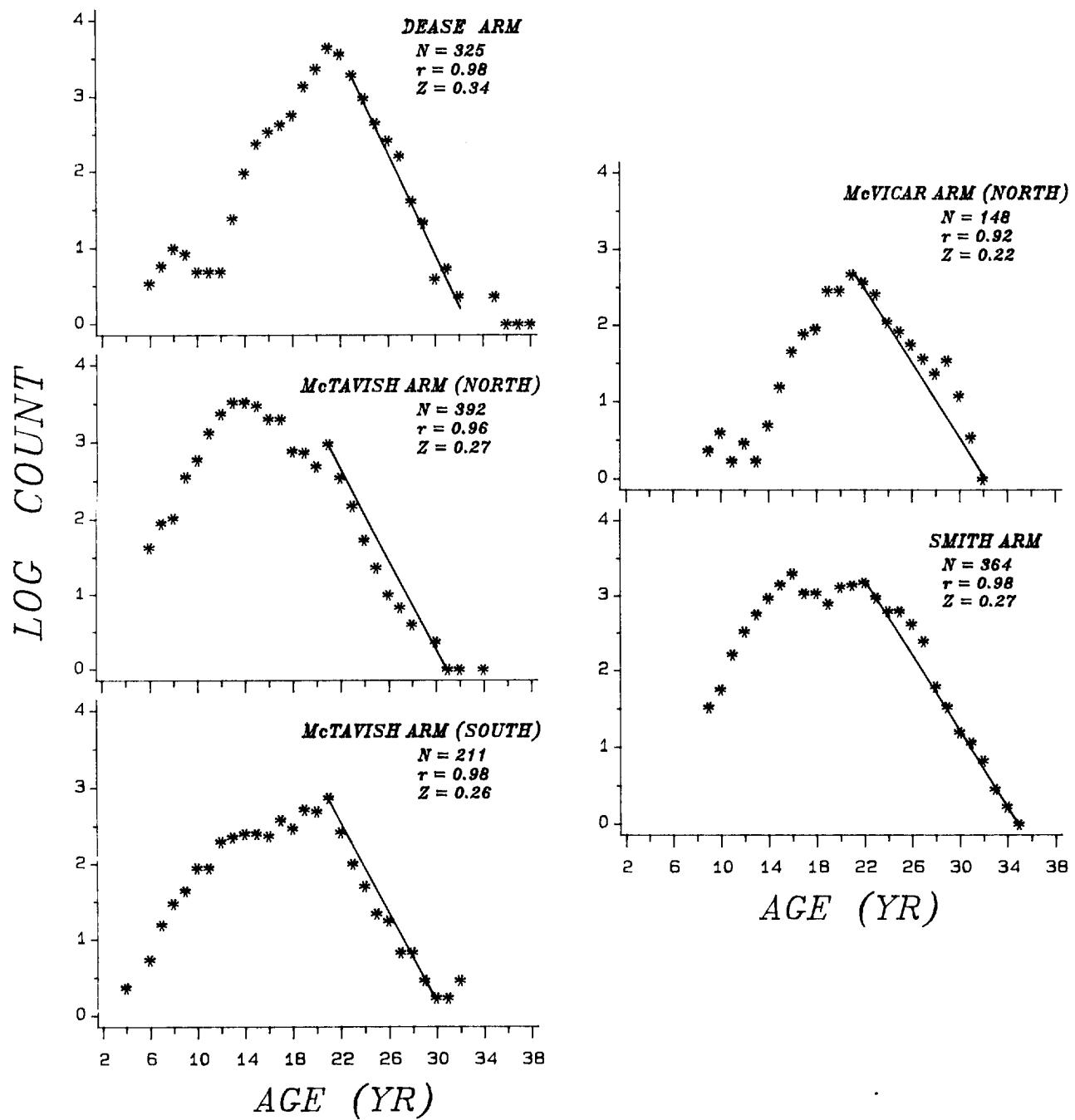


Figure 2. Catch curves depicting instantaneous total mortality rate for lake trout, Great Bear Lake, 1984-85.

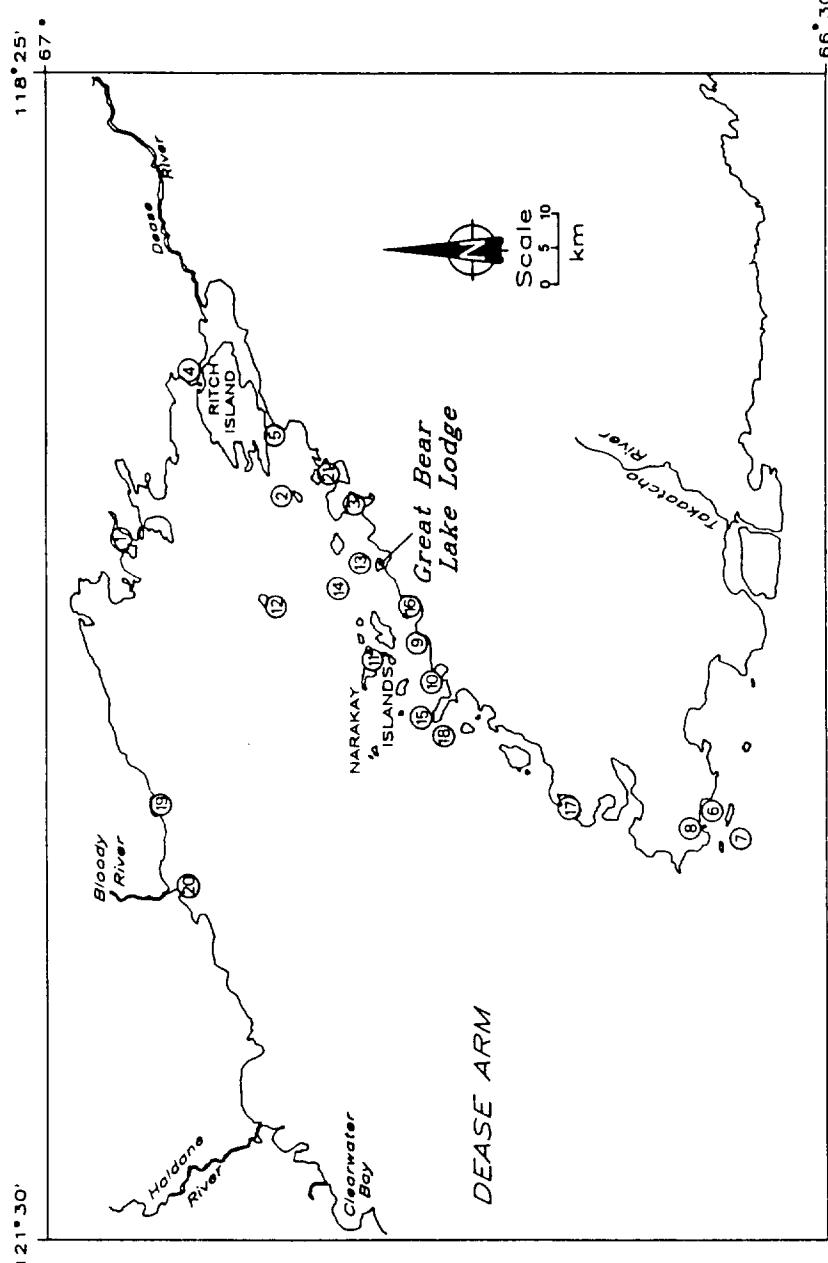


Figure 3. Experimental net locations, Dease Arm, Great Bear Lake, 1984.

Table 5. Catch and catch per unit effort (CPUE) for fish caught by experimental gill nets, Nease Arm, Great Bear Lake, 1984.

| | No. | % | Mesh Size (mm) | | | | Total Catch | CPUE ¹ |
|-----------------|-----|-------|----------------|------|------|------|----------------|-------------------|
| | | | 38 | 64 | 89 | 114 | | |
| Lake trout | No. | | 56 | 75 | 61 | 52 | 32 | 276 |
| | % | 20.3 | 27.2 | 22.1 | 18.8 | 11.6 | | 78.6 |
| Lake whitefish | No. | 1 | 18 | 13 | 11 | 6 | 49 | 0.14 |
| | % | 2.0 | 36.7 | 26.5 | 22.4 | 12.2 | | 14.0 |
| Round whitefish | No. | 3 | - | - | - | - | - | <0.01 |
| | % | 100.0 | - | - | - | - | - | 3 |
| Lake cisco | No. | 18 | 2 | - | - | - | - | 0.9 |
| | % | 90.0 | 10.0 | - | - | - | - | 0.06 |
| Arctic grayling | No. | 3 | - | - | - | 5.7 | - | 20 |
| | % | 100.0 | - | - | - | - | - | 5.7 |
| Total | No. | 81 | 95 | 74 | 632 | 380 | 351 | 0.98 |
| | % | 23.1 | 27.1 | 21.1 | 17.9 | 10.8 | | |

¹No. fish/100 m of gill net/24 h

Table 6. Biological data by length interval for lake trout caught by experimental gill nets, Dease Arm, Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | |
|----------------------------|------------|------|-----------|------|------|-----|------------|-------|-----------|------|------|------|------------|-------|-----------|------|------|----|---|
| | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | |
| | N | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN | SD | |
| 200 | - | - | - | - | - | 1 | 223 | 100 | - | 0.90 | 0 | 3 | 222 | 100 | 0 | 0.92 | 0 | | |
| 250 | - | - | - | - | - | - | - | - | - | - | 4 | 257 | 175 | 29 | 1.04 | 0 | - | | |
| 325 | 2 | 337 | 425 | 35 | 1.11 | 0 | - | - | - | - | - | 2 | 337 | 425 | 35 | 1.11 | 0 | - | |
| 350 | - | - | - | - | - | 2 | 354 | 500 | 0 | 1.13 | 0 | 3 | 359 | 500 | 0 | 1.13 | 0 | - | |
| 375 | 1 | 396 | 700 | - | 1.13 | 0 | - | - | - | - | 1 | 396 | 700 | - | 1.13 | 0 | - | | |
| 400 | 3 | 420 | 800 | 50 | 1.08 | 0 | 1 | 412 | 700 | - | 1.00 | 0 | 4 | 418 | 775 | 65 | 1.06 | 0 | - |
| 425 | 1 | 436 | 1150 | - | 1.39 | 0 | 1 | 427 | 800 | - | 1.03 | 0 | 3 | 434 | 975 | 247 | 1.21 | 0 | - |
| 450 | 1 | 462 | 1200 | - | 1.22 | 0 | - | - | - | - | 4 | 458 | 1200 | - | 1.22 | 0 | - | | |
| 475 | 1 | 478 | 1000 | - | 0.92 | 0 | 1 | 489 | 1400 | - | 1.20 | 0 | 2 | 484 | 1200 | 283 | 1.06 | 0 | - |
| 500 | 1 | 512 | 1250 | - | 0.93 | 100 | 1 | 503 | 1350 | - | 1.06 | 0 | 4 | 508 | 1300 | 71 | 1.00 | 25 | - |
| 525 | 3 | 538 | 1650 | 87 | 1.06 | 33 | 1 | 540 | 1800 | - | 1.14 | 0 | 7 | 539 | 1688 | 103 | 1.08 | 14 | - |
| 550 | 5 | 560 | 1820 | 182 | 1.04 | 60 | 6 | 559 | 2025 | 353 | 1.16 | 33 | 20 | 562 | 1932 | 295 | 1.10 | 25 | - |
| 575 | 5 | 584 | 2130 | 387 | 1.06 | 100 | 1 | 584 | 1950 | - | 0.98 | 10 | 10 | 584 | 2100 | 354 | 1.05 | 60 | - |
| 600 | 10 | 609 | 2535 | 383 | 1.12 | 100 | 3 | 612 | 2383 | 144 | 1.04 | 100 | 30 | 610 | 2500 | 343 | 1.10 | 43 | - |
| 625 | 11 | 636 | 2718 | 460 | 1.06 | 100 | 5 | 641 | 3040 | 691 | 1.15 | 100 | 49 | 636 | 2819 | 541 | 1.09 | 33 | - |
| 650 | 6 | 660 | 3025 | 342 | 1.05 | 100 | 3 | 664 | 2483 | 437 | 0.85 | 100 | 48 | 663 | 2844 | 440 | 0.98 | 19 | - |
| 675 | 5 | 690 | 3970 | 805 | 1.20 | 100 | 3 | 687 | 3150 | 391 | 0.97 | 100 | 22 | 688 | 3663 | 771 | 1.12 | 36 | - |
| 700 | - | - | - | - | - | 1 | 719 | 3450 | - | 0.93 | 100 | 19 | 708 | 3450 | - | 0.93 | 5 | - | |
| 725 | 2 | 725 | 3950 | 354 | 1.04 | 100 | - | - | - | - | 15 | 733 | 3950 | 354 | 1.04 | 13 | - | | |
| 750 | - | - | - | - | - | 2 | 754 | 4625 | 106 | 1.08 | 100 | 4 | 757 | 4625 | 106 | 1.08 | 50 | - | |
| 775 | - | - | - | - | - | - | - | - | - | - | 2 | 794 | - | - | - | 0 | - | | |
| 875 | - | - | - | - | - | - | - | - | - | - | 1 | 876 | - | - | - | 0 | - | | |
| 1025 | - | - | - | - | - | 1 | 1033 | 13000 | - | 1.18 | 100 | 2 | 1038 | 13000 | - | 1.18 | 50 | - | |
| 1075 | - | - | - | - | - | - | - | - | - | - | 1 | 1092 | - | - | - | 0 | - | | |
| 1175 | - | - | - | - | - | - | - | - | - | - | 1 | 1194 | - | - | - | 0 | - | | |
| TOTAL | 57 | 588 | 2358 | 1005 | 1.09 | 33 | 594 | 2612 | 2168 | 1.06 | 261 | 625 | 2307 | 1583 | 1.07 | - | - | | |
| MEAN | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |

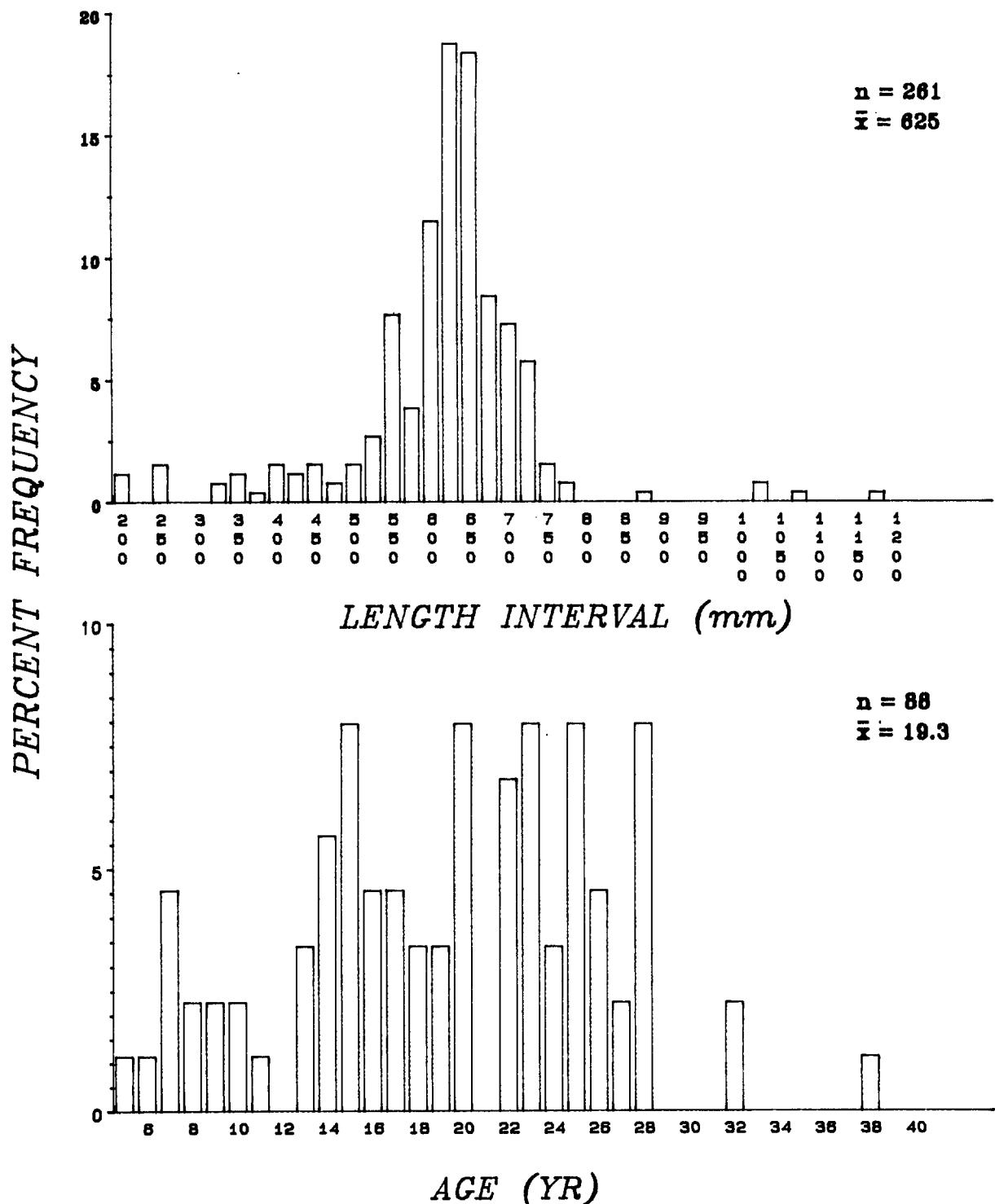


Figure 4. Length and age frequency distributions for lake trout caught by experimental nets, Dease Arm, Great Bear Lake, 1984.

Table 7. Biological data by age group for lake trout caught by experimental gill nets. Dease Arm, Great Bear Lakes, 1984.

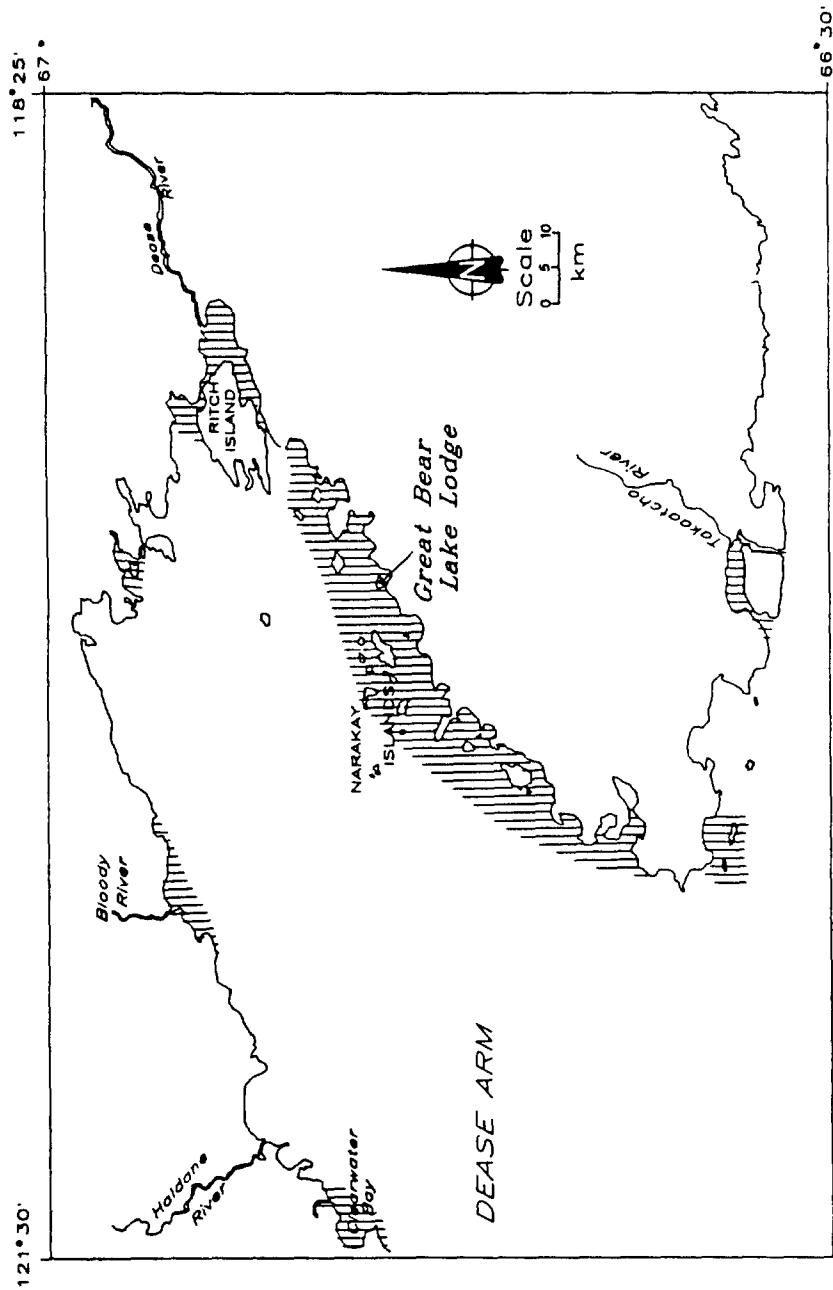


Figure 5. Areas generally fished in Dease Arm, Great Bear Lake, 1984.

Table 8. Biological data by length interval for angled and retained lake trout. Dease Arm, (Great Bear Lake Lodge area), Great Bear Lake, 1984.

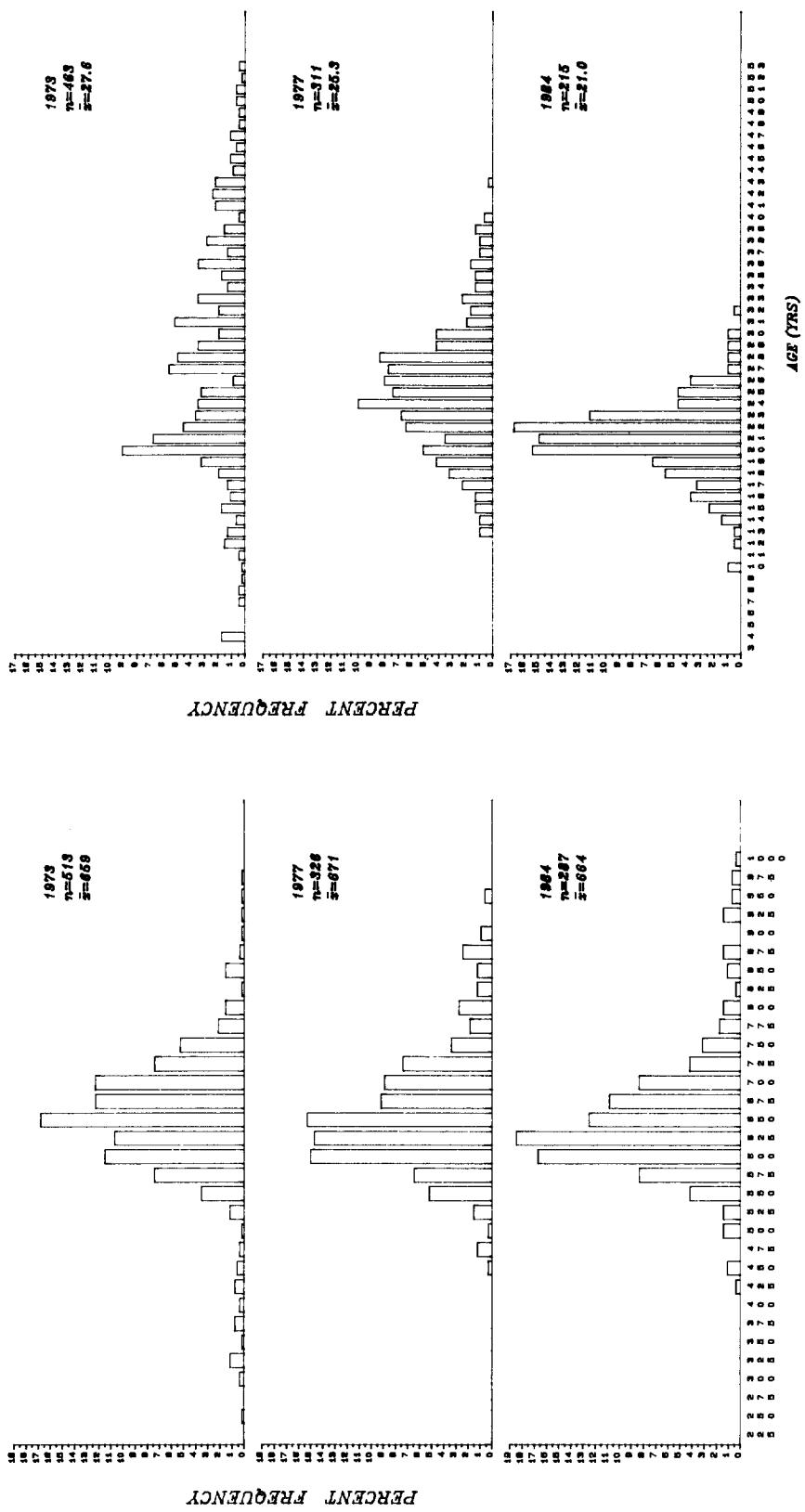


Figure 6. Length and age frequency distributions for angled and retained lake trout, Deseau Arm, Great Bear Lake, 1973-1984.

Table 9. Biological data by age group for angled and retained lake trout, Dease Arm, (Great Bear Lake Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | | |
|-------------|------------|------|----|-----------|------|------|------------|------|-----|-----------|------|------|------------|------|-----|-----------|-------|------|------|------|
| | LENGTH(MM) | | | WEIGHT(G) | | | LENGTH(MM) | | | WEIGHT(G) | | | LENGTH(MM) | | | WEIGHT(G) | | | | |
| | N | MEAN | SD | K | MEAN | SD | N | MEAN | SD | K | MEAN | SD | N | MEAN | SD | K | MEAN | SD | | |
| 10 | 2 | 446 | 17 | 975 | 177 | 0.09 | 0 | - | - | - | - | - | 2 | 446 | 17 | 975 | 177 | 0.09 | | |
| 12 | 1 | 572 | - | 2100 | - | 1.12 | 0 | 1 | 563 | - | 2400 | - | 1 | 572 | - | 2100 | - | 1.12 | | |
| 13 | - | - | - | - | - | - | 1 | 655 | - | 3800 | - | 1.35 | 100 | 3 | 606 | 42 | 2850 | 832 | 1.25 | |
| 14 | 2 | 582 | 3 | 2375 | 177 | 1.21 | 50 | 1 | 547 | 47 | 1625 | 389 | 0.98 | 0 | 5 | 557 | 62 | 1770 | 564 | 1.00 |
| 15 | 3 | 564 | 80 | 1867 | 725 | 1.01 | 33 | 2 | 547 | 47 | 115 | 3000 | 1387 | 1.06 | 8 | 631 | 94 | 2881 | 1150 | 1.10 |
| 16 | 3 | 607 | 59 | 2683 | 825 | 1.17 | 67 | 5 | 646 | 59 | 3575 | 1210 | 1.31 | 75 | 7 | 652 | 69 | 3557 | 982 | 1.28 |
| 17 | 3 | 662 | 94 | 3533 | 833 | 1.24 | 100 | 4 | 644 | 82 | 3114 | 1038 | 1.15 | 71 | 12 | 648 | 72 | 3263 | 942 | 1.18 |
| 18 | 5 | 654 | 64 | 3470 | 855 | 1.22 | 80 | 7 | 644 | 82 | 3764 | 1530 | 1.18 | 86 | 14 | 649 | 83 | 3457 | 1136 | 1.24 |
| 19 | 7 | 623 | 24 | 3150 | 482 | 1.30 | 71 | 7 | 675 | 114 | 3207 | 989 | 1.13 | 86 | 33 | 640 | 56 | 3170 | 702 | 1.20 |
| 20 | 19 | 631 | 40 | 3142 | 410 | 1.26 | 100 | 14 | 652 | 72 | 3238 | 746 | 1.23 | 88 | 32 | 649 | 52 | 3334 | 676 | 1.21 |
| 21 | 13 | 661 | 50 | 3377 | 600 | 1.16 | 85 | 17 | 638 | 52 | 3611 | 864 | 1.19 | 100 | 36 | 662 | 69 | 3692 | 1273 | 1.25 |
| 22 | 19 | 650 | 69 | 3672 | 1530 | 1.31 | 100 | 16 | 669 | 65 | 4286 | 1791 | 1.22 | 100 | 24 | 666 | 64 | 3810 | 1322 | 1.26 |
| 23 | 13 | 639 | 24 | 3408 | 542 | 1.30 | 92 | 11 | 697 | 82 | 3483 | 189 | 1.27 | 100 | 10 | 654 | 55 | 3406 | 622 | 1.24 |
| 24 | 6 | 674 | 46 | 3590 | 613 | 1.19 | 83 | 3 | 652 | 31 | 3463 | 680 | 1.31 | 75 | 10 | 662 | 85 | 3945 | 1989 | 1.29 |
| 25 | 4 | 650 | 71 | 3463 | 1071 | 1.24 | 100 | 4 | 641 | 17 | 5913 | 3416 | 1.32 | 100 | 8 | 715 | 123 | 4869 | 2560 | 1.27 |
| 26 | 4 | 677 | 51 | 3825 | 845 | 1.22 | 100 | 4 | 753 | 170 | 3250 | 495 | 1.41 | 100 | 2 | 617 | 74 | 3250 | 495 | 1.41 |
| 27 | - | - | - | - | - | - | - | 2 | 617 | 74 | 3050 | - | 1.07 | 100 | 2 | 669 | 16 | 3325 | 389 | 1.11 |
| 28 | 1 | 680 | - | 3600 | - | 1.14 | 100 | 1 | 658 | - | 3250 | - | 1.24 | 100 | 2 | 662 | 31 | 3825 | 813 | 1.31 |
| 29 | 1 | 684 | - | 4400 | - | 1.37 | 100 | 1 | 640 | - | 5100 | - | 1.38 | 100 | 2 | 691 | 37 | 4375 | 1025 | 1.31 |
| 30 | 1 | 665 | - | 3650 | - | 1.24 | 100 | 1 | 717 | - | - | - | - | 1 | 948 | - | 10300 | - | 1.21 | |
| 32 | 1 | 948 | - | 10300 | - | 1.21 | 100 | - | - | - | - | - | - | 1 | - | - | - | - | 100 | |
| TOTAL | 108 | 642 | 67 | 3354 | 1165 | 1.24 | 101 | 658 | 79 | 3539 | 1353 | 1.20 | 215 | 651 | 75 | 3473 | 1313 | 1.23 | | |
| MEAN AGE | 21.0 | | | | | | 21.0 | | | | | | 21.0 | | | | | | | |

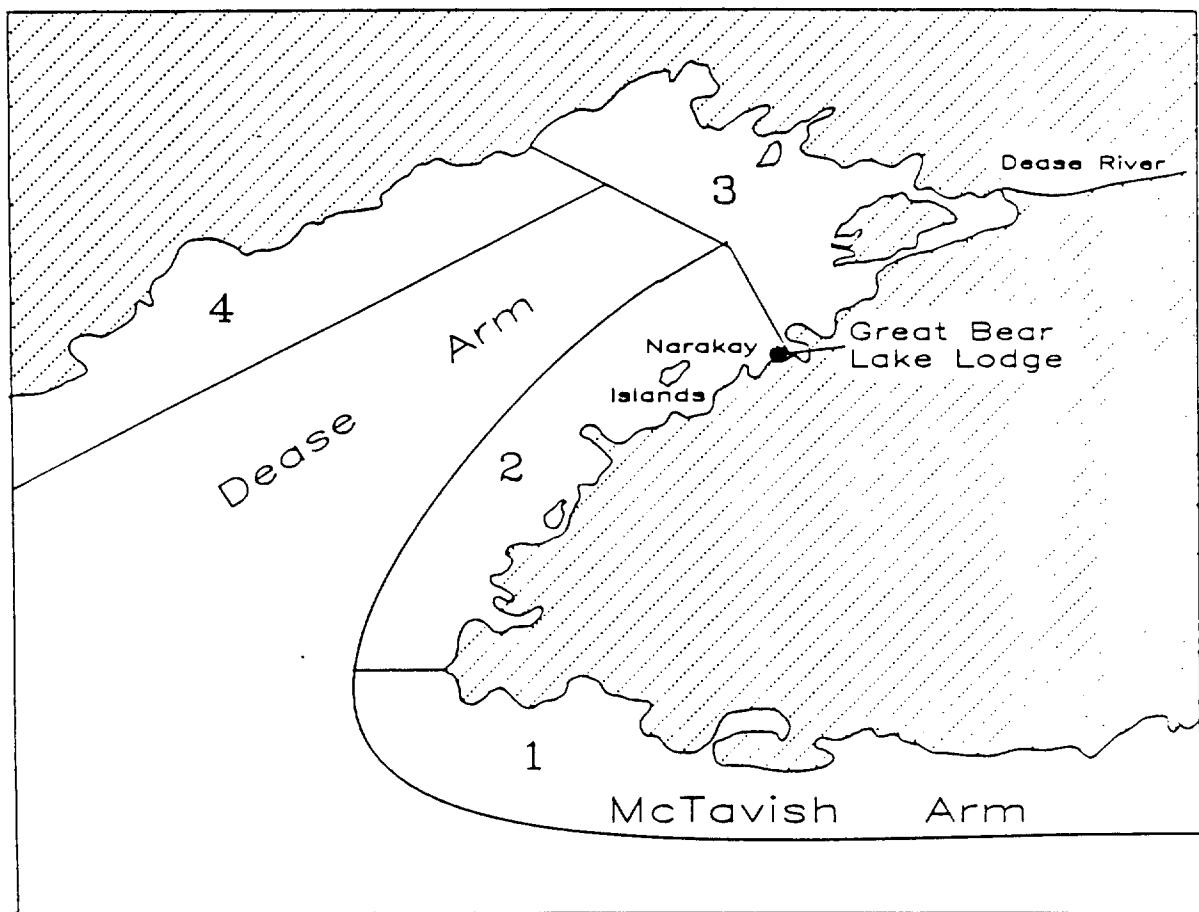


Figure 7. Subarea locations used in the intensive creel census program
Dease Arm, Great Bear Lake, 1984.

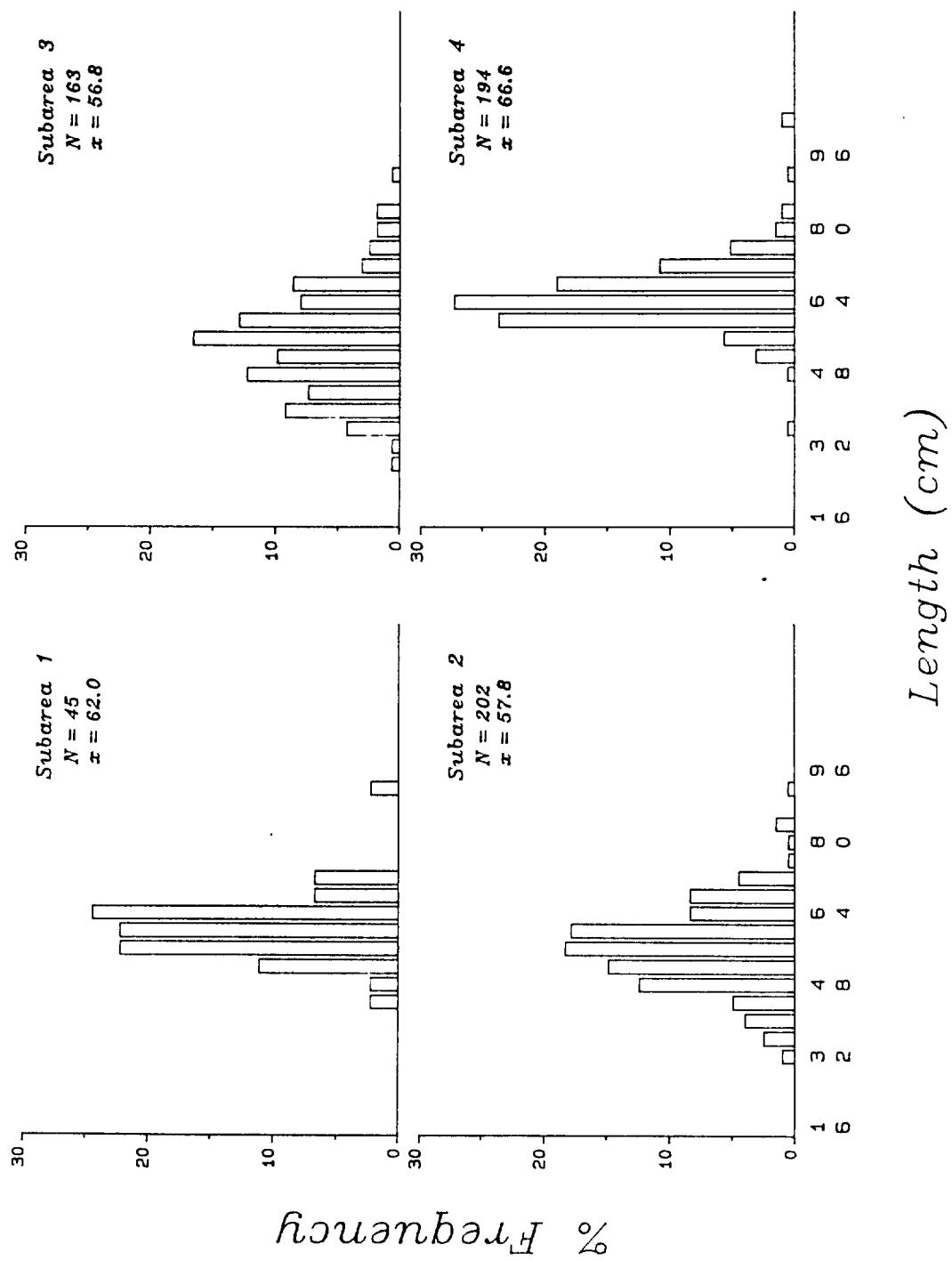


Figure 8. Length frequency distributions by subarea for lake trout caught by angling,
Dease Arm (north), Great Bear Lake, 1984.

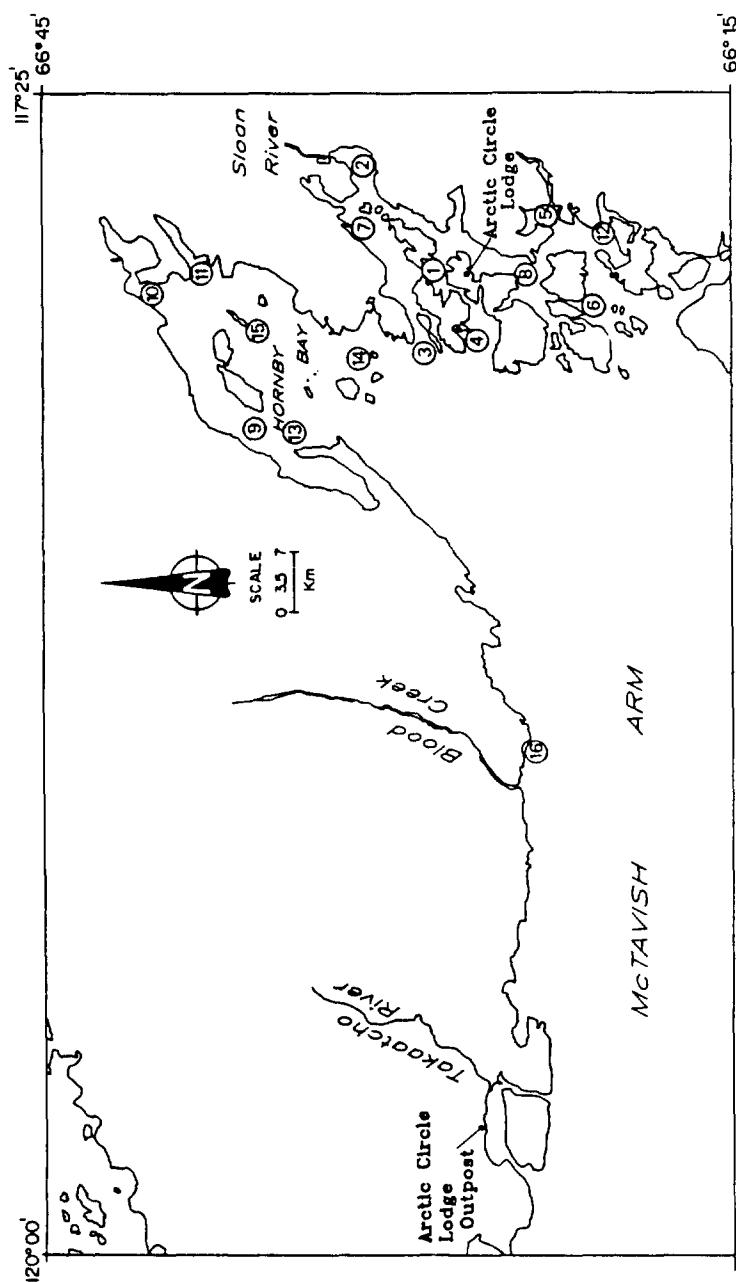


Figure 9. Experimental net locations, McTavish Arm (north), Great Bear Lake, 1984.

Table 10. Catch and catch per unit effort (CPUE) for fish caught by experimental gill nets, McTavish Arm (north), Great Bear Lake, 1984.

| | No. % | 38 | 64 | 89 | 114 | 139 | Mesh Size (mm) | Total Catch | CPUE ¹ |
|-----------------|----------|-------------|------------|------------|------------|-----------|----------------|----------------|-------------------|
| | | | | | | | | | |
| Lake trout | No. % | 135 35.6 | 74 19.5 | 73 19.3 | 68 17.9 | 29 7.7 | 379 96.7 | 2.14 | |
| Lake whitefish | No. % | 5 100.0 | - - | - - | - - | - - | - - | 5 1.3 | 0.03 |
| Round whitefish | No. % | 1 100.0 | - - | - - | - - | - - | - - | 1 0.3 | <0.01 |
| Cisco sp. | No. % | 7 100.0 | - - | - - | - - | - - | - - | 7 1.8 | 0.04 |
| Total | No. % | 148 37.8 | 74 18.9 | 73 18.6 | 68 17.3 | 29 7.4 | 392 392 | 2.22 | |

¹No. fish/100 m of gillnet/24 h

Table 11. Biological data by length interval for lake trout caught by experimental gill nets, McTavish Arm (north), Great Bear Lake, 1984.

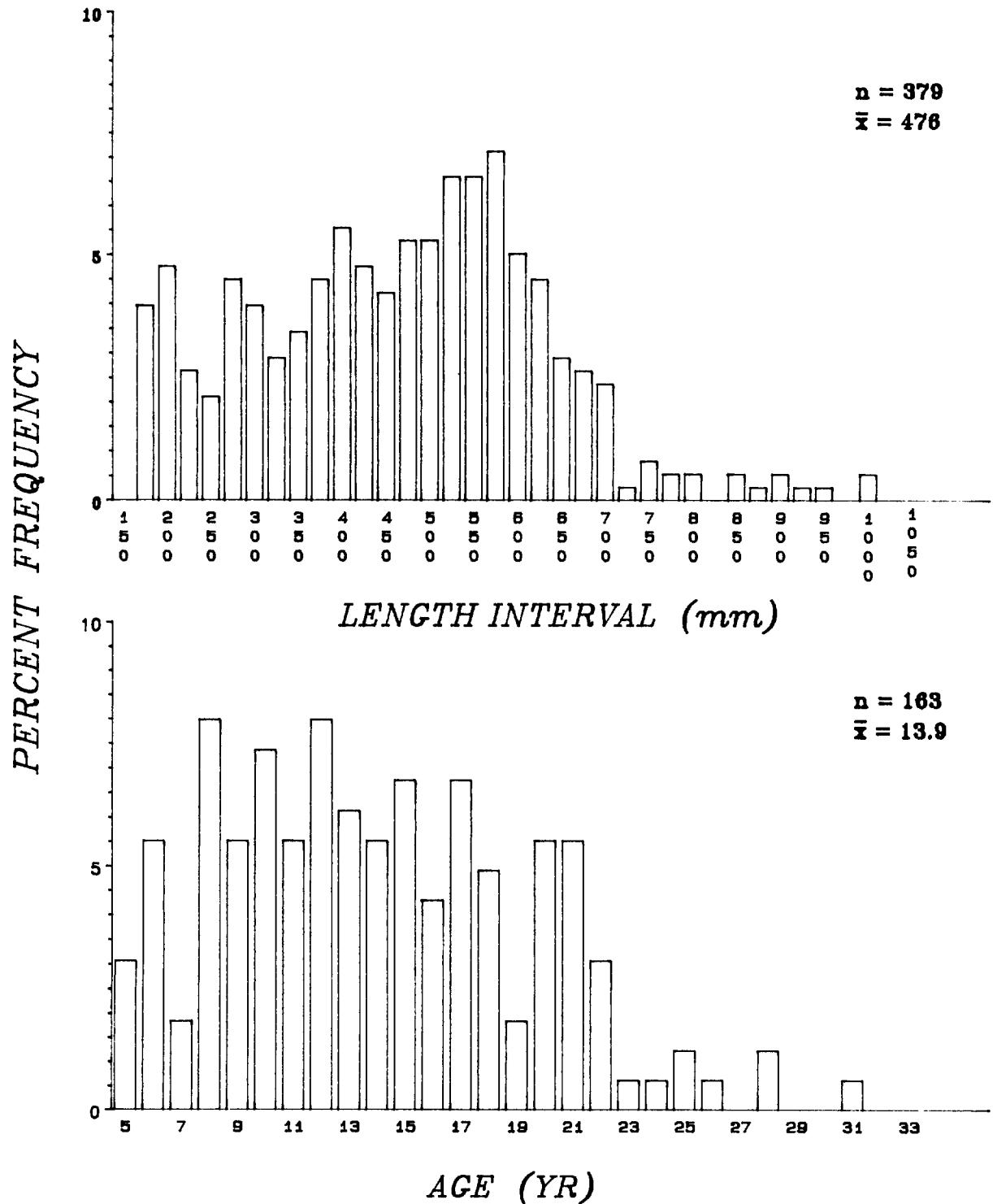


Figure 10. Length and age frequency distributions for lake trout caught by experimental nets, McTavish Arm (north), Great Bear Lake, 1984.

Table 12. Biological data by age group for lake trout caught by experimental gill nets, McTavish Arm (north), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | | | | | FEMALES | | | | | | | | | | COMBINED | |
|-------------|------------|------|-----------|------|------|------|------------|-----|-----------|------|---------|------|------------|------|-----------|------|------|------|------|------|----------|---|
| | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | K | | MAT | |
| | N | MEAN | SD | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN | SD | K | MEAN | SD | K | MAT | | |
| 5 | - | - | - | - | - | - | - | 2 | 203 | 4 | 63 | 18 | 0.75 | 0 | 5 | 194 | 9 | 55 | 11 | 0.75 | 0 | |
| 6 | 1 | 204 | - | 75 | - | 0.88 | 0 | 1 | 213 | - | 100 | - | 1.03 | 0 | 9 | 203 | 17 | 103 | 61 | 1.33 | 0 | |
| 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 198 | 18 | 75 | 25 | 0.96 | 0 | |
| 8 | 6 | 262 | 39 | 192 | 74 | 1.03 | 0 | 1 | 305 | - | 250 | - | 0.88 | 0 | 13 | 253 | 37 | 169 | 70 | 1.00 | 0 | |
| 9 | 3 | 270 | 18 | 217 | 29 | 1.10 | 0 | 0 | 324 | 13 | 375 | 35 | 1.10 | 0 | 9 | 271 | 40 | 222 | 100 | 1.05 | 0 | |
| 10 | 9 | 320 | 40 | 356 | 157 | 1.02 | 0 | 0 | 346 | 35 | 425 | 106 | 1.02 | 0 | 12 | 321 | 39 | 354 | 148 | 1.02 | 0 | |
| 11 | 4 | 350 | 28 | 425 | 119 | 0.97 | 0 | 4 | 363 | 41 | 488 | 160 | 0.98 | 0 | 9 | 343 | 52 | 417 | 173 | 0.96 | 0 | |
| 12 | 10 | 389 | 42 | 657 | 218 | 1.08 | 0 | 0 | 393 | 14 | 700 | 0 | 1.16 | 0 | 13 | 390 | 37 | 667 | 190 | 1.10 | 0 | |
| 13 | 8 | 389 | 64 | 681 | 289 | 1.09 | 0 | 0 | 465 | 42 | 1125 | 389 | 1.10 | 0 | 0 | 10 | 404 | 66 | 770 | 342 | 1.09 | 0 |
| 14 | 4 | 470 | 20 | 1150 | 178 | 1.11 | 0 | 5 | 437 | 30 | 870 | 120 | 1.04 | 0 | 0 | 9 | 452 | 30 | 994 | 202 | 1.07 | 0 |
| 15 | 7 | 467 | 62 | 437 | 1.10 | 29 | 4 | 405 | 94 | 788 | 492 | 1.07 | 0 | 0 | 11 | 445 | 77 | 1023 | 471 | 1.09 | 18 | |
| 16 | 5 | 489 | 122 | 1510 | 867 | 1.15 | 60 | 2 | 531 | 42 | 1675 | 318 | 1.11 | 100 | 7 | 501 | 103 | 1557 | 724 | 1.14 | 71 | |
| 17 | 5 | 559 | 111 | 2280 | 1498 | 1.19 | 60 | 6 | 513 | 49 | 1500 | 297 | 1.12 | 50 | 11 | 534 | 82 | 1855 | 1052 | 1.15 | 55 | |
| 18 | 5 | 494 | 45 | 1430 | 466 | 1.15 | 40 | 3 | 604 | 83 | 2317 | 553 | 1.07 | 100 | 8 | 535 | 80 | 1763 | 650 | 1.12 | 63 | |
| 19 | 1 | 605 | - | 2600 | - | 1.17 | 100 | 2 | 569 | 9 | 2000 | 495 | 1.08 | 100 | 3 | 581 | 22 | 2200 | 492 | 1.11 | 100 | |
| 20 | 8 | 523 | 63 | 1738 | 602 | 1.17 | 63 | 0 | 590 | - | 3000 | - | 1.46 | 100 | 9 | 530 | 63 | 1878 | 703 | 1.20 | 67 | |
| 21 | 4 | 573 | 60 | 2338 | 755 | 1.21 | 100 | 5 | 578 | 44 | 2240 | 502 | 1.15 | 100 | 9 | 576 | 48 | 2283 | 585 | 1.17 | 100 | |
| 22 | 3 | 619 | 82 | 2833 | 922 | 1.17 | 100 | 2 | 543 | 26 | 1950 | 71 | 1.23 | 100 | 5 | 589 | 73 | 2480 | 813 | 1.20 | 100 | |
| 23 | 1 | 511 | - | 1500 | - | 1.12 | 0 | - | - | - | - | - | - | - | 1 | 511 | - | 1500 | - | 1.12 | 0 | |
| 24 | - | - | - | - | - | - | - | 1 | 572 | - | 2100 | - | 1.12 | 100 | 1 | 572 | - | 2100 | - | 1.12 | 100 | |
| 25 | 1 | 599 | - | 2850 | - | 1.33 | 100 | 1 | 644 | - | 4350 | - | 1.63 | 100 | 2 | 622 | 32 | 3600 | 1061 | 1.48 | 100 | |
| 26 | 1 | 630 | - | 2650 | - | 1.06 | 100 | - | - | - | - | - | - | - | 1 | 630 | - | 2650 | - | 1.06 | 100 | |
| 28 | 2 | 742 | 81 | 4675 | 1379 | 1.13 | 100 | - | 812 | - | 6100 | - | 1.14 | 100 | 1 | 742 | 81 | 4675 | 1379 | 1.13 | 100 | |
| 31 | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 | 812 | - | 6100 | - | 1.14 | 100 | |
| TOTAL | 88 | 442 | 127 | 1231 | 1074 | 1.10 | 50 | 466 | 128 | 1397 | 1137 | 1.09 | 163 | 415 | 145 | 1110 | 1095 | 1.10 | 13.9 | 13.9 | | |

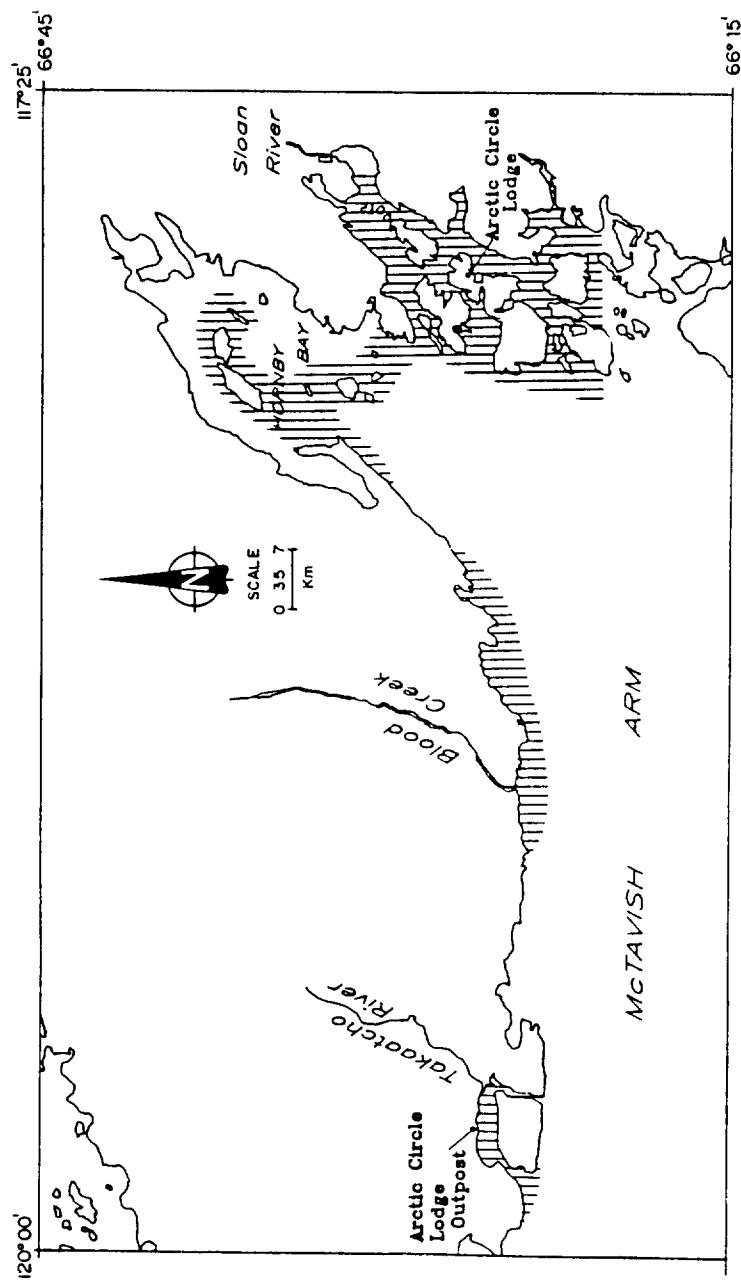


Figure 11. Areas generally fished in McTavish Arm (north), Great Bear Lake, 1984.

Table 13. Biological data by length interval for angled and retained lake trout, McTavish Arm (north). (Arctic Circle Lodge area). Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | |
|----------------------------|------------|------|------|-----------|------|-----|------------|------|------|-----------|------|-----|------------|------|-------|-----------|------|----|
| | LENGTH(MM) | | | WEIGHT(G) | | | LENGTH(MM) | | | WEIGHT(G) | | | LENGTH(MM) | | | WEIGHT(G) | | |
| | N | MEAN | SD | K | SD | % | N | MEAN | SD | K | SD | % | N | MEAN | SD | K | SD | % |
| 325 | - | - | - | - | - | - | 2 | 343 | 450 | 141 | 1.12 | 0 | 2 | 343 | 450 | 141 | 1.12 | 0 |
| 350 | 1 | 354 | 450 | - | 1.01 | 0 | 3 | 366 | 533 | 76 | 1.09 | 0 | 4 | 363 | 513 | 75 | 1.07 | 0 |
| 375 | 10 | 386 | 610 | 52 | 1.06 | 0 | 7 | 388 | 636 | 69 | 1.08 | 0 | 17 | 387 | 621 | 59 | 1.07 | 0 |
| 400 | 9 | 409 | 717 | 97 | 1.04 | 0 | 12 | 414 | 775 | 78 | 1.09 | 8 | 21 | 412 | 750 | 89 | 1.07 | 5 |
| 425 | 26 | 432 | 862 | 84 | 1.07 | 0 | 19 | 436 | 879 | 80 | 1.06 | 16 | 47 | 434 | 874 | 85 | 1.07 | 6 |
| 450 | 18 | 460 | 1042 | 79 | 1.07 | 0 | 11 | 461 | 1064 | 116 | 1.09 | 18 | 29 | 460 | 1050 | 94 | 1.08 | 7 |
| 475 | 9 | 484 | 1256 | 104 | 1.11 | 0 | 14 | 484 | 1218 | 184 | 1.07 | 14 | 23 | 484 | 1233 | 156 | 1.09 | 9 |
| 500 | 9 | 510 | 1461 | 162 | 1.10 | 11 | 13 | 513 | 1515 | 565 | 1.12 | 54 | 22 | 512 | 1493 | 440 | 1.11 | 36 |
| 525 | 9 | 533 | 1650 | 263 | 1.09 | 33 | 10 | 532 | 1780 | 345 | 1.18 | 60 | 19 | 532 | 1718 | 306 | 1.14 | 47 |
| 550 | 16 | 560 | 2047 | 381 | 1.16 | 63 | 16 | 562 | 2128 | 371 | 1.20 | 69 | 32 | 561 | 2088 | 372 | 1.18 | 66 |
| 575 | 11 | 587 | 2632 | 368 | 1.30 | 91 | 9 | 588 | 2656 | 545 | 1.30 | 20 | 588 | 2643 | 443 | 1.30 | 90 | |
| 600 | 20 | 613 | 2813 | 313 | 1.22 | 80 | 32 | 610 | 2820 | 320 | 1.24 | 94 | 53 | 611 | 2809 | 317 | 1.23 | 87 |
| 625 | 24 | 636 | 2946 | 379 | 1.14 | 83 | 30 | 636 | 3275 | 309 | 1.28 | 93 | 55 | 636 | 3131 | 373 | 1.22 | 87 |
| 650 | 16 | 661 | 3209 | 397 | 1.11 | 88 | 30 | 661 | 3493 | 390 | 1.21 | 97 | 48 | 661 | 3429 | 441 | 1.19 | 90 |
| 675 | 16 | 684 | 3616 | 405 | 1.13 | 81 | 24 | 685 | 3808 | 478 | 1.18 | 96 | 43 | 685 | 3799 | 583 | 1.18 | 84 |
| 700 | 12 | 708 | 4054 | 374 | 1.14 | 92 | 11 | 709 | 4114 | 420 | 1.15 | 82 | 24 | 709 | 4113 | 407 | 1.16 | 83 |
| 725 | 3 | 738 | 4150 | 492 | 1.03 | 100 | 8 | 730 | 3913 | 439 | 1.00 | 88 | 14 | 734 | 4289 | 747 | 1.08 | 71 |
| 750 | 2 | 761 | 4575 | 106 | 1.04 | 100 | 3 | 761 | 4300 | 350 | 0.99 | 67 | 7 | 758 | 4529 | 330 | 1.04 | 57 |
| 775 | 3 | 789 | 5050 | 218 | 1.03 | 67 | - | - | - | - | - | - | 9 | 787 | 5144 | 393 | 1.05 | 22 |
| 800 | 1 | 808 | 5100 | - | 0.97 | 100 | 1 | 805 | 5000 | - | 0.96 | 100 | 7 | 810 | 5407 | 289 | 1.02 | 29 |
| 825 | - | - | - | - | - | - | 2 | 836 | 6300 | 707 | 1.08 | 100 | 7 | 831 | 6164 | 434 | 1.07 | 29 |
| 850 | - | - | - | - | - | - | - | - | - | - | - | - | 7 | 862 | 6714 | 609 | 1.05 | 0 |
| 875 | 1 | 899 | 5000 | - | 0.69 | 100 | - | - | - | - | - | - | 9 | 892 | 7556 | 1104 | 1.07 | 11 |
| 900 | - | - | - | - | - | - | 1 | 920 | 8000 | - | 1.03 | 100 | 5 | 916 | 8310 | 315 | 1.08 | 20 |
| 925 | - | - | - | - | - | - | - | - | - | - | - | - | 5 | 931 | 8930 | 748 | 1.11 | 0 |
| 950 | - | - | - | - | - | - | - | - | - | - | - | - | 5 | 954 | 9110 | 456 | 1.05 | 0 |
| 1000 | - | - | - | - | - | - | - | - | - | - | - | - | 7 | 1004 | 11137 | 1946 | 1.10 | 0 |
| TOTAL | 216 | 564 | 2254 | 1233 | 1.12 | 258 | 582 | 2546 | 1303 | 1.17 | 541 | 606 | 2998 | 2090 | 1.14 | | | |

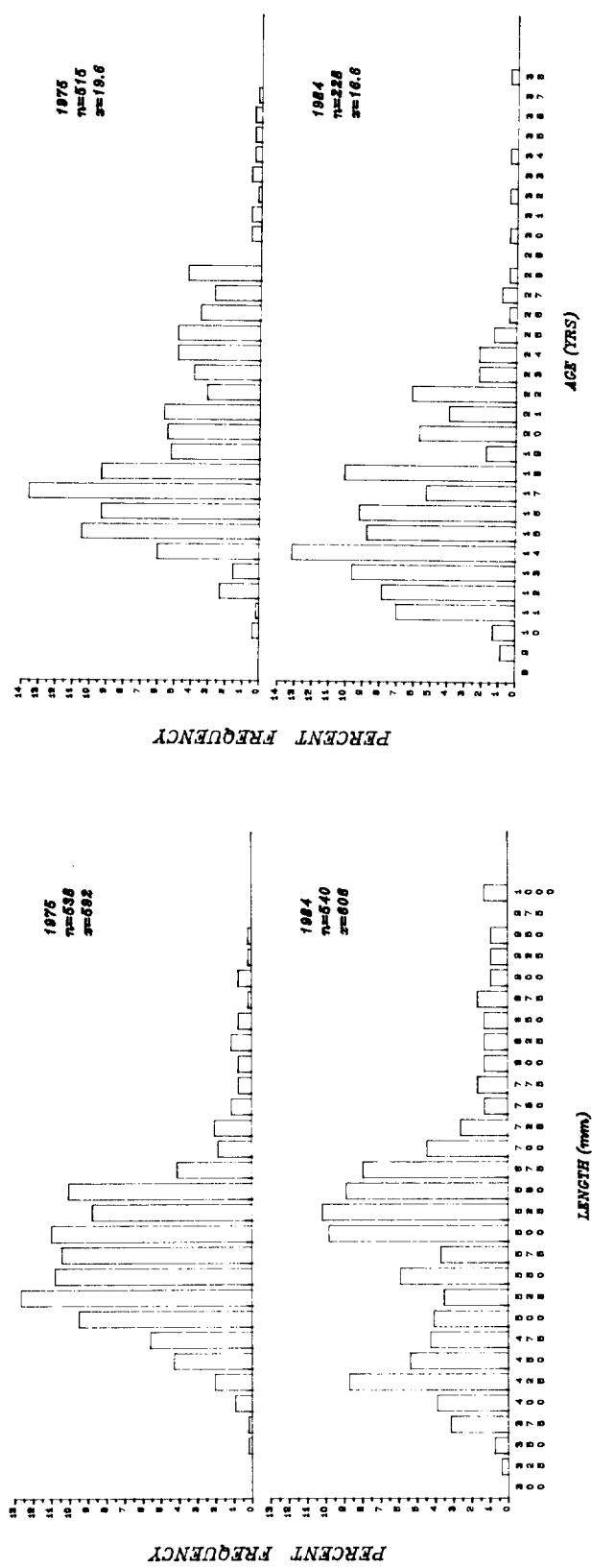


Figure 12. Length and age frequency distributions for angled and retained lake trout, McTavish Arm (north), Great Bear Lake, 1975-1984.

Table 14. Biological data by age group for angled and retained lake trout, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | | |
|-------------|------------|-----|-----------|------|---------------|------|------------|------|-----------|------|---------------|------|------------|------|-----------|------|---------------|------|------|------|
| | LENGTH(MM) | | WEIGHT(G) | | % N MAT | | LENGTH(MM) | | WEIGHT(G) | | % N MAT | | LENGTH(MM) | | WEIGHT(G) | | % N MAT | | | |
| | N MEAN | SD | MEAN | SD | K | MAT | N MEAN | SD | MEAN | SD | K | MAT | N MEAN | SD | MEAN | SD | K | MAT | | |
| 9 | 1 | 380 | - | 550 | - | 1.00 | 0 | 1 | 355 | - | 1.01 | 0 | 2 | 368 | 1.8 | 500 | 71 | 1.00 | 0 | |
| 10 | 1 | 400 | - | 550 | - | 0.86 | 0 | 2 | 514 | 8 | 1.225 | 35 | 3 | 476 | 6.6 | 1000 | 391 | 0.89 | 33 | |
| 11 | 8 | 416 | 62 | 788 | 387 | 1.04 | 0 | 8 | 409 | 51 | 731 | 262 | 16 | 412 | 55 | 759 | 321 | 1.04 | 0 | |
| 12 | 12 | 446 | 62 | 975 | 526 | 1.04 | 8 | 6 | 412 | 43 | 792 | 218 | 17 | 434 | 57 | 914 | 448 | 1.07 | 11 | |
| 13 | 9 | 439 | 22 | 894 | 147 | 1.05 | 0 | 13 | 428 | 26 | 873 | 148 | 11 | 23 | 22 | 432 | 25 | 882 | 144 | |
| 14 | 17 | 451 | 56 | 1003 | 330 | 1.07 | 0 | 13 | 464 | 55 | 1027 | 321 | 0 | 30 | 457 | 55 | 1013 | 320 | 1.04 | 0 |
| 15 | 10 | 497 | 89 | 1340 | 587 | 1.05 | 0 | 10 | 477 | 54 | 1230 | 408 | 40 | 20 | 487 | 72 | 1285 | 495 | 1.07 | 20 |
| 16 | 9 | 500 | 60 | 1361 | 556 | 1.04 | 0 | 12 | 499 | 71 | 1404 | 772 | 1 | 0.09 | 33 | 21 | 500 | 65 | 1.05 | 19 |
| 17 | 4 | 487 | 50 | 1225 | 323 | 1.05 | 0 | 8 | 484 | 50 | 1375 | 604 | 1 | 1.14 | 25 | 12 | 485 | 48 | 1325 | 515 |
| 18 | 11 | 548 | 85 | 1927 | 976 | 1.08 | 36 | 12 | 525 | 79 | 1883 | 926 | 1 | 1.19 | 58 | 23 | 536 | 81 | 1904 | 928 |
| 19 | 2 | 615 | 85 | 2600 | 849 | 1.11 | 0 | 2 | 546 | 34 | 1875 | 530 | 1 | 1.13 | 50 | 4 | 581 | 66 | 2238 | 713 |
| 20 | 6 | 568 | 89 | 2450 | 1165 | 1.25 | 67 | 7 | 581 | 91 | 2271 | 1090 | 1 | 0.09 | 57 | 13 | 575 | 86 | 2354 | 1081 |
| 21 | 4 | 525 | 53 | 1738 | 673 | 1.16 | 50 | 5 | 554 | 89 | 2260 | 1152 | 1 | 2.22 | 60 | 9 | 541 | 72 | 2028 | 953 |
| 22 | 10 | 572 | 81 | 2385 | 810 | 1.23 | 80 | 4 | 584 | 70 | 2163 | 682 | 1 | 0.06 | 100 | 14 | 576 | 75 | 2321 | 757 |
| 23 | 3 | 537 | 61 | 1833 | 625 | 1.15 | 67 | 2 | 649 | 6 | 3425 | 106 | 1 | 2.25 | 100 | 5 | 582 | 75 | 2470 | 979 |
| 24 | 2 | 548 | 25 | 2150 | 354 | 1.30 | 100 | 3 | 581 | 75 | 2633 | 941 | 1 | 2.29 | 67 | 5 | 568 | 57 | 2440 | 738 |
| 25 | 2 | 530 | 85 | 1900 | 1061 | 1.20 | 50 | 1 | 635 | - | 3250 | - | 1 | 2.27 | 100 | 3 | 565 | 85 | 2350 | 1082 |
| 26 | - | - | - | - | - | - | 1 | 653 | - | 3700 | - | 1 | 3.33 | 100 | 1 | 653 | - | 3700 | - | |
| 27 | - | - | - | - | - | - | 2 | 626 | 24 | 3125 | 389 | 1 | 2.7 | 100 | 2 | 626 | 24 | 3125 | 389 | |
| 28 | 1 | 626 | - | 2750 | - | 1.12 | 100 | - | - | - | - | - | 1 | - | 626 | - | 2750 | - | | |
| 30 | 1 | 618 | - | 2800 | - | 1.19 | 100 | - | - | - | - | - | 1 | 618 | - | 2800 | - | 1.19 | 100 | |
| 32 | - | - | - | - | - | - | - | 1 | 697 | - | 4150 | - | 1 | 2.3 | 100 | 1 | 697 | - | 4150 | - |
| 34 | - | - | - | - | - | - | 1 | 674 | - | 3600 | - | 1 | 1.18 | 100 | 1 | 674 | - | 3600 | - | |
| 38 | - | - | - | - | - | - | 1 | 713 | - | 4650 | - | 1 | 2.8 | 100 | 1 | 713 | - | 4650 | - | |
| TOTAL | 113 | 496 | 84 | 1467 | 835 | 1.09 | | 115 | 501 | 90 | 1573 | 993 | 1 | 1.11 | | 228 | 498 | 87 | 1521 | 918 |
| MEAN AGE | 16.4 | | | | | | | 16.8 | | | | | | | 16.6 | | | | 1.10 | |

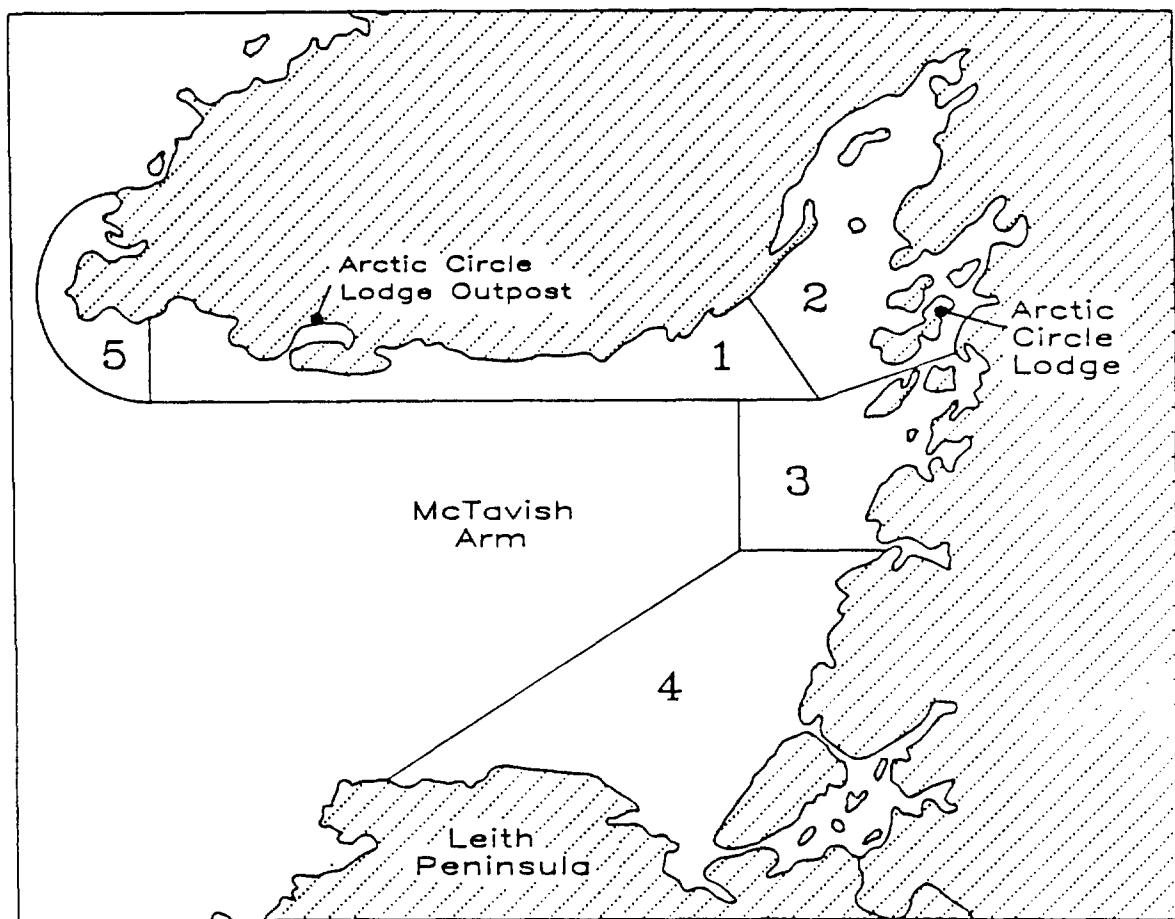


Figure 13. Subarea locations used in the intensive creel census program
McTavish Arm (north), Great Bear Lake, 1984.

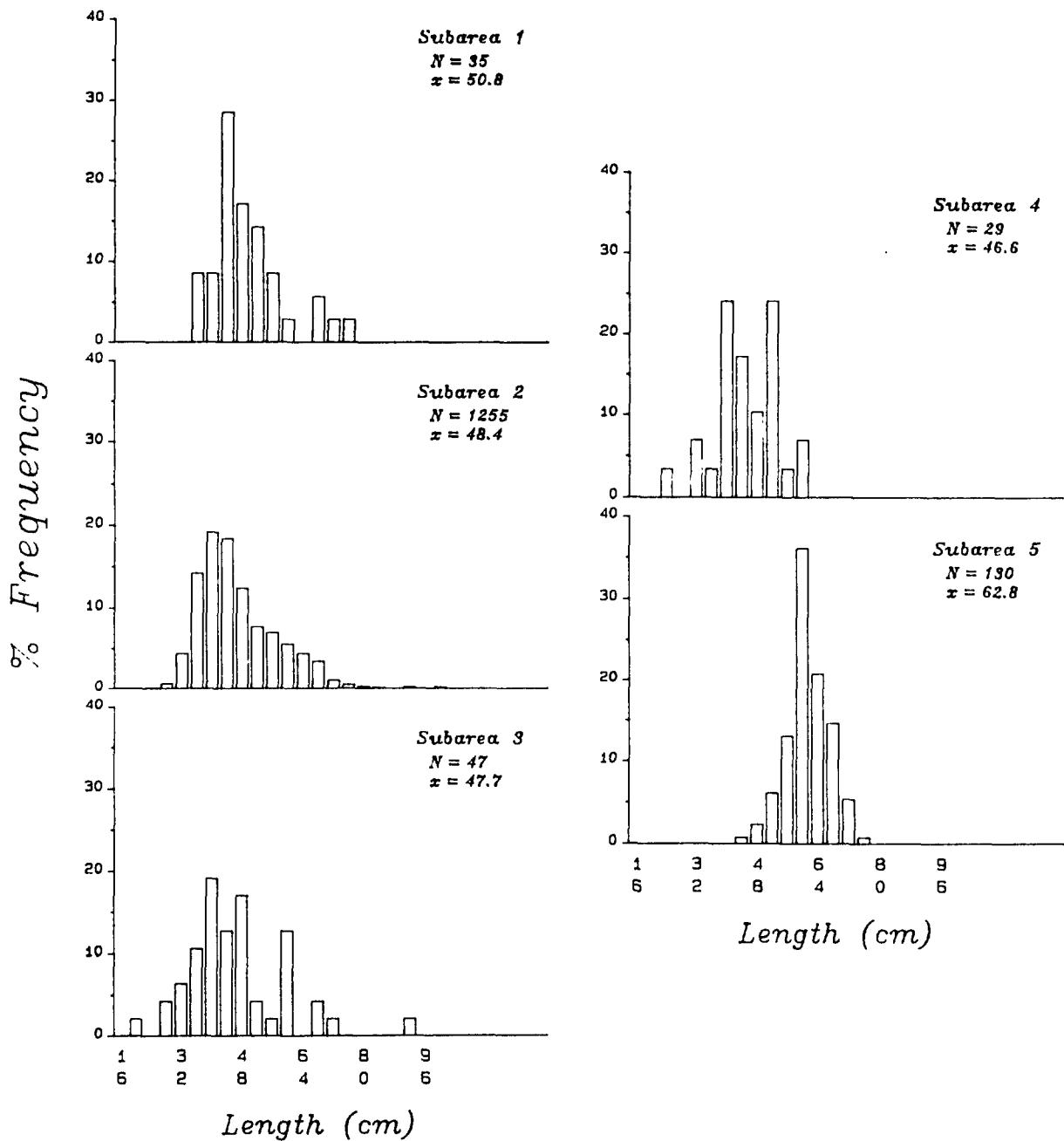


Figure 14. Length frequency distributions by subarea for lake trout caught by angling, McTavish Arm (north), Great Bear Lake, 1984.

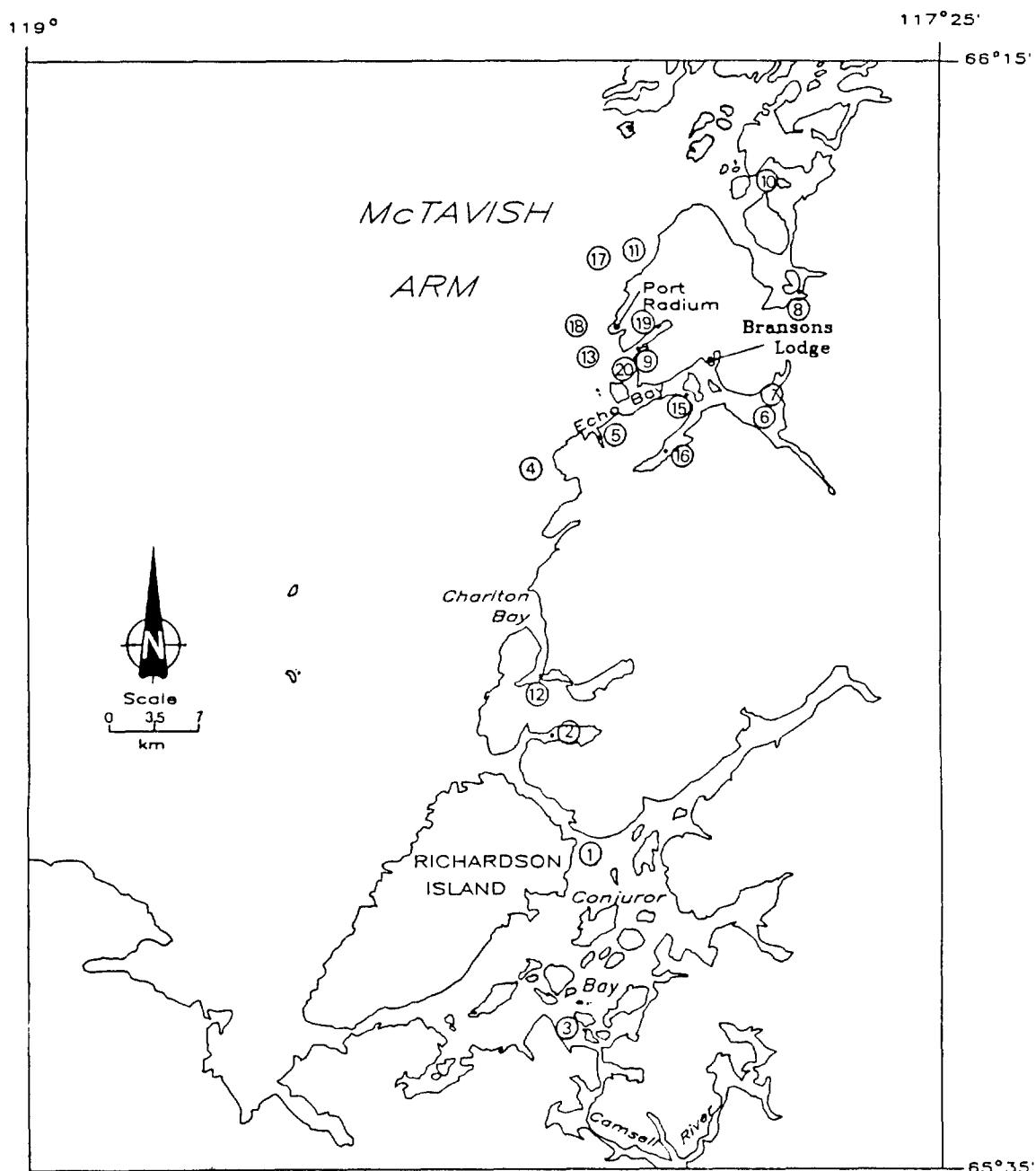


Figure 15. Experimental net locations, McTavish Arm (south), Great Bear Lake, 1984.

Table 15. Catch and catch per unit effort (CPUE) for fish caught by experimental gill nets, McTavish Arm (south), Great Bear Lake, 1984.

| | No. % | 38 | 64 | 89 | 114 | 139 | CPUE ¹ | |
|-----------------|----------|------------|------------|------------|------------|----------|-------------------|----------------|
| | | | | | | | Mesh Size (mm) | Total Catch |
| Lake trout | No. % | 35 28.0 | 29 23.2 | 26 20.8 | 28 22.4 | 7 5.6 | 125 96.9 | 0.34 |
| Lake whitefish | No. % | 2 100.0 | - - | - - | - - | - - | 2 1.6 | <0.01 |
| Round whitefish | No. % | 1 50.0 | 1 50.0 | - - | - - | - - | 2 1.6 | <0.01 |
| Total | No. % | 38 29.5 | 30 23.3 | 26 20.2 | 28 21.7 | 7 5.4 | 129 | 0.35 |

¹No. fish/100 m of gill net/24 h

Table 16. Biological data by length interval for lake trout caught by experimental gill nets, McTavish Arm (south), Great Bear Lake, 1984.

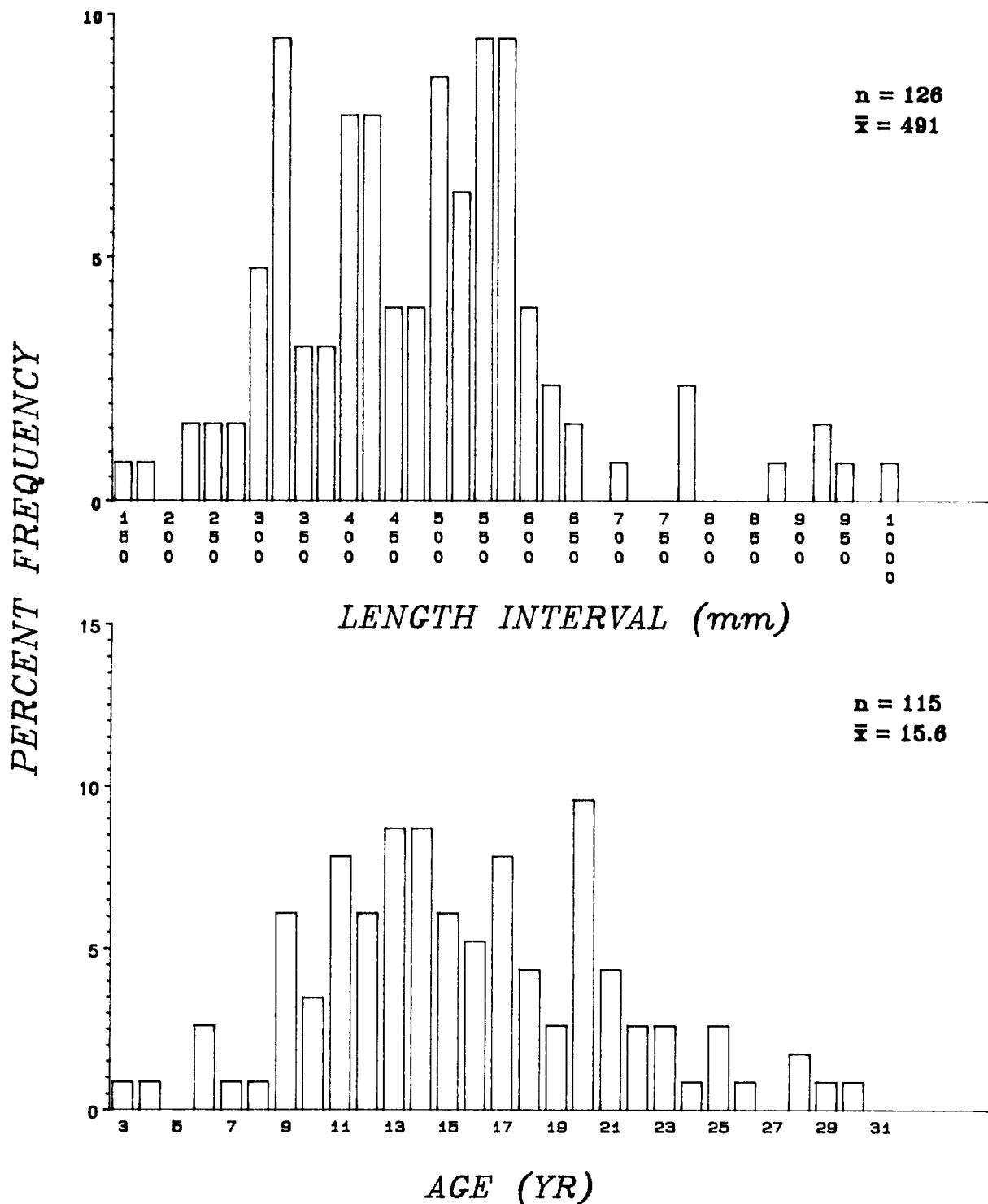


Figure 16. Length and age frequency distributions for lake trout caught by experimental nets, McTavish Arm (south), Great Bear Lake, 1984.

Table 17. Biological data by age group for lake trout caught by experimental gill nets, McTavish Arm (south), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | FEMALES | | | | COMBINED | | | |
|-------------|-------|------|------------------|-----------------|---------|------|------------------|-----------------|----------|------|------------------|-----------------|
| | N | MEAN | LENGTH(MM) SD | WEIGHT(G) SD | N | MEAN | LENGTH(MM) SD | WEIGHT(G) SD | N | MEAN | LENGTH(MM) SD | WEIGHT(G) SD |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| 5 | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - |
| 7 | - | - | - | - | - | - | - | - | - | - | - | - |
| 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | 3 | 358 | 3.2 | 51.7 | 189 | 1.09 | 0 | 1 | 323 | - | 350 | - |
| 11 | 3 | 363 | 4.9 | 53.3 | 153 | 1.12 | 0 | 6 | 355 | 86 | 550 | 446 |
| 12 | 5 | 420 | 2.1 | 85.0 | 127 | 1.15 | 0 | 2 | 405 | 39 | 725 | 247 |
| 13 | 6 | 387 | 2.5 | 69.2 | 380 | 1.13 | 0 | 4 | 385 | 39 | 675 | 171 |
| 14 | 5 | 461 | 4.9 | 115.0 | 418 | 1.14 | 20 | 5 | 487 | 129 | 1310 | 933 |
| 15 | 3 | 502 | 7.3 | 136.7 | 473 | 1.06 | 33 | 4 | 459 | 62 | 1263 | 626 |
| 16 | 5 | 555 | 5.6 | 202.0 | 469 | 1.17 | 80 | 1 | 492 | - | 1300 | - |
| 17 | 2 | 492 | 10.7 | 160.7 | 1051 | 1.23 | 50 | 7 | 513 | 57 | 1514 | 485 |
| 18 | 2 | 465 | 6.4 | 142.5 | 318 | 1.43 | 50 | 3 | 536 | 38 | 1650 | 557 |
| 19 | 2 | 513 | 4.2 | 157.5 | 530 | 1.14 | 0 | 1 | 552 | - | 1900 | - |
| 20 | 8 | 556 | 3.5 | 219.4 | 381 | 1.27 | 88 | 3 | 609 | 134 | 2900 | 1431 |
| 21 | 3 | 555 | 4.2 | 225.0 | 427 | 1.31 | 100 | 2 | 634 | 49 | 2950 | 354 |
| 22 | 2 | 576 | 4.6 | 217.5 | 460 | 1.13 | 50 | 1 | 590 | - | 2900 | - |
| 23 | 1 | 616 | - | 275.0 | - | 1.18 | 100 | 2 | 609 | 16 | 2775 | 106 |
| 24 | - | - | - | - | - | - | - | 1 | 517 | - | 1650 | - |
| 25 | 3 | 571 | 7.3 | 185.0 | 433 | 1.01 | 100 | - | - | - | 571 | 73 |
| 26 | 1 | 504 | - | 130.0 | - | 1.02 | 100 | - | - | - | 1 | 504 |
| 27 | - | - | - | - | - | - | - | 2 | 789 | 11 | 5550 | 1202 |
| 28 | 1 | 876 | - | 720.0 | - | 1.07 | 100 | - | - | - | 1 | 876 |
| 29 | 1 | 935 | - | 970.0 | - | 1.19 | 100 | - | - | - | 1 | 935 |
| TOTAL | 59 | 477 | 132 | 1649 | 1499 | 1.16 | | 50 | 472 | 135 | 115 | 472 |
| MEAN AGE | 16.6 | 492 | 121 | 1649 | 1499 | 1.16 | | 15.7 | 472 | 135 | 15.6 | 472 |
| MEAN AGE | 16.6 | 492 | 121 | 1649 | 1499 | 1.16 | | 15.7 | 472 | 135 | 15.6 | 472 |

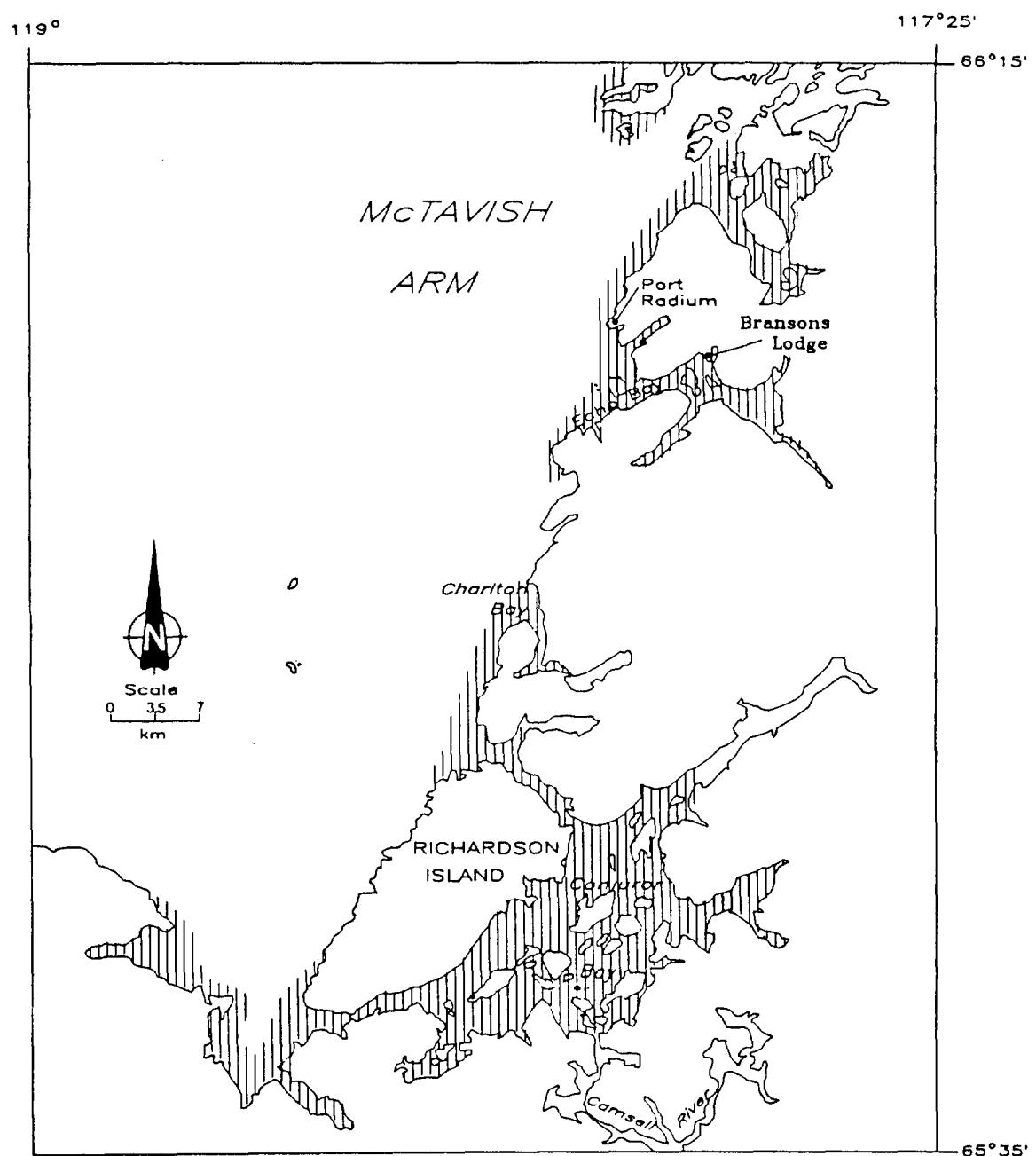


Figure 17. Areas generally fished in McTavish (south), Great Bear Lake, 1984.

Table 10. Biological data by length interval for angled and retained lake trout, McTavish Arm (south), (Bransons Lodge area). Great Bear Lake. 1984.

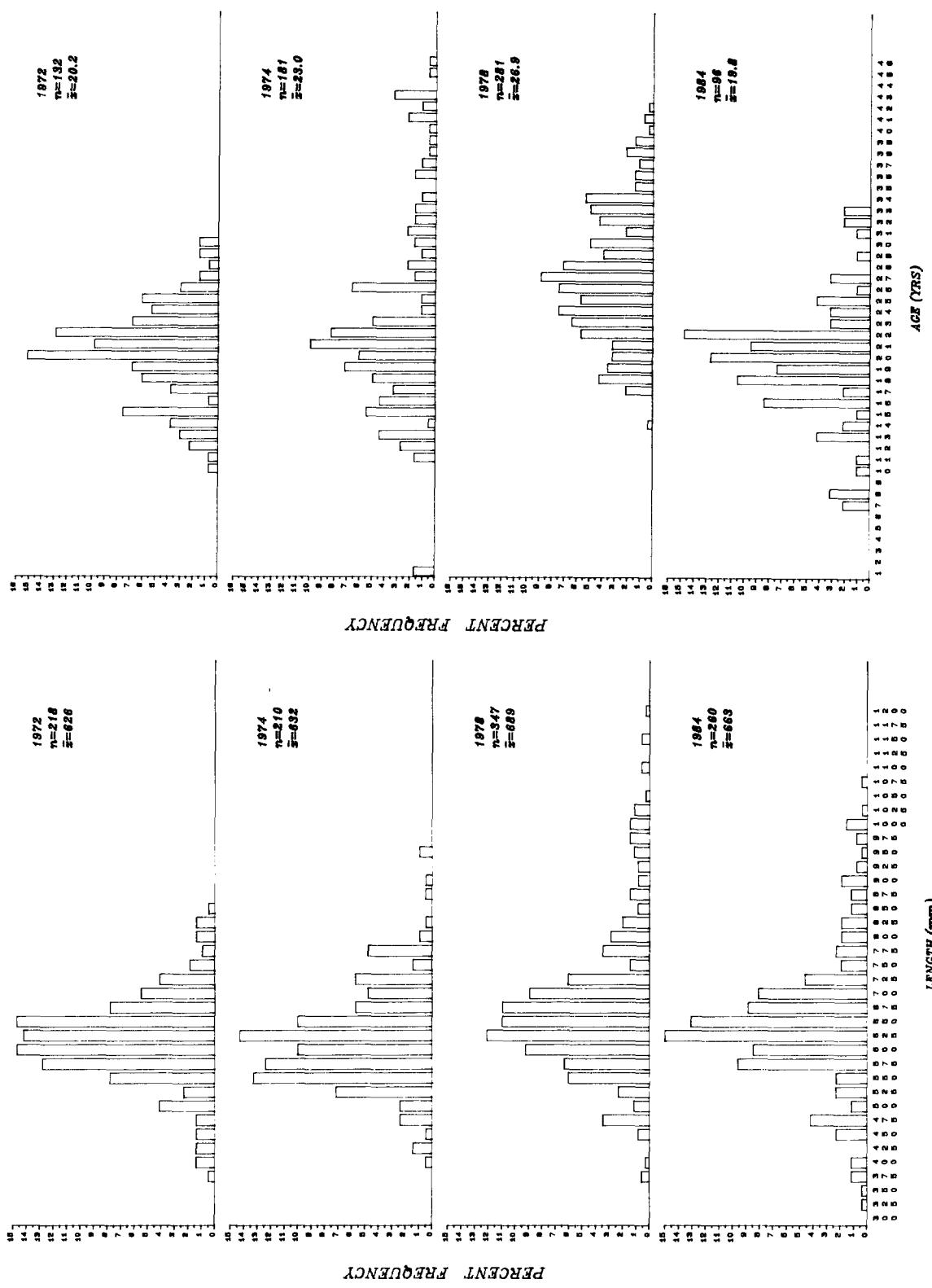


Figure 18. Length and age frequency distributions for angled and retained lake trout, McTavish Arm (south), Great Bear Lake, 1972–1984.

Table 19. Biological data by age group for angled and retained lake trout, McTavish Arm (south), (Bransons Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | |
|-------------|------------|------|-----------|------|-------|------|------------|------|-----------|------|-------|------|------------|------|-----------|------|-------|------|------|
| | LENGTH(MM) | | WEIGHT(G) | | % MAT | | LENGTH(MM) | | WEIGHT(G) | | % MAT | | LENGTH(MM) | | WEIGHT(G) | | % MAT | | |
| | N | MEAN | SD | MEAN | SD | K | N | MEAN | SD | MEAN | SD | K | N | MEAN | SD | MEAN | SD | K | |
| 7 | 1 | 487 | - | 1150 | - | 1.00 | 1 | 465 | - | 1100 | - | 1.09 | 0 | 2 | 476 | 16 | 1125 | 35 | |
| 8 | 1 | 461 | - | 1100 | - | 1.12 | 100 | 2 | 435 | 64 | 925 | 530 | 1.05 | 0 | 3 | 444 | 47 | 983 | 388 |
| 10 | - | - | - | - | - | - | 1 | 487 | - | 650 | - | 0.56 | 0 | 1 | 487 | - | 650 | - | |
| 11 | 1 | 549 | - | 1050 | - | 0.63 | 0 | - | - | - | - | - | - | 1 | 549 | - | 1050 | - | |
| 13 | 2 | 553 | 52 | 2325 | 813 | 1.34 | 50 | 2 | 678 | 18 | 2775 | 884 | 0.88 | 100 | 4 | 616 | 79 | 2550 | 740 |
| 14 | 1 | 476 | - | 1000 | - | 0.93 | 0 | 1 | 423 | - | 850 | - | 1.12 | 0 | 2 | 450 | 37 | 925 | 106 |
| 15 | 1 | 365 | - | 550 | - | 1.13 | 0 | - | - | - | - | - | - | 1 | 365 | - | 550 | - | |
| 16 | 4 | 542 | 92 | 1800 | 585 | 1.14 | 25 | 4 | 511 | 116 | 1813 | 1613 | 1.12 | 25 | 8 | 527 | 98 | 1806 | 1123 |
| 17 | 1 | 494 | - | 1650 | - | 1.37 | 0 | 1 | 707 | - | 3400 | - | 0.96 | 100 | 2 | 601 | 151 | 2525 | 1237 |
| 18 | 4 | 627 | 107 | 3038 | 1110 | 1.20 | 50 | 6 | 606 | 84 | 2642 | 995 | 1.14 | 67 | 10 | 614 | 88 | 2800 | 1001 |
| 19 | 5 | 628 | 29 | 3230 | 617 | 1.29 | 80 | 2 | 542 | 69 | 2025 | 813 | 1.23 | 50 | 7 | 603 | 56 | 2886 | 842 |
| 20 | 9 | 610 | 74 | 2800 | 1058 | 1.18 | 67 | 3 | 606 | 35 | 2717 | 454 | 1.21 | 100 | 12 | 609 | 65 | 2779 | 924 |
| 21 | 1 | 637 | - | 3150 | - | 1.22 | 100 | 8 | 616 | 97 | 3075 | 1149 | 1.23 | 88 | 9 | 618 | 91 | 3083 | 1075 |
| 22 | 7 | 607 | 65 | 2821 | 932 | 1.23 | 100 | 7 | 642 | 66 | 3000 | 558 | 1.15 | 100 | 14 | 624 | 65 | 2911 | 744 |
| 23 | 3 | 711 | 70 | 4500 | 964 | 1.26 | 67 | - | - | - | - | - | - | 3 | 711 | 70 | 4500 | 964 | |
| 24 | 1 | 655 | - | 3600 | - | 1.28 | 100 | 2 | 701 | 97 | 4750 | 1485 | 1.37 | 100 | 3 | 685 | 73 | 4367 | 1242 |
| 25 | 3 | 687 | 28 | 3900 | 527 | 1.20 | 100 | 1 | 595 | - | 3700 | - | 1.76 | 100 | 4 | 664 | 51 | 3850 | 442 |
| 26 | - | - | - | - | - | - | - | 1 | 808 | - | 5200 | - | 0.99 | 100 | 1 | 808 | - | 5200 | - |
| 27 | 1 | 559 | - | 2200 | - | 1.26 | 100 | 2 | 709 | 37 | 4525 | 672 | 1.27 | 100 | 3 | 659 | 90 | 3750 | 1424 |
| 28 | - | - | - | - | - | - | 1 | 651 | - | 4150 | - | 1.50 | 100 | 1 | 651 | - | 4150 | - | |
| 31 | - | - | - | - | - | - | 1 | 601 | - | 2950 | - | 1.36 | 100 | 1 | 601 | - | 2950 | - | |
| 32 | 1 | 690 | - | 3750 | - | 1.14 | 100 | 1 | 764 | - | 5050 | - | 1.13 | 100 | 2 | 727 | 52 | 4400 | 919 |
| 33 | 1 | 945 | - | 8950 | - | 1.06 | 100 | 1 | 690 | - | 3800 | - | 1.16 | 100 | 2 | 818 | 180 | 6375 | 3642 |
| TOTAL | 48 | 608 | 101 | 2884 | 1453 | 1.19 | 48 | 609 | 103 | 2869 | 1315 | 1.17 | 96 | 608 | 102 | 2877 | 1379 | 1.18 | |
| MEAN AGE | | 19.7 | | | | | | 20.0 | | | | | | 19.8 | | | | | |

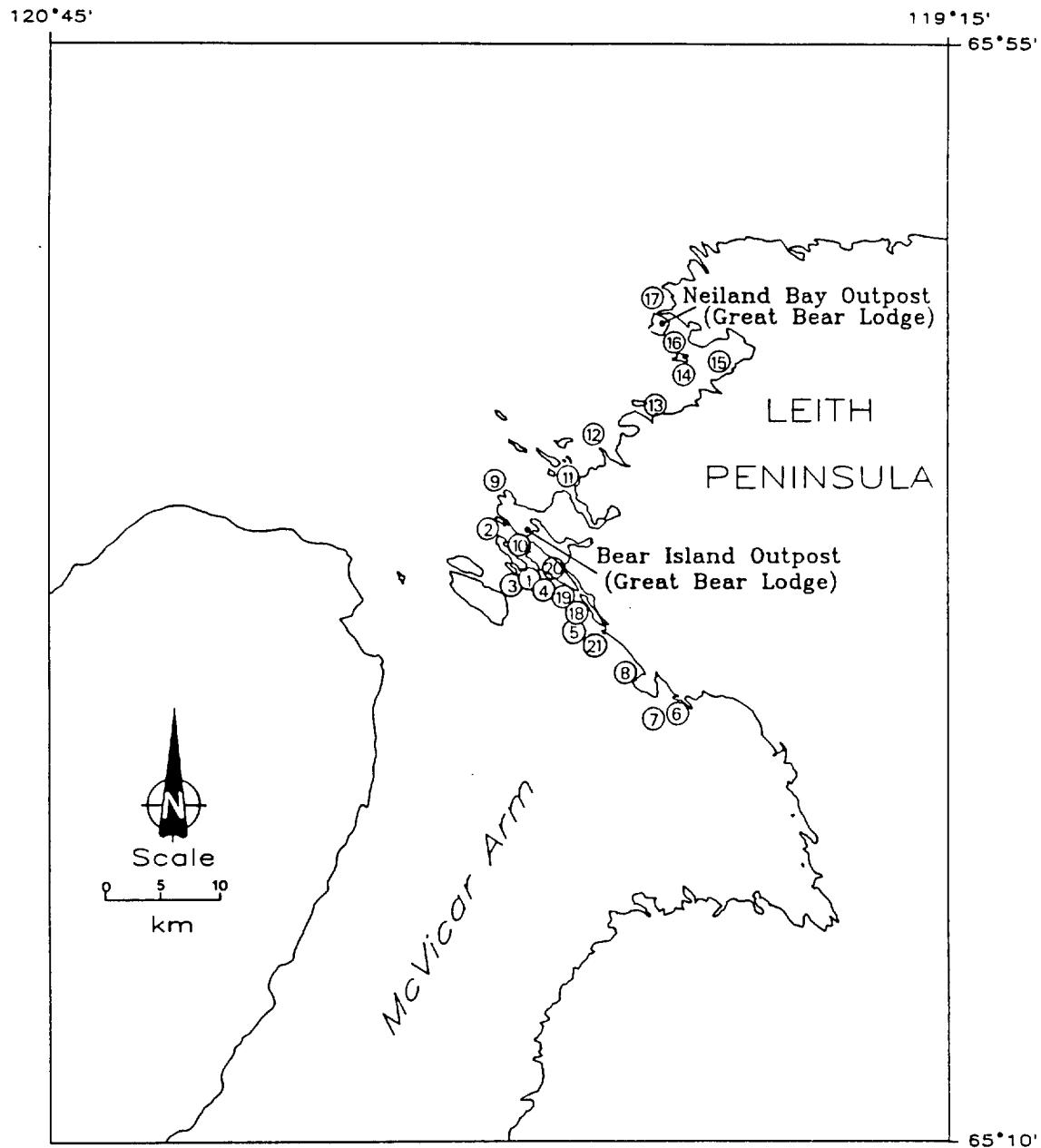


Figure 19. Experimental net locations, McVicar Arm (north), Great Bear Lake, 1984.

Table 20. Catch and catch per unit effort (CPUE) for fish caught by experimental gill nets, McVicar Arm (north), Great Bear Lake, 1984.

| | No. % | 38 | 64 | 89 | 114 | 139 | CPUE ¹ | |
|-----------------|----------|------------|------------|------------|------------|------------|-------------------|-------------------|
| | | | | | | | Total Catch | CPUE ¹ |
| Lake trout | No. % | 34 23.0 | 39 26.4 | 28 18.9 | 34 23.0 | 13 8.8 | 148 56.7 | 0.26 |
| Lake whitefish | No. % | 3 8.3 | 5 13.9 | 3 8.3 | 12 33.3 | 13 36.1 | 36 13.8 | 0.06 |
| Round whitefish | No. % | 2 16.7 | 10 83.3 | - - | - - | - - | - - | 0.02 |
| Northern pike | No. % | 1 50.0 | - - | 1 50.0 | - - | - - | - - | <0.01 |
| Arctic grayling | No. % | - - | - - | - - | - - | 1 100.0 | 1 0.4 | <0.01 |
| Lake cisco | No. % | 20 32.3 | 39 62.9 | 2 3.2 | 1 1.6 | - - | 62 23.8 | 0.11 |
| Total | No. % | 60 23.0 | 93 35.6 | 34 13.0 | 47 18.0 | 27 10.3 | 261 | 0.46 |

¹No. fish/100 m of gill net/24 h

Table 21. Biological data by length interval for lake trout caught by experimental gill nets, McVicar Arm (north), Great Bear Lake, 1984.

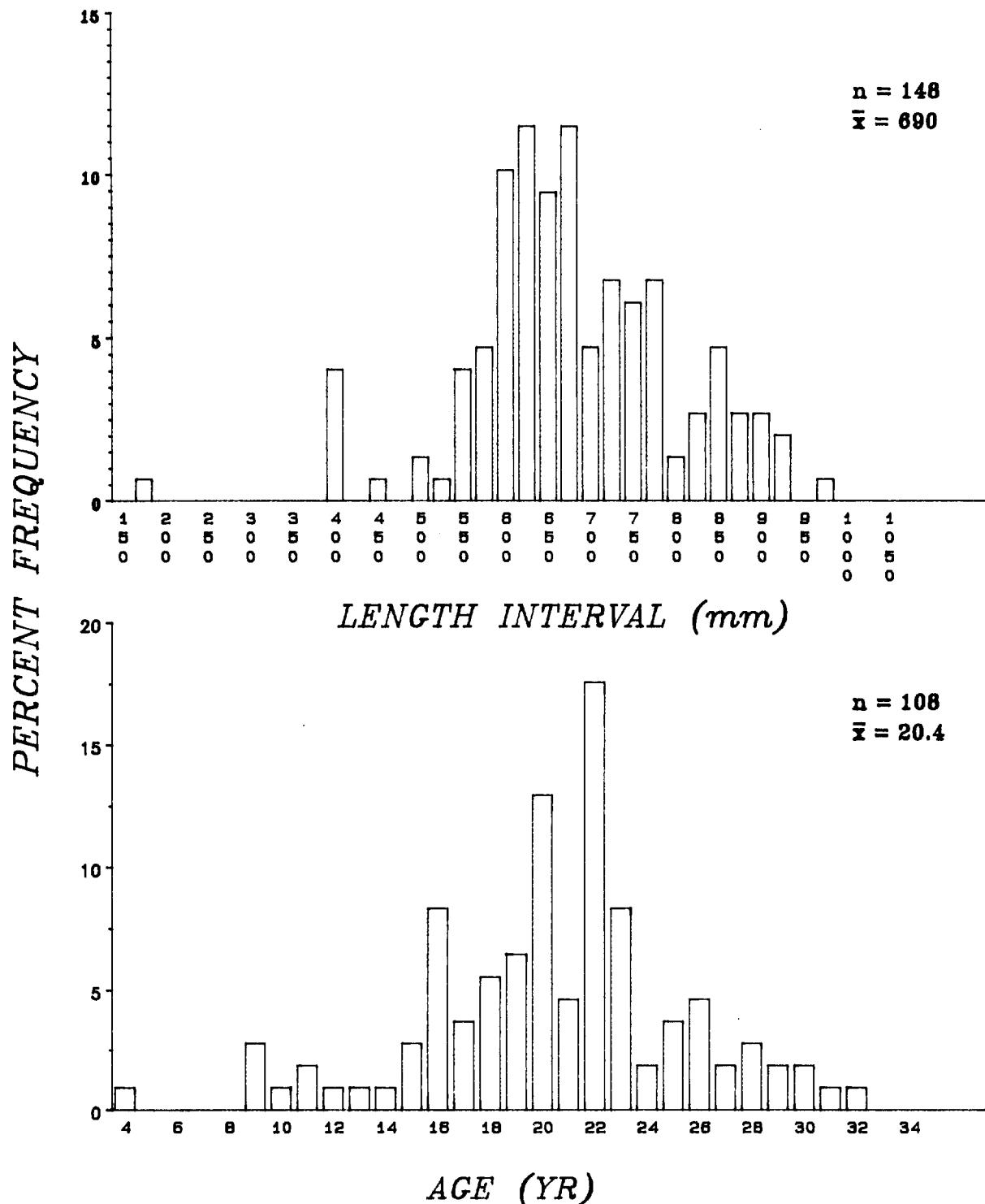


Figure 20. Length and age frequency distributions for lake trout caught by experimental nets, McVicar Arm (north), Great Bear Lake, 1984.

Table 22. Biological data by age group for lake trout caught by experimental gill nets, McVicar Arm (north), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | FEMALES | | | | COMBINED | | | |
|-------------|-------------------------|----------|------------------------|----------|-------------------------|----------|------------------------|----------|-------------------------|----------|------------------------|----------|
| | LENGTH(MM) N MEAN SD | | WEIGHT(G) N MEAN SD | | LENGTH(MM) N MEAN SD | | WEIGHT(G) N MEAN SD | | LENGTH(MM) N MEAN SD | | WEIGHT(G) N MEAN SD | |
| | K | % MAT | K | % MAT | K | % MAT | K | % MAT | K | % MAT | K | % MAT |
| 4 | - | - | - | - | - | - | - | - | - | - | 50 | - |
| 9 | 1 | 400 | - | 650 | - | 1.02 | 0 | 1 | 457 | - | 850 | 304 |
| 10 | 1 | 401 | - | 700 | - | 1.09 | 0 | 1 | 57 | - | 700 | - |
| 11 | 1 | 416 | - | 800 | - | 1.11 | 0 | 1 | 416 | - | 825 | 35 |
| 12 | - | - | - | - | - | - | - | - | 900 | - | 900 | - |
| 13 | 1 | 502 | - | 1300 | - | 1.03 | 0 | 1 | 421 | 0 | 1300 | - |
| 14 | - | - | - | - | - | - | - | - | - | - | 1950 | - |
| 15 | 1 | 580 | - | 1950 | - | 1.00 | 0 | 1 | 555 | - | 1950 | - |
| 16 | 7 | 631 | 67 | 2821 | 724 | 1.11 | 100 | 2 | 614 | 57 | 2300 | 283 |
| 17 | 3 | 617 | 19 | 2833 | 76 | 1.21 | 100 | 1 | 635 | - | 3050 | - |
| 18 | 3 | 658 | 63 | 3367 | 797 | 1.17 | 100 | 3 | 683 | 158 | 4483 | 2740 |
| 19 | 4 | 721 | 90 | 4963 | 1499 | 1.32 | 100 | 3 | 661 | 81 | 3350 | 700 |
| 20 | 7 | 757 | 113 | 5136 | 2181 | 1.12 | 100 | 7 | 703 | 97 | 4050 | 1370 |
| 21 | 1 | 628 | - | 2850 | - | 1.15 | 100 | 4 | 663 | 65 | 3388 | 912 |
| 22 | 9 | 682 | 70 | 3628 | 1161 | 1.12 | 100 | 10 | 679 | 65 | 3700 | 888 |
| 23 | 4 | 686 | 137 | 4213 | 2052 | 1.26 | 100 | 5 | 710 | 122 | 4610 | 2171 |
| 24 | - | - | - | - | - | - | - | 2 | 840 | 141 | 6900 | 2828 |
| 25 | 2 | 656 | 89 | 3450 | 1626 | 1.17 | 100 | 2 | 860 | 90 | 6325 | 1450 |
| 26 | - | - | - | - | - | - | - | 5 | 706 | 76 | 4500 | 1295 |
| 27 | - | - | - | - | - | - | - | 2 | 915 | 36 | 7225 | 2086 |
| 28 | - | - | - | - | - | - | - | 3 | 795 | 135 | 6167 | 2130 |
| 29 | 1 | 767 | - | 4750 | - | 1.05 | 100 | 1 | 775 | - | 5100 | - |
| 30 | 1 | 854 | - | 7000 | - | 1.12 | 100 | 1 | 984 | - | 10550 | - |
| 31 | 1 | 877 | - | 7050 | - | 1.05 | 100 | - | - | - | 602 | - |
| 32 | 1 | 877 | - | 7050 | - | 1.05 | 100 | - | - | - | 877 | - |
| TOTAL | 48 | | | | 58 | 696 | 127 | 21.6 | 4212 | 2051 | 1.17 | 108 |
| MEAN AGE | 668 | 118 | 3700 | 1818 | 1.15 | | | | 20.4 | 676 | 134 | 3913 |
| MEAN AGE | 19.6 | | | | | | | | | | | 1999 |
| | | | | | | | | | | | | 1.16 |

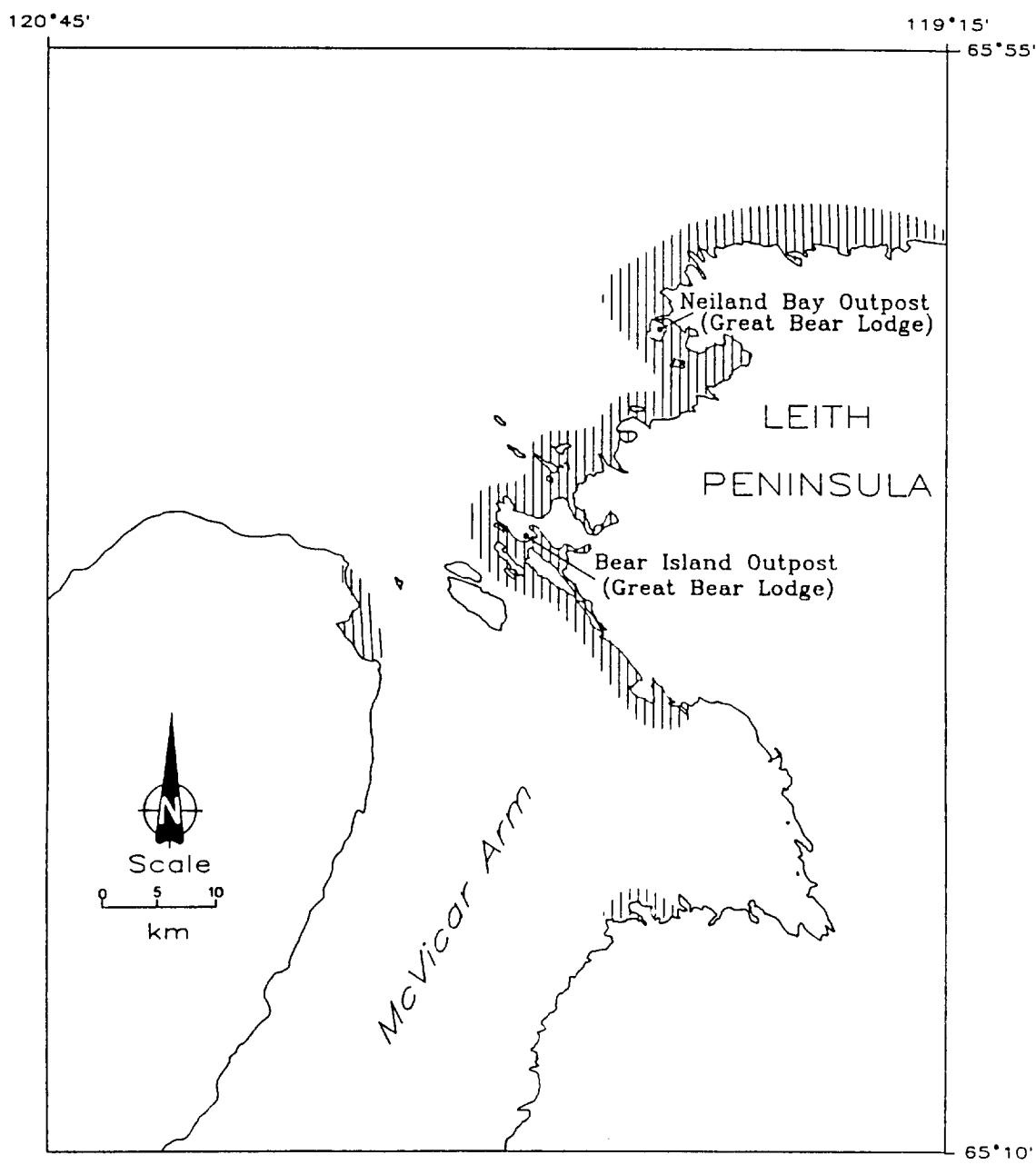


Figure 21. Areas generally fished in McVicar Arm (north), Great Bear Lake, 1984.

Table 23. Biological data by length interval for angled and retained lake trout, McVicar Arm (north), (Great Bear Lodge area), Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | |
|----------------------------|------------|------|-----------|------|------------|-----|-----------|------|------------|-------|-----------|------|
| | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | |
| | N | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN |
| 575 | - | - | - | - | 2 | 595 | 3100 | 636 | 2 | 595 | 3100 | 636 |
| 600 | 2 | 608 | 3125 | 247 | 1.39 | 100 | 3 | 608 | 2917 | 1.47 | 609 | 2900 |
| 625 | 4 | 633 | 3294 | 761 | 1.30 | 100 | - | - | - | - | 633 | 3294 |
| 650 | 1 | 668 | 3950 | - | 1.33 | 100 | - | - | - | - | 668 | 3950 |
| 675 | 4 | 683 | 3700 | 439 | 1.16 | 100 | 2 | 688 | 4800 | 1.47 | 100 | 685 |
| 700 | 3 | 711 | 4075 | 390 | 1.14 | 100 | 1 | 710 | 3300 | 0.92 | 100 | 711 |
| 725 | 1 | 735 | 5000 | - | 1.26 | 100 | - | - | - | - | 735 | 5000 |
| 750 | 2 | 764 | 4875 | 460 | 1.09 | 100 | 1 | 752 | 5200 | - | 1.22 | 760 |
| 775 | 1 | 794 | 5600 | - | 1.12 | 100 | - | - | - | - | 794 | 5600 |
| 800 | - | - | - | - | - | 1 | 820 | 7250 | - | 1.31 | 100 | 820 |
| 825 | 1 | 840 | 7000 | - | 1.18 | 100 | - | - | - | - | 840 | 7000 |
| 850 | 1 | 872 | 8000 | - | 1.21 | 100 | 3 | 856 | 7700 | 1.23 | 100 | 860 |
| 875 | 2 | 887 | 8188 | 725 | 1.17 | 100 | 3 | 886 | 8795 | 1.26 | 100 | 887 |
| 900 | 1 | 924 | 9725 | - | 1.23 | 100 | 3 | 904 | 8558 | 1.16 | 100 | 909 |
| 925 | 1 | 941 | 8525 | - | 1.02 | 100 | 2 | 936 | 9125 | 1.591 | 1.11 | 937 |
| 950 | 2 | 958 | 10175 | 955 | 1.16 | 100 | 2 | 958 | 11750 | 1.34 | 100 | 958 |
| 1025 | 1 | 1040 | 11400 | - | 1.01 | 100 | 1 | 1030 | 12100 | - | 1.11 | 100 |
| TOTAL | 27 | 765 | 5634 | 2671 | 1.19 | 24 | 809 | 7055 | 3041 | 1.26 | 52 | 782 |
| MEAN | | | | | | | | | | | | |

a) Bear Island Outpost and Neiland Bay Outpost combined.

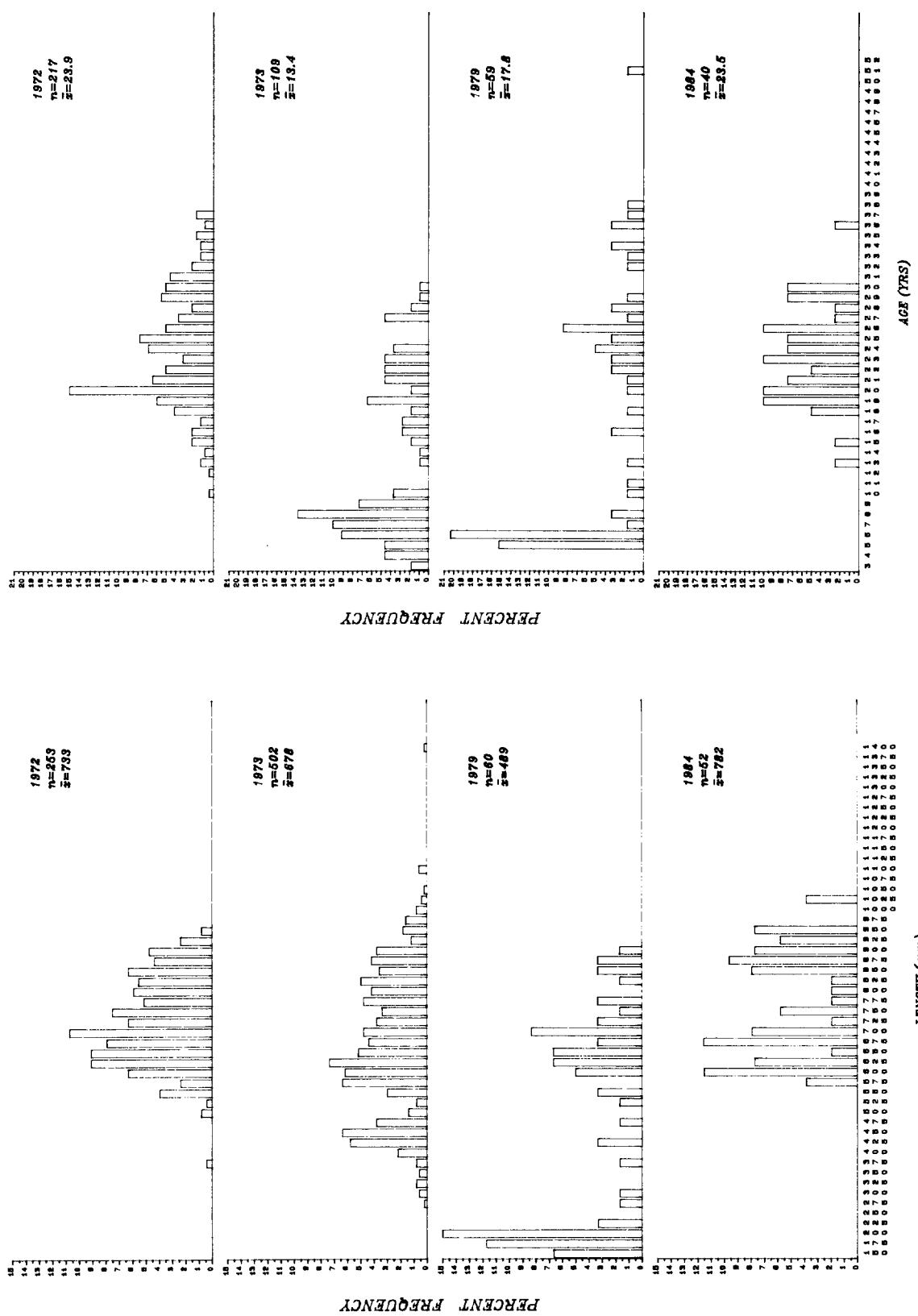


Figure 22. Length and age frequency distributions for angled and retained lake trout, McVicar Arm (north), Great Bear Lake, 1972-1984.

Table 24. Biological data by age group for angled and retained lake trout, McVicar Arm (north), (Great Bear Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | |
|-------------|------------|------|-----------|------|----------------|------|------------|-----------|----------------|-------|------------|-----------|----------------|------|------|------|-------|------|------|
| | LENGTH(MM) | | WEIGHT(G) | | % N MEAN SD | K | LENGTH(MM) | WEIGHT(G) | % N MEAN SD | K | LENGTH(MM) | WEIGHT(G) | % N MEAN SD | K | MAT | | | | |
| | N | MEAN | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN | SD |
| 13 | - | - | - | - | - | - | 1 | 608 | - | 2100 | - | 1 | 608 | - | 2100 | - | 0.93 | 0 | |
| 15 | 1 | 695 | - | 3550 | - | 1.06 | 100 | - | - | - | - | 1 | 695 | - | 3550 | - | 1.06 | 100 | |
| 16 | - | - | - | - | - | - | 2 | 654 | 79 | 3425 | 177 | 1.29 | 50 | 2 | 654 | 79 | 3425 | 177 | |
| 18 | 2 | 700 | 26 | 3463 | 230 | 1.01 | 100 | 2 | 596 | 6 | 3075 | 601 | 1.45 | 50 | 4 | 648 | 62 | 3269 | 434 |
| 19 | 2 | 670 | 92 | 3975 | 1450 | 1.30 | 100 | 1 | 752 | - | 5200 | - | 1.22 | 100 | 4 | 677 | 78 | 3888 | 1420 |
| 20 | 2 | 753 | 168 | 5613 | 3376 | 1.24 | 100 | 1 | 681 | - | 4100 | - | 1.30 | 100 | 3 | 729 | 126 | 5108 | 2542 |
| 21 | 2 | 691 | 21 | 3963 | 477 | 1.20 | 100 | - | - | - | - | - | - | 2 | 691 | 21 | 3963 | 477 | |
| 22 | 1 | 637 | - | 3200 | - | 1.24 | 100 | 3 | 933 | 84 | 9775 | 2025 | 1.20 | 100 | 4 | 859 | 163 | 8131 | 3680 |
| 23 | 2 | 805 | 49 | 6100 | 1273 | 1.16 | 100 | 1 | 615 | - | 3150 | - | 1.35 | 100 | 3 | 742 | 115 | 5117 | 1926 |
| 24 | 1 | 634 | - | 4300 | - | 1.69 | 100 | 2 | 792 | 138 | 7330 | 2587 | 1.47 | 100 | 3 | 739 | 133 | 6320 | 2531 |
| 25 | 4 | 768 | 134 | 5219 | 2555 | 1.08 | 100 | - | - | - | - | - | - | 4 | 768 | 134 | 5219 | 2555 | |
| 26 | - | - | - | - | - | - | 1 | 963 | - | 12000 | - | 1.34 | 100 | 1 | 963 | - | 12000 | - | |
| 27 | - | - | - | - | - | - | 1 | 963 | - | - | - | - | - | 1 | 963 | - | - | - | |
| 28 | 1 | 890 | - | 7675 | - | 1.09 | 100 | - | - | - | - | - | - | 1 | 890 | - | 7675 | - | |
| 29 | - | - | - | - | - | - | 3 | 936 | 100 | 8150 | 354 | 1.20 | 100 | 3 | 936 | 100 | 8150 | 354 | |
| 30 | 2 | 860 | 255 | 7863 | 5003 | 1.19 | 100 | 1 | 926 | - | 8000 | - | 1.01 | 100 | 3 | 882 | 184 | 7908 | 3538 |
| 36 | - | - | - | - | - | - | 1 | 900 | - | 8700 | - | 1.19 | 100 | 1 | 900 | - | 8700 | - | |
| TOTAL | 20 | 744 | 118 | 5078 | 2313 | 1.18 | 19 | 797 | 155 | 6474 | 3182 | 1.27 | 40 | 766 | 138 | 5653 | 2824 | 1.22 | |
| MEAN | | | | | | | | | | | | | | 23.5 | | | | | |
| MEAN AGE | 23.4 | | | | | | | | | | | | | | | | | | |

a) Bear Island Outpost and Neiland Bay Outpost combined.

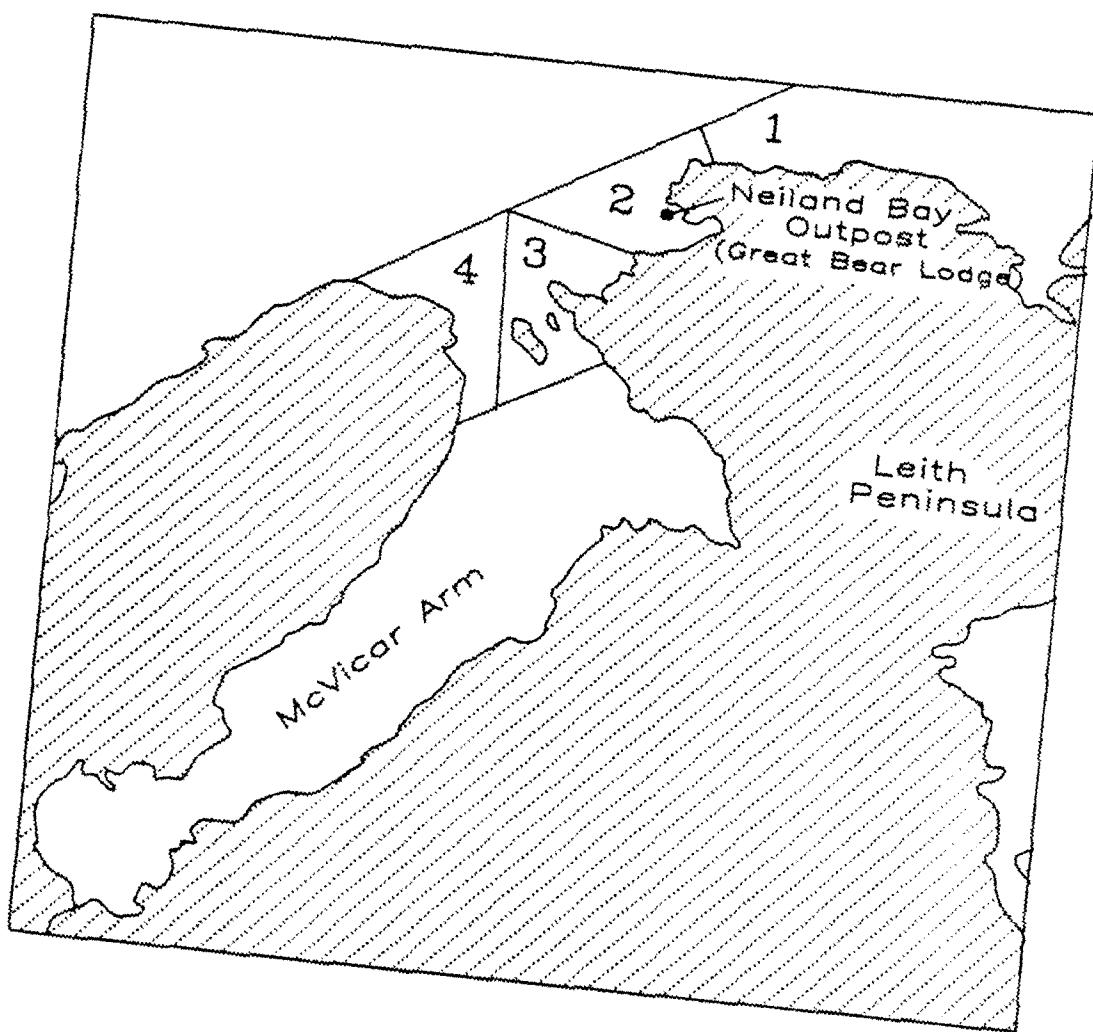


Figure 23. Subarea locations used in the intensive creel census program
Neiland Bay Outpost Camp, McVicar Arm (north), Great Bear
Lake, 1984.

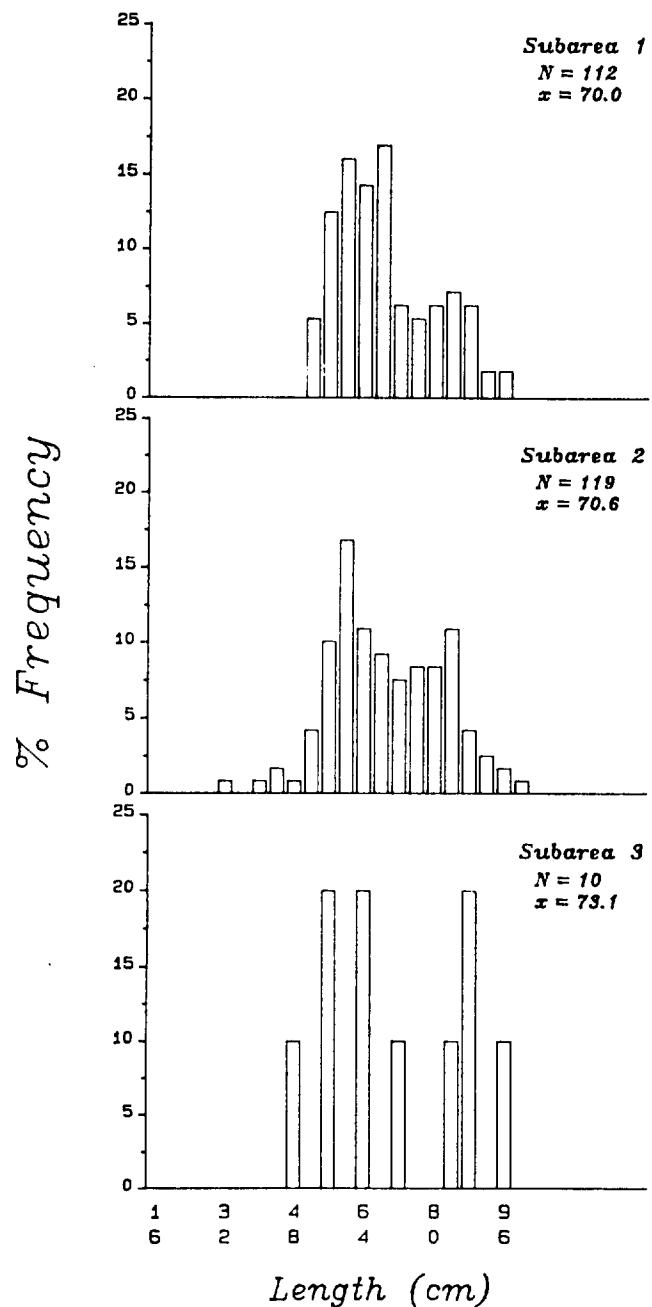


Figure 24. Length frequency distributions by subarea for lake trout caught by angling, Neiland Bay Outpost Camp McVicar Arm (north), Great Bear Lake, 1984.

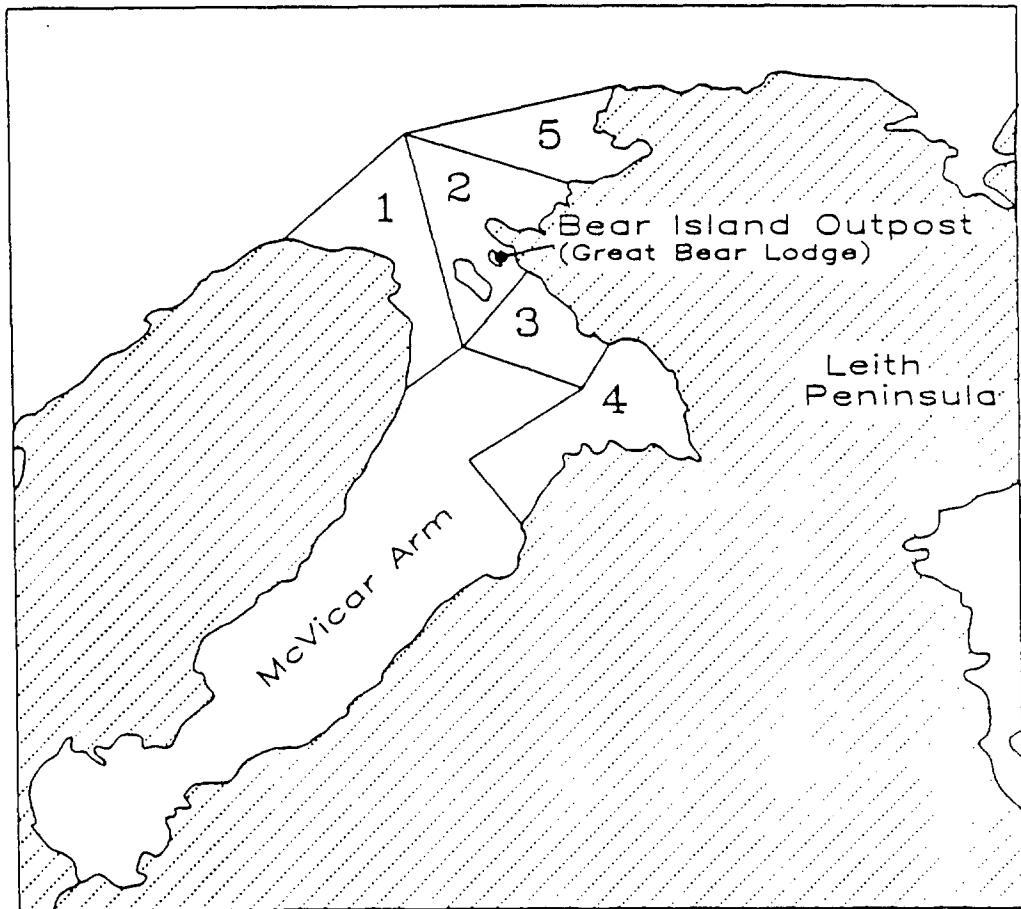


Figure 25. Subarea locations used in the intensive creel census program
Bear Island Outpost Camp, McVicar Arm (north), Great Bear
Lake, 1984.

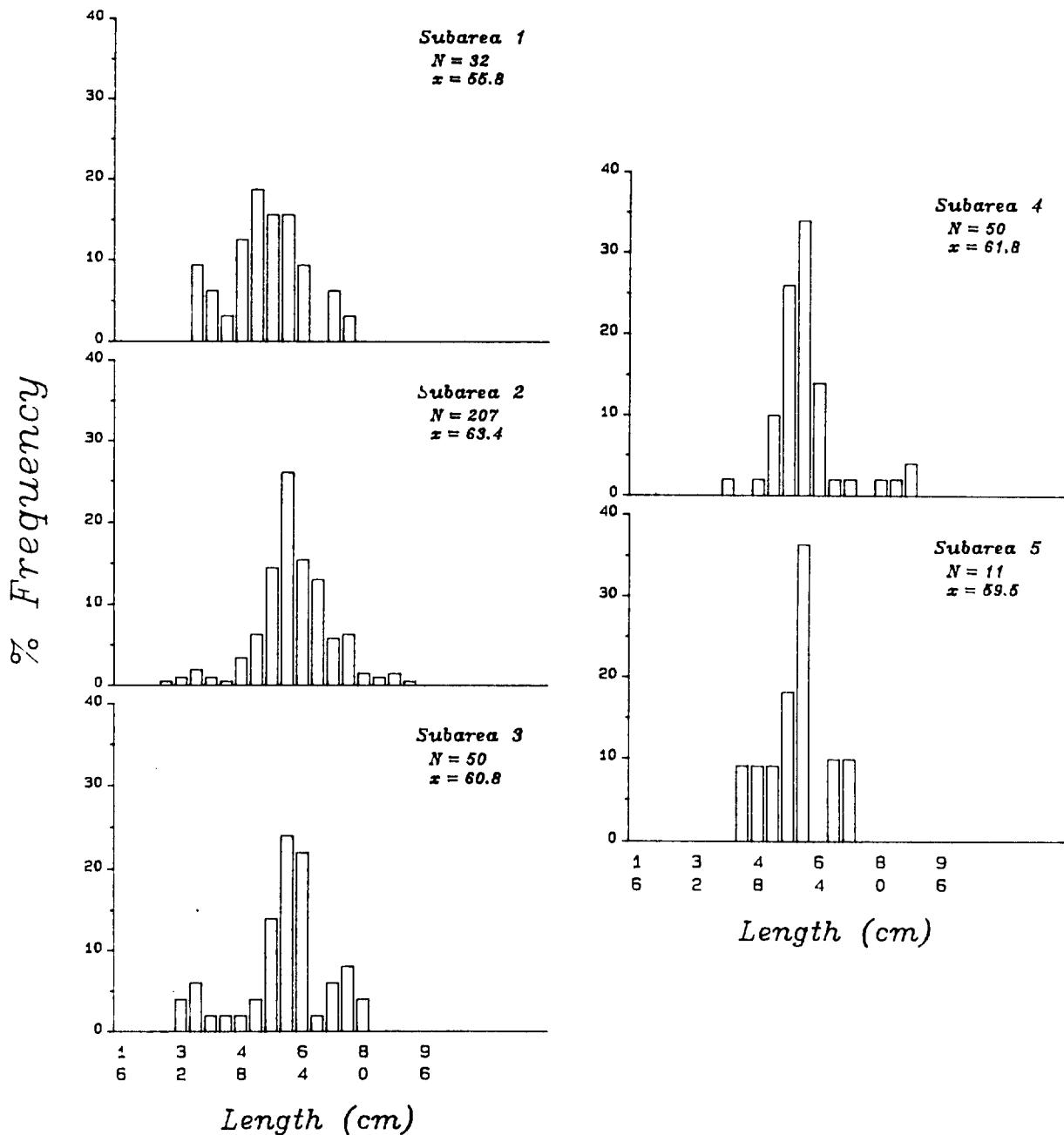


Figure 26. Length frequency distributions by subarea for lake trout caught by angling, Bear Island Outpost Camp, McVicar Arm (north), Great Bear Lake, 1984.

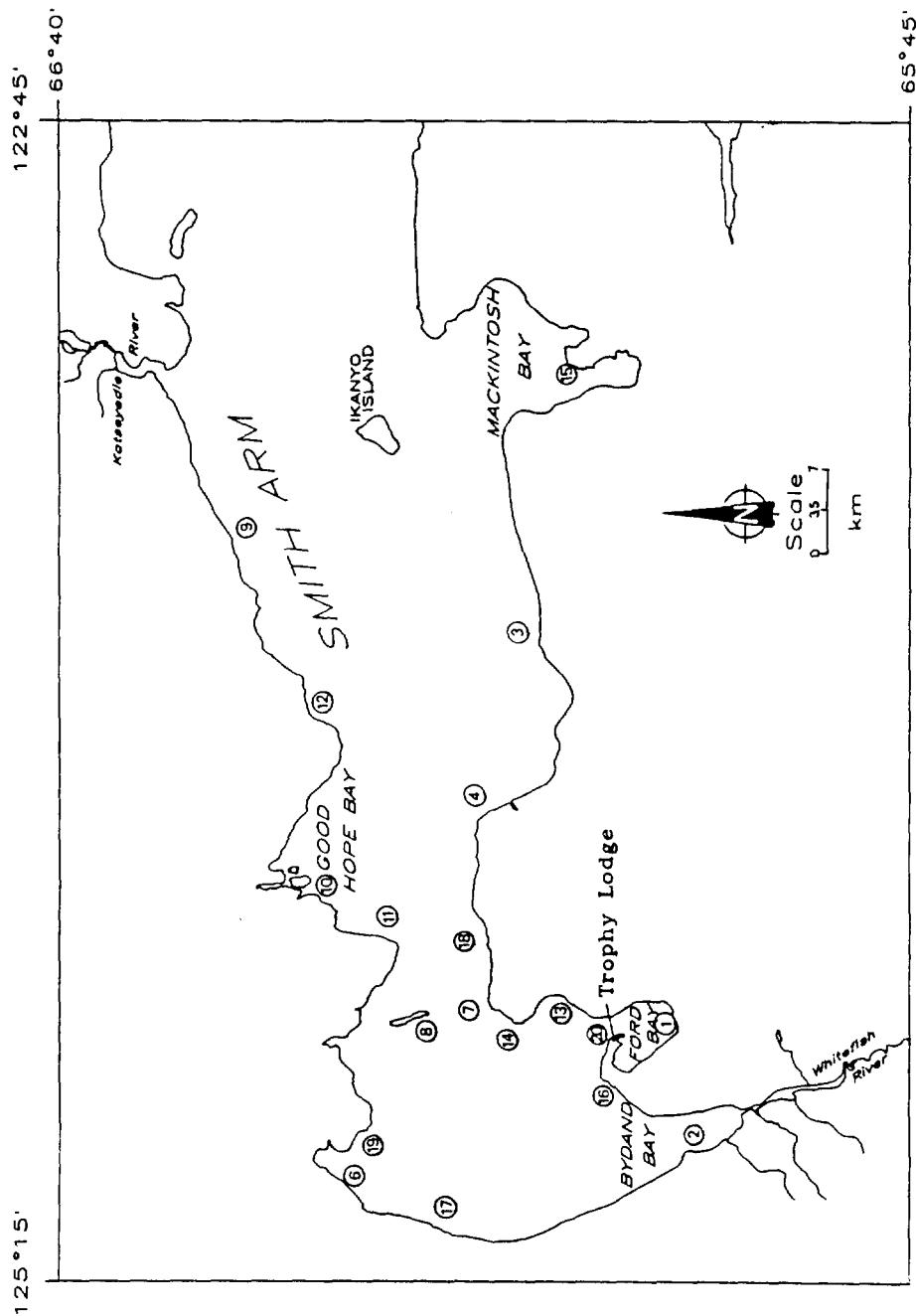


Figure 27. Experimental net locations, Smith Arm, Great Bear Lake, 1985.

Table 25. Catch and catch per unit effort (CPUE) for fish caught by experimental gill nets, Smith Arm, Great Bear Lake, 1985.

| | No. | % | Mesh Size (mm) | | | | Total Catch | CPUE ¹ |
|-----------------|-----|------|----------------|------|------|------|----------------|-------------------|
| | | | 38 | 64 | 89 | 114 | | |
| Lake trout | No. | | 34 | 34 | 42 | 53 | 38 | 201 |
| | % | 16.9 | 16.9 | 20.9 | 26.4 | 33 | 18.9 | 0.50 |
| Lake whitefish | No. | | 27 | 41 | 69 | 57 | 62 | 35.6 |
| | % | 10.5 | 16.0 | 27.0 | 22.3 | 24.2 | 45.4 | 0.63 |
| Round whitefish | No. | | 10 | 25 | - | - | - | 256 |
| | % | 28.6 | 71.4 | - | - | - | 45.4 | 0.09 |
| Lake cisco | No. | | 29 | 4 | - | - | - | 35 |
| | % | 87.9 | 12.1 | - | - | - | 6.2 | 0.09 |
| Arctic grayling | No. | | 7 | 6 | 20 | 5.7 | - | 33 |
| | % | 20.0 | 17.1 | 57.1 | 57.1 | 5.7 | - | 5.9 |
| Northern pike | No. | | - | 3 | 1 | - | - | 35 |
| | % | - | 75.0 | 25.0 | - | - | - | 6.2 |
| Total | No. | | 107 | 113 | 132 | 112 | 100 | 0.09 |
| | % | 19.0 | 20.0 | 23.4 | 19.9 | 19.9 | 17.7 | 1.39 |

¹No. fish/100 m of gill net/24 h

Table 26. Biological data by length interval for lake trout caught by experimental gill nets. Smith Arm, Great Bear Lake, 1985.

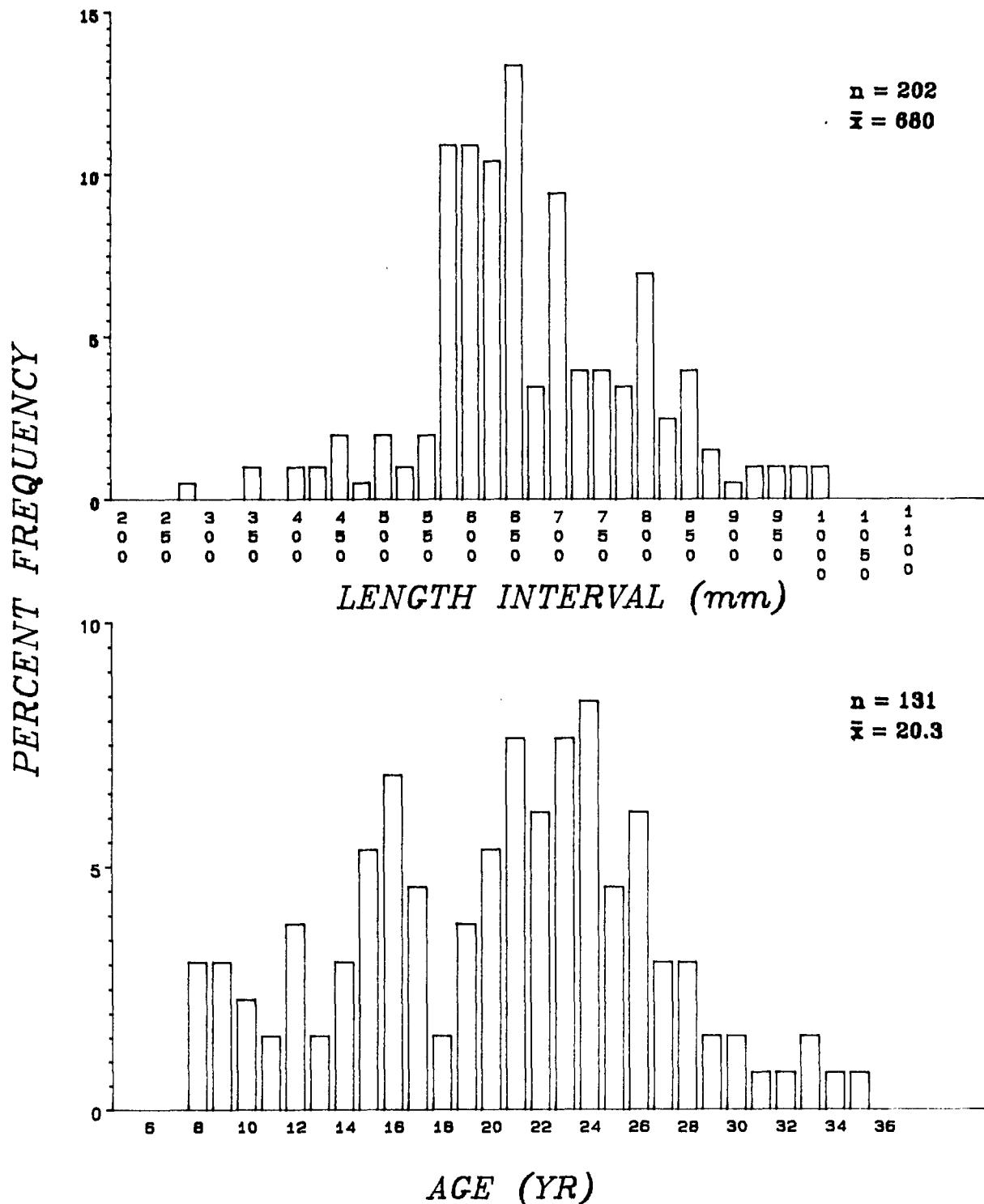


Figure 28. Length and age frequency distributions for lake trout caught by experimental nets, Smith Arm, Great Bear Lake, 1985.

Table 27. Biological data by age group for lake trout caught by experimental gill nets, Smith Arm, Great Bear Lake, 1985.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | |
|-------------|-------------------------|-----|----------------------|------|------|------|-------------------------|-----|----------------------|------|-------|------|-------------------------|------|----------------------|------|------|------|------|
| | LENGTH(MM) N MEAN SD | | WEIGHT(G) MEAN SD | | % | | LENGTH(MM) N MEAN SD | | WEIGHT(G) MEAN SD | | % | | LENGTH(MM) N MEAN SD | | WEIGHT(G) MEAN SD | | % | | |
| | K | MAT | K | MAT | K | MAT | K | MAT | K | MAT | K | MAT | K | MAT | K | MAT | K | MAT | |
| 8 | 4 | 390 | 33 | 658 | 170 | 1.09 | 0 | - | - | - | - | - | 4 | 390 | 33 | 658 | 170 | 1.09 | |
| 9 | 4 | 402 | 71 | 813 | 409 | 1.16 | 0 | 1 | 470 | - | 1.16 | 0 | 4 | 402 | 71 | 813 | 409 | 1.16 | |
| 10 | 2 | 515 | 18 | 1175 | 247 | 0.86 | 50 | 1 | 1200 | - | 1.16 | 0 | 3 | 500 | 29 | 1183 | 176 | 0.96 | |
| 11 | 2 | 518 | 42 | 1325 | 177 | 0.96 | 0 | - | - | - | 2 | 518 | 42 | 1325 | 177 | 0.96 | 0 | | |
| 12 | 3 | 549 | 83 | 1867 | 931 | 1.06 | 67 | 2 | 550 | 64 | 1.18 | 50 | 5 | 549 | 67 | 1910 | 712 | 1.11 | |
| 13 | 2 | 550 | 42 | 1825 | 318 | 1.10 | 50 | - | - | - | 2 | 550 | 42 | 1825 | 318 | 1.10 | 50 | | |
| 14 | 3 | 644 | 120 | 3233 | 1502 | 1.14 | 67 | 1 | 458 | - | 1.20 | 0 | 4 | 598 | 135 | 2713 | 1609 | 1.16 | |
| 15 | 4 | 598 | 16 | 2313 | 160 | 1.08 | 100 | 3 | 642 | 80 | 1.21 | 1.07 | 7 | 617 | 53 | 2586 | 787 | 1.08 | |
| 16 | 6 | 603 | 49 | 2492 | 621 | 1.13 | 83 | 3 | 697 | 127 | 1.22 | 1.14 | 100 | 9 | 634 | 88 | 3061 | 1561 | 1.13 |
| 17 | 5 | 668 | 84 | 3710 | 1622 | 1.19 | 100 | 1 | 582 | - | 1.20 | 0 | 6 | 654 | 83 | 3433 | 1601 | 1.16 | |
| 18 | 1 | 645 | - | 3200 | - | 1.19 | 100 | 1 | 652 | - | 1.14 | 100 | 2 | 649 | 5 | 3175 | 35 | 1.16 | |
| 19 | 2 | 598 | 26 | 2625 | 530 | 1.22 | 100 | 3 | 679 | 72 | 1.14 | 1.13 | 100 | 5 | 647 | 69 | 3220 | 993 | 1.17 |
| 20 | 5 | 685 | 76 | 3880 | 1631 | 1.15 | 100 | 2 | 658 | 67 | 1.20 | 1.11 | 100 | 7 | 677 | 69 | 3686 | 1423 | 1.14 |
| 21 | 4 | 589 | 13 | 2413 | 338 | 1.18 | 100 | 6 | 692 | 73 | 1.22 | 1.22 | 100 | 10 | 651 | 76 | 3405 | 1139 | 1.20 |
| 22 | 4 | 624 | 20 | 2900 | 147 | 1.20 | 75 | 4 | 677 | 83 | 1.079 | 1.14 | 100 | 8 | 651 | 63 | 3238 | 799 | 1.17 |
| 23 | 8 | 625 | 45 | 2819 | 1165 | 1.11 | 100 | 2 | 732 | 14 | 1.15 | 1.15 | 100 | 10 | 646 | 60 | 3155 | 1254 | 1.12 |
| 24 | 0 | 645 | 37 | 3188 | 503 | 1.18 | 100 | 3 | 683 | 61 | 1.20 | 1.20 | 100 | 11 | 655 | 45 | 3373 | 689 | 1.19 |
| 25 | 4 | 622 | 24 | 2538 | 293 | 1.06 | 100 | 2 | 586 | 49 | 1.24 | 1.03 | 100 | 6 | 643 | 44 | 2792 | 492 | 1.05 |
| 26 | 6 | 683 | 77 | 3558 | 957 | 1.11 | 100 | 2 | 634 | 13 | 1.25 | 1.25 | 100 | 8 | 686 | 66 | 3706 | 854 | 1.14 |
| 27 | 3 | 624 | 30 | 2900 | 328 | 1.20 | 100 | 1 | 663 | - | 1.20 | 1.00 | 4 | 634 | 31 | 3050 | 402 | 1.20 | |
| 28 | 2 | 709 | 86 | 4250 | 1768 | 1.15 | 100 | 2 | 833 | 38 | 1.00 | 1.00 | 4 | 771 | 90 | 5025 | 1396 | 1.08 | |
| 29 | 1 | 605 | - | 2400 | - | 1.08 | 100 | 1 | 849 | - | 1.14 | 100 | 2 | 727 | 173 | 4675 | 3217 | 1.11 | |
| 30 | - | - | - | - | - | - | - | 2 | 845 | 7 | 1.01 | 100 | 2 | 845 | 7 | 6125 | 247 | 1.01 | |
| 31 | 1 | 590 | - | 2100 | - | 1.02 | 100 | - | - | - | - | 1 | 590 | - | 2100 | - | 1.02 | | |
| 32 | 1 | 905 | - | 7300 | - | 0.98 | 100 | - | - | - | - | 1 | 905 | - | 7300 | - | 0.98 | | |
| 33 | 2 | 721 | 126 | 4200 | 2121 | 1.07 | 100 | - | 1 | 804 | - | 1.02 | 100 | 1 | 804 | - | 5300 | - | 1.02 |
| 34 | - | - | - | 7400 | - | 0.93 | 100 | - | - | - | - | 1 | 926 | - | 7400 | - | 0.93 | 100 | |
| TOTAL | 88 | 612 | 105 | 2796 | 1403 | 1.12 | 21.2 | 685 | 100 | 3814 | 1464 | 1.14 | 20.3 | 636 | 109 | 3130 | 1497 | 1.13 | |

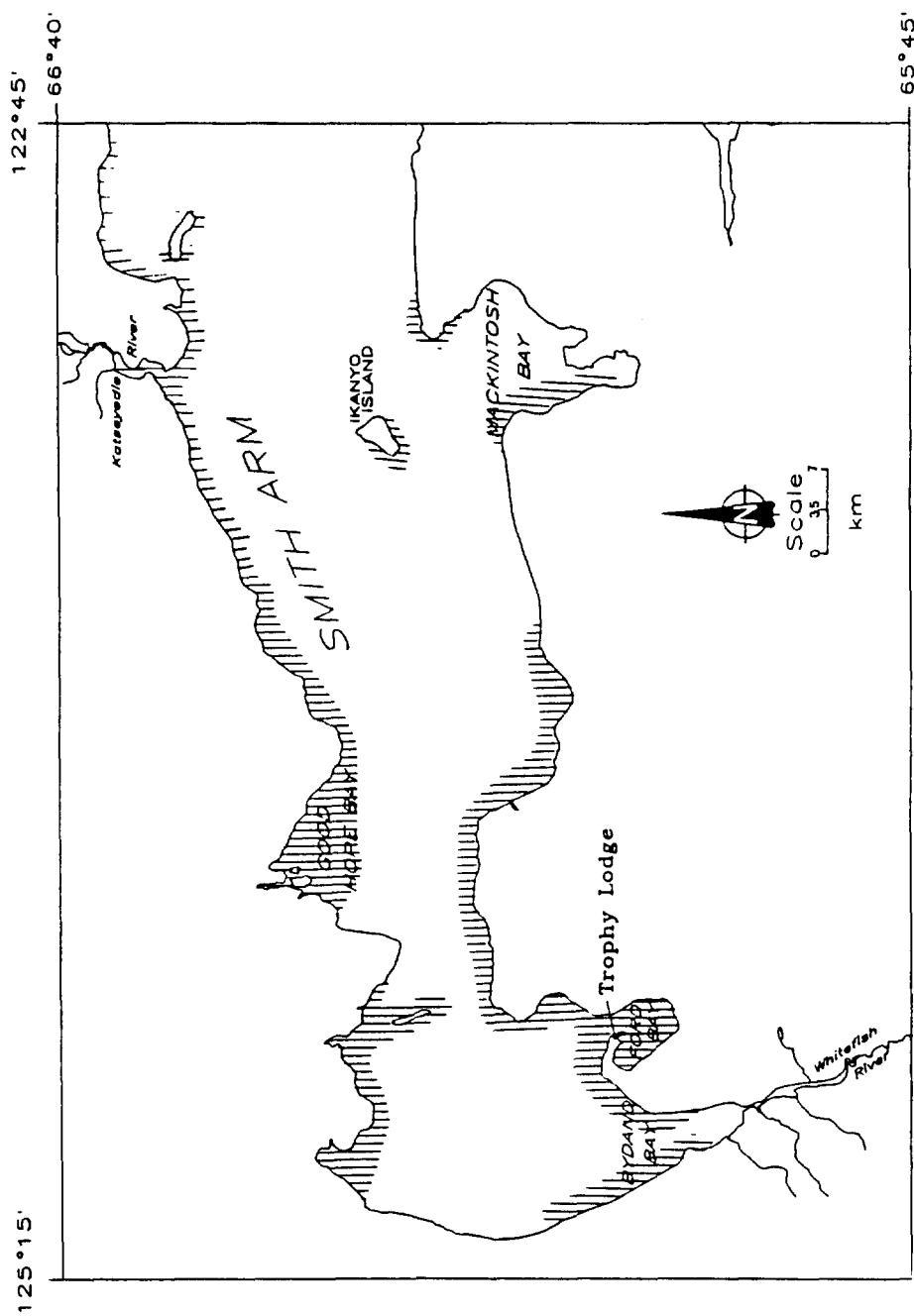


Figure 29. Areas generally fished in Smith Arm, Great Bear Lake, 1985.

Table 28. Biological data by length interval for angled and retained lake trout, Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

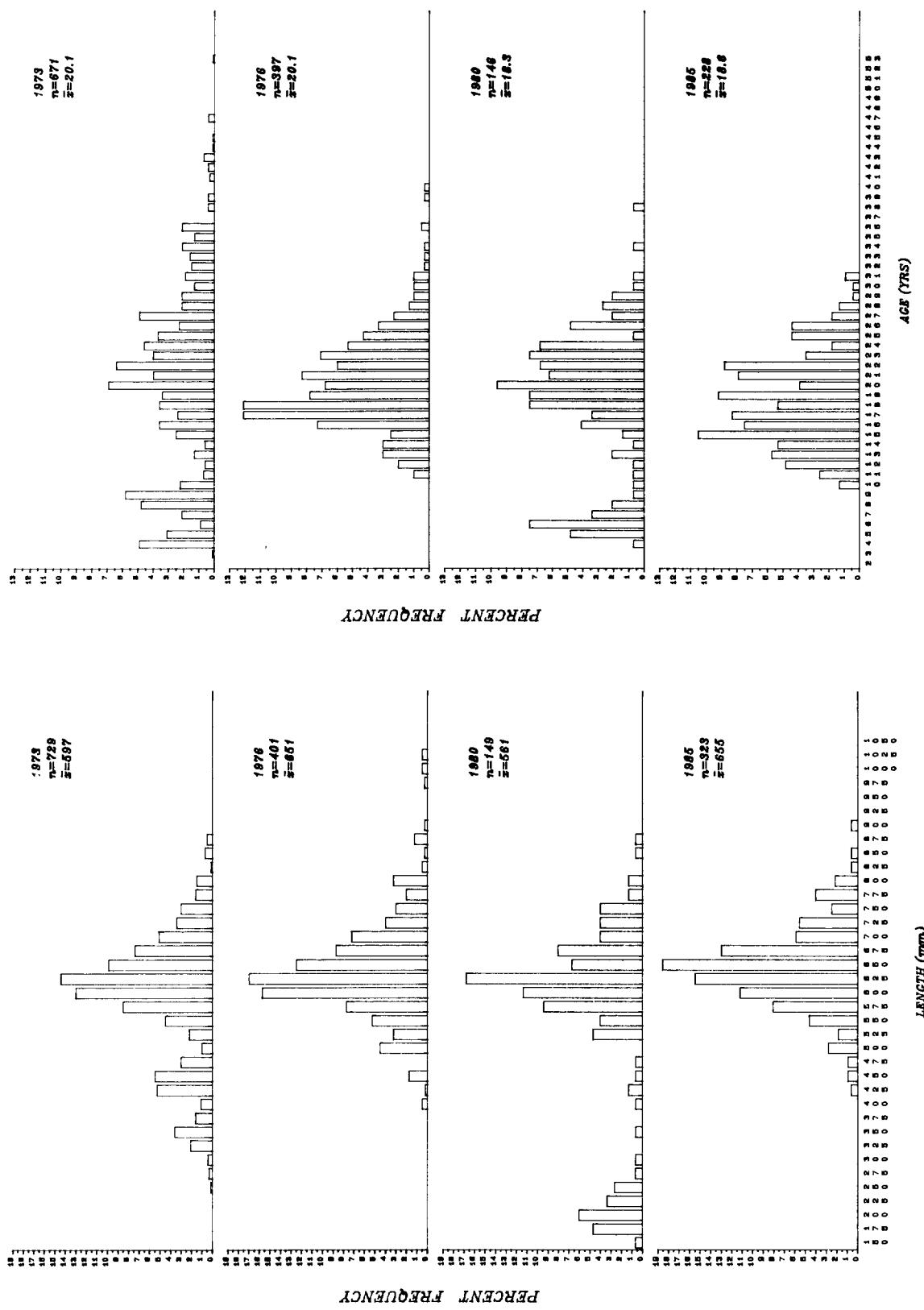


Figure 30. Length and age frequency distributions for angled and retained lake trout, Smith Arm, Great Bear Lake, 1973-1985.

Table 29. Biological data by age group for angled and retained lake trout, Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | | | |
|-------------|------------|------|-----------|------|------|------|------------|-----|-----------|----|------|------|------------|------|-----------|------|----------|------|------|------|-----|
| | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % MAT | | | | |
| | N | MEAN | SD | MEAN | SD | K | MAT | N | MEAN | SD | K | MAT | N | MEAN | SD | K | MEAN | | | | |
| 10 | 2 | 492 | 88 | 1500 | 919 | 1.17 | 0 | 1 | 537 | - | 1.10 | 0 | 3 | 507 | 67 | 1567 | 660 | 1.14 | 0 | | |
| 11 | 4 | 497 | 28 | 1263 | 210 | 1.02 | 0 | 2 | 528 | 4 | 1.05 | 0 | 6 | 507 | 27 | 1333 | 197 | 1.02 | 0 | | |
| 12 | 5 | 526 | 43 | 1570 | 323 | 1.07 | 20 | 6 | 611 | 57 | 2433 | 578 | 1.06 | 17 | 11 | 572 | 66 | 2041 | 642 | 1.07 | 18 |
| 13 | 9 | 546 | 29 | 1806 | 223 | 1.11 | 44 | 4 | 545 | 91 | 1938 | 950 | 1.12 | 25 | 13 | 545 | 51 | 1846 | 513 | 1.11 | 38 |
| 14 | 8 | 615 | 47 | 2488 | 552 | 1.07 | 75 | 4 | 617 | 45 | 2900 | 492 | 1.24 | 100 | 12 | 615 | 44 | 2625 | 549 | 1.13 | 63 |
| 15 | 11 | 606 | 54 | 2518 | 567 | 1.11 | 82 | 13 | 635 | 65 | 2992 | 783 | 1.14 | 69 | 24 | 622 | 61 | 2775 | 720 | 1.13 | 75 |
| 16 | 11 | 643 | 48 | 3059 | 690 | 1.13 | 91 | 6 | 656 | 35 | 3017 | 347 | 1.08 | 67 | 17 | 647 | 44 | 3044 | 579 | 1.11 | 82 |
| 17 | 9 | 651 | 63 | 3244 | 842 | 1.16 | 100 | 10 | 652 | 49 | 3155 | 686 | 1.13 | 100 | 19 | 651 | 55 | 3197 | 743 | 1.14 | 100 |
| 18 | 7 | 638 | 54 | 2836 | 638 | 1.09 | 71 | 5 | 675 | 50 | 3380 | 695 | 1.09 | 80 | 12 | 653 | 53 | 3063 | 690 | 1.09 | 75 |
| 19 | 8 | 682 | 76 | 3569 | 1219 | 1.08 | 100 | 13 | 680 | 66 | 3731 | 865 | 1.18 | 92 | 21 | 681 | 68 | 3659 | 988 | 1.14 | 95 |
| 20 | 3 | 548 | 22 | 3800 | 132 | 1.41 | 100 | 6 | 695 | 72 | 3975 | 914 | 1.19 | 100 | 9 | 679 | 63 | 3917 | 731 | 1.26 | 100 |
| 21 | 7 | 563 | 77 | 3392 | 1091 | 1.22 | 100 | 11 | 655 | 54 | 3477 | 722 | 1.23 | 100 | 18 | 658 | 62 | 3447 | 836 | 1.23 | 100 |
| 22 | 10 | 620 | 62 | 3190 | 619 | 1.36 | 100 | 10 | 682 | 37 | 3655 | 693 | 1.14 | 100 | 20 | 651 | 59 | 3423 | 683 | 1.25 | 100 |
| 23 | 4 | 676 | 47 | 3750 | 1129 | 1.19 | 100 | 4 | 661 | 33 | 3650 | 1109 | 1.26 | 100 | 8 | 668 | 38 | 3700 | 1038 | 1.22 | 100 |
| 24 | 2 | 645 | 43 | 3125 | 501 | 1.16 | 100 | 2 | 672 | 30 | 4450 | 71 | 1.48 | 100 | 4 | 658 | 34 | 3788 | 841 | 1.32 | 100 |
| 25 | 2 | 624 | 20 | 3525 | 247 | 1.45 | 100 | 8 | 688 | 55 | 4281 | 1175 | 1.29 | 100 | 10 | 676 | 57 | 4130 | 1087 | 1.33 | 100 |
| 26 | 7 | 672 | 69 | 3457 | 963 | 1.12 | 100 | 3 | 694 | 31 | 3950 | 477 | 1.18 | 100 | 10 | 678 | 59 | 3605 | 852 | 1.14 | 100 |
| 27 | 2 | 637 | 21 | 3475 | 884 | 1.34 | 100 | 2 | 722 | 95 | 4000 | 990 | 1.07 | 100 | 4 | 679 | 75 | 3738 | 824 | 1.20 | 100 |
| 28 | 2 | 663 | 16 | 3475 | 35 | 1.20 | 100 | 1 | 645 | - | 3150 | - | 1.17 | 100 | 3 | 657 | 15 | 3367 | 189 | 1.19 | 100 |
| 29 | 1 | 655 | - | 3300 | - | 1.17 | 100 | - | - | - | - | - | - | 1 | 655 | - | - | - | 1.17 | 100 | |
| 30 | - | - | - | - | - | - | - | 1 | 702 | - | 4100 | - | 1.19 | 100 | 1 | 702 | - | - | 1.19 | 100 | |
| 31 | 1 | 772 | - | 6250 | - | 1.36 | 100 | 1 | 792 | - | 5400 | - | 1.09 | 100 | 2 | 782 | 14 | 5825 | 601 | 1.22 | 100 |
| TOTAL | 115 | | | | | | | 113 | 556 | 65 | 3376 | 967 | 1.17 | | 228 | | | | | | |
| MEAN AGE | 623 | 73 | 2900 | 1013 | 1.16 | 19.0 | | | | | | | | | 18.6 | 640 | 71 | 3137 | 1017 | | |
| MEAN AGE | 18.2 | | | | | | | | | | | | | | | | | 1.16 | | | |

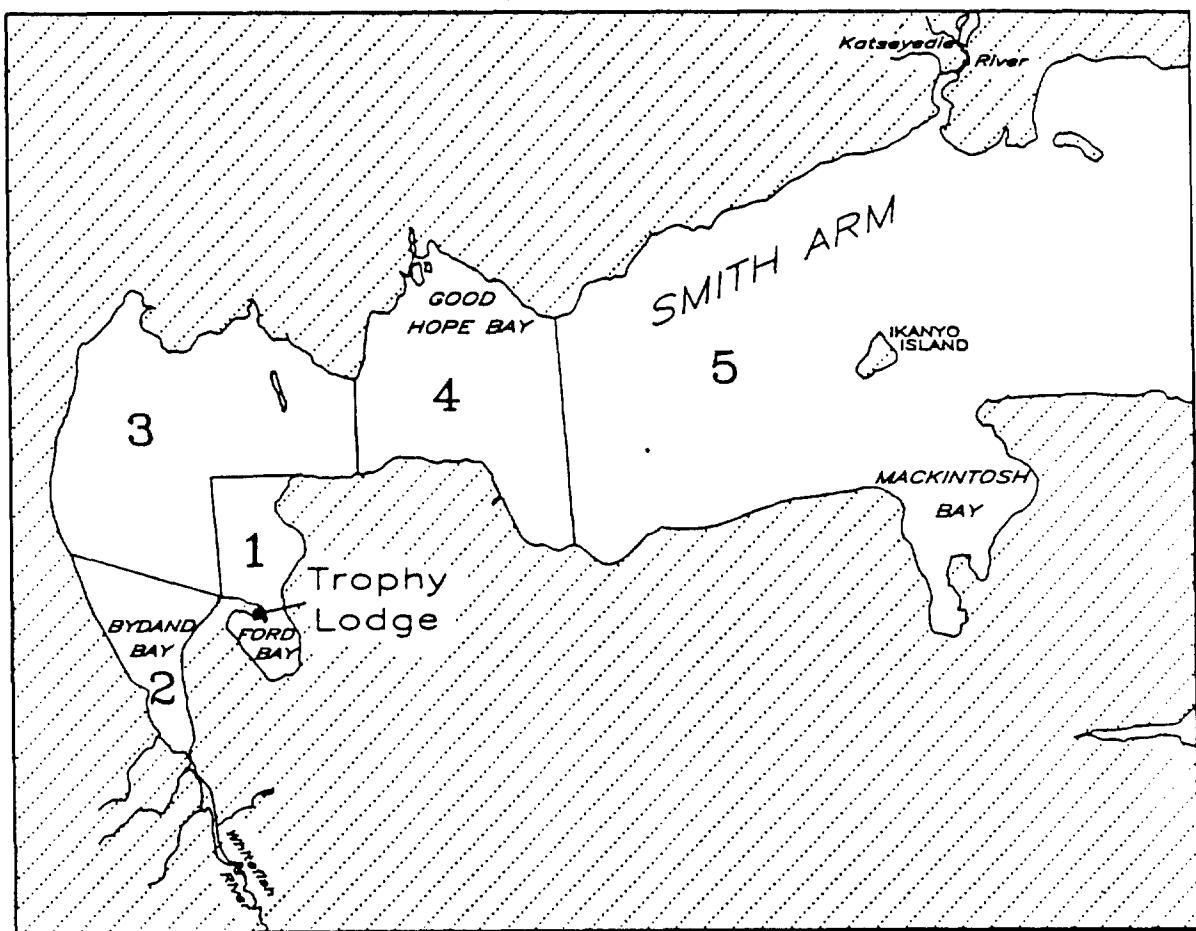


Figure 31. Subarea locations used in the intensive creel census program
Smith Arm, Great Bear Lake, 1985.

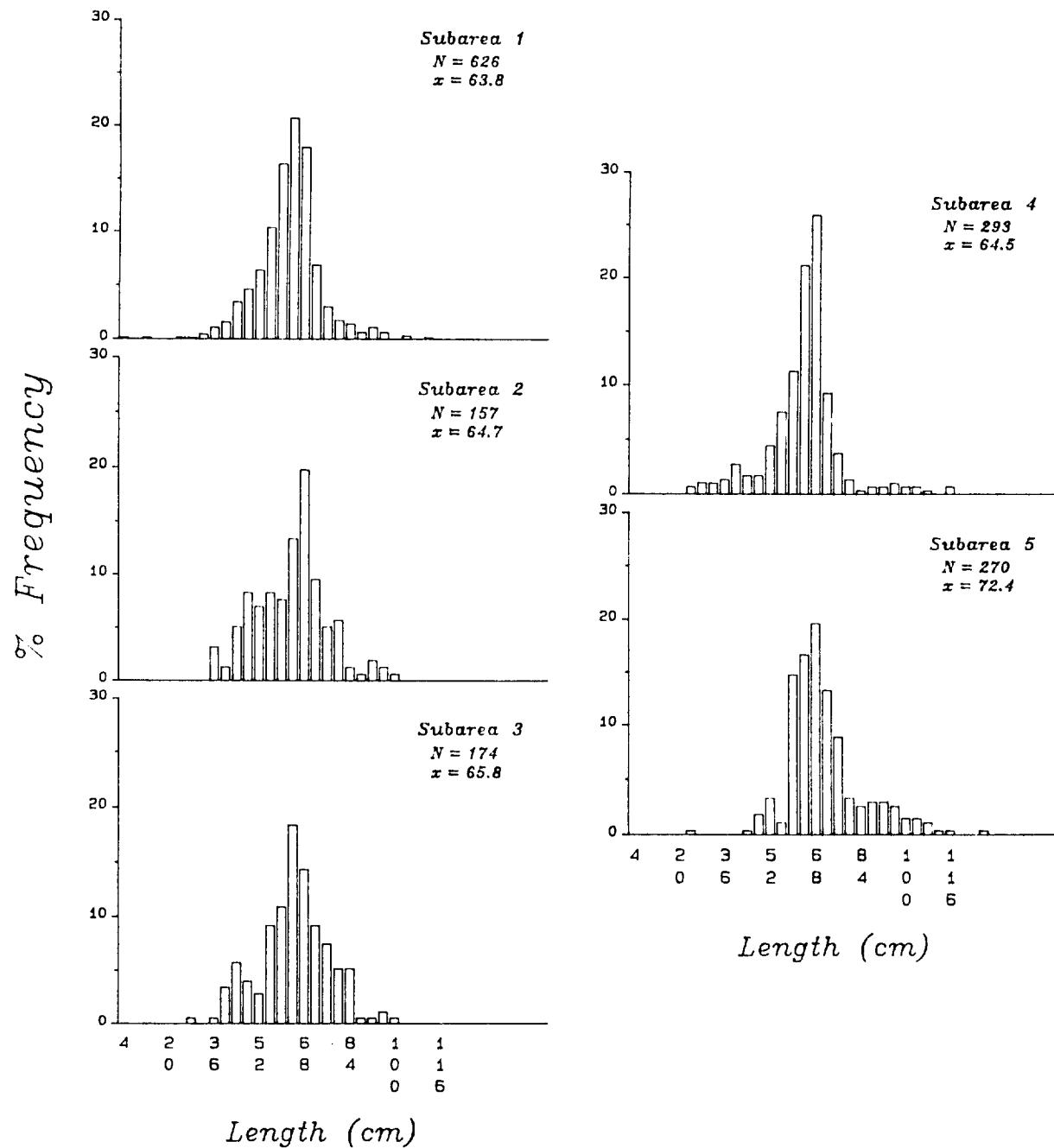


Figure 32. Length frequency distributions by subarea for lake trout caught by angling, Smith Arm, Great Bear Lake, 1985.

Appendix 1. Summary of methods used to calculate catch, effort, and catch per unit effort statistics from experimental gill nets and a standard creel census.

1. Experimental Gill Nets

CPUE (Catch per Unit Effort)

$$\begin{aligned} &= \text{number or weight of fish per 100} \\ &\quad \text{meters of gill net per 24 hour set} \\ &\quad \text{duration} \\ &= \frac{C \times 24 \text{ h} \times 100 \text{ m}}{S \times GL} \end{aligned}$$

where:

C = total catch of fish (number or weight)
S = length of time the gill nets are set
(hours)

GL = total length of the gill net used
(meters)

h = hours

m = meter

2. Standard Creel Census

d¹ = days actually censused during the census period

d = number of days of the census period

D = number of days the lodge was in operation and guests were able to fish

AP = number of individual anglers present during d¹

I = number of interviews conducted during d¹

IP = number of interviews possible during d¹

= Σ(maximum number of individual anglers for a guest week X number of days in the guest week)

PCP = percent of the census period censused
= $\frac{d^1}{D} \times 100\%$

PFS = percent of the lodge operation censused
= $\frac{d^1}{D} \times 100\%$

TIP = number of interviews possible for the census period
= IP X 100%
PCP

NA = total number of anglers possible during D
= AP X 100%
PFS

NI = total number of angler days possible during D
= D¹ x IP

H = harvest of lake trout for d¹
= K + SL + (R X release mortality)

where:

K = Kept = total number of fish (by species) kept

R = Released = total number of fish (by species) released

Release mortality = the mortality of lake trout caught by angling and released
= 0.07

SL = shore lunch

= number of fish (by species) utilized for shore lunch

- = a) all fish assumed to be lake trout
- b) SL(E) = estimated, using extrapolation method, from data obtained from the intensive creel census program

$$\begin{aligned} &= \frac{\text{SL (intensive creel census)}}{\text{Total SL of all species (intensive creel census)}} \times \text{Total SL (standard creel census)} \end{aligned}$$

TH = total harvest of lake trout for D

$$= \frac{H \times IP}{I}$$

A = Σ (individual anglers interviewed each day during d¹)

AD = Σ (number of angler interviews conducted each day during d¹)

AH = Σ (hours individual anglers spend fishing each day during d¹)

TAH = total angler hours possible during d¹
= $\frac{AH \times IP}{I}$

TAHP = total angler hours possible during D
= $\frac{AH \times TIP}{I}$

CPUE (Catch per Unit Effort) during d¹

where:

C = catch

= the total number of lake trout caught during d¹ (includes kept, released, and shorelunch)

C/AH = catch per angler hour

C/AD = catch per angler day

C/A = catch per angler interviewed

UH = utilized hectare

= area utilized by the lodges for angling (area determined from interviews with the lodges asking them which areas they fished. The areas were drawn on a map a distance of 2.4 kilometers from the shoreline. The area was then determined using a polar planimeter as described by Nielson and Johnson, (1983).)

TH/UH = total harvest per utilized hectares

TH/NA = total harvest per angler

TH/NI = total harvest per angler day

Appendix 2. Summary of standard creel census and fishing season statistics by area and sport fishing lodge,
Great Bear Lake, 1984-1985.

| CREEL CODE | DEASE ARM (GREAT BEAR LAKE LODGE AREA) | MCTAVISH ARM ^a (NORTH) (ARCTIC CIRCLE LODGE AREA) | | MCVICAR ARM (NORTH) (GREAT BEAR LODGE AREA) | | SMITH ARM ^b (TROPHY LODGE AREA) | |
|---------------|--|---|--|--|--|--|--|
| | | MCTAVISH ARM (SOUTH) (BRANSONS LODGE AREA) | MCVICAR ARM (NORTH) (GREAT BEAR LODGE AREA) | MCTAVISH ARM (SOUTH) (BRANSONS LODGE AREA) | MCVICAR ARM (NORTH) (GREAT BEAR LODGE AREA) | SMITH ARM (TROPHY LODGE AREA) | |
| d' | 44 | 55 | 49 | 30 | 30 | 54 | |
| d | 44 | 55 | 49 | 30 | 30 | 54 | |
| D | 44 | 62 | 57 | 30 | 30 | 54 | |
| AP | 313 | 175 | 270 | 178 | 178 | 318 | |
| I | 1325 | 944 | 1429 | 889 | 889 | 1561 | |
| IP | 2191 | 1225 | 1890 | 1068 | 1068 | 1908 | |
| PCP | 100 | 100 | 100 | 100 | 100 | 100 | |
| PFS | 100 | 88 | 85 | 100 | 100 | 100 | |
| TIP | 2191 | 1225 | 1890 | 1068 | 1068 | 1908 | |
| NA | 3113.00 | 197.27 | 314.10 | 178 | 178 | 318.00 | |
| NI | 2191.00 | 1380.91 | 2198.57 | 1068.00 | 1068.00 | 1908.00 | |
| Harvest | H | 2378.11 | 1807.40 | 1938.61 | 1350.00 | 2425.99 | |
| | TH | 3932.41 | 2345.41 | 2564.01 | 1626.00 | 2965.27 | |
| A | 1225 | 905 | 1424 | 889 | 889 | 1561 | |
| AD | 1325 | 944 | 1429 | 889 | 889 | 1561 | |
| AH | 7679.00 | 5043.65 | 8379.50 | 4961.50 | 4958.92 | 8826.00 | |
| TAH | 12697.88 | 6544.99 | 11082.75 | 5958.92 | 5958.92 | 10787.96 | |
| TAHP | 12697.88 | 6544.99 | 11082.75 | 5958.92 | 5958.92 | 10787.96 | |
| CPUE | C/AH C/AD C/A | 1.05 6.11 6.61 | 1.01 5.38 5.61 | 0.81 4.76 4.77 | 1.02 5.72 5.36 | 0.88 4.99 4.99 | |
| AREA UTILIZED | UH | 54396.16 | 48892.83 | 44070.63 | 26972.77 | 36345.25 | |
| YIELD | TH/UH TH/NA TH/NI TH/TAHP | 0.07 12.56 1.79 0.31 | 0.05 11.89 1.70 0.36 | 0.06 8.16 1.17 0.23 | 0.06 9.14 1.52 0.27 | 0.08 9.32 1.55 0.27 | |

a) Does not include data for anglers from Bransons Lodge.

b) Does not include data for anglers from Bransons Outpost Camp.

Appendix 3. Example of a standard creel census form.



**Environment Canada Environnement Canada
Fisheries and Marine Pêches et Mer
Resource Management Branch
Fishery Management Division
CATCH RECORD – SPORTS FISHERY**

Direction de la gestion des ressources

Division de la gestion des pêches

RELEVÉ DES PRISES – PÊCHE SPORTIVE

Sommer - Echantillons

Recorder — Donates \$100,000 per

221-44193 37751

Appendix 4. Example of an intensive creel census form.

INTENSIVE CREEL CENSUS

Day Month Year

Lodge _____

Guides Name _____

1. Anglers Name _____

2. Anglers Name _____

Effort _____ Hours Grid Location Effort

Time Started _____

Time Finished _____

| | | | |
|---|-----------|---|-----------|
| 1 | _____ hrs | 2 | _____ hrs |
| 3 | _____ hrs | 4 | _____ hrs |

CATCH EFFORT

| Sample No. | Species | Length (cm) | Catch use | Grid Location |
|------------|---------|-------------|-----------|---------------|
| 1. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 2. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 3. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 4. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 5. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 6. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 7. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 8. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 9. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 10. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 11. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 12. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 13. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 14. | LT | AG NP _____ | K R SL | 1 2 3 4 |
| 15. | LT | AG NP _____ | K R SL | 1 2 3 4 |

Appendix 5. Summary of information on sample dates, sample locations, set duration, depth, and catch per unit effort (CPUE) by area for experimental gill net sets, Great Bear Lake, 1984-85.

| Date | Set Number | Location Number | Set Duration (h) | Surface Water Temp. (°C) | Water Depth (m) | Total CPUE ^a Catch | Date | Set Number | Location Number | Set Duration (h) | Surface Water Temp. (°C) | Water Depth (m) | Total CPUE ^a Catch | |
|-----------------------------|------------|-----------------|------------------|--------------------------|-----------------|-------------------------------|-------|------------|-----------------|------------------|--------------------------|-----------------|-------------------------------|------|
| Dense Arm | | | | | | | | | | | | | | |
| Aug. 2 | 1 | 1 | 2.50 | 18 | 2.0-12.0 | 43 | 165.1 | July 24 | 17 | 17 | 8.70 | 7 | 3.0-18.3 | 3 |
| 3 | 2 | 2 | 1.75 | 11 | 1.5-12.0 | - | - | 25 | 18 | 18 | 7.00 | 8 | 3.0-13.0 | 7 |
| 3 | 3 | 3 | 2.5 | 13 | 2.5-8.0 | 5.5 | 5.5 | 26 | 19 | 19 | 7.60 | 13 | 4.0-45.7 | 11 |
| 4 | 4 | 4 | 2.25 | 14 | 3.5-3.5 | 38.4 | 124 | 27 | 20 | 20 | 8.00 | 12 | 4.0-21.3 | 11 |
| 4 | 5 | 5 | 2.50 | 13 | 1.5-19.0 | 476.2 | | | | | | | | 13.2 |
| 6 | 6 | 6 | 1.50 | 11 | 1.5-6.0 | 6.4 | | | | | | | | |
| 6 | 7 | 7 | 2.25 | 11 | 1.5-1.5 | 1 | 4.3 | | | | | | | |
| 6 | 8 | 8 | 1.70 | 12 | 1.5-7.0 | 1 | 9.5 | | | | | | | |
| 7 | 9 | 9 | 2.00 | 11 | 2.0-13.0 | 1 | 4.8 | | | | | | | |
| 7 | 7 | 10 | 4.75 | 11 | 2.0-3.0 | 3 | 6.1 | | | | | | | |
| 8 | 8 | 11 | 1.25 | 9.5 | 2.0-2.0 | 7 | 53.8 | | | | | | | |
| 8 | 8 | 12 | 3.00 | 9.0 | 9.0-20.0 | 1 | 3.2 | | | | | | | |
| 9 | 9 | 13 | 4.00 | 10 | 1.0-3.5 | 2.4 | 5 | | | | | | | |
| 10 | 14 | 14 | 47.75 | N/A | 1.5-25.0 | 26 | 5.2 | | | | | | | |
| 13 | 15 | 15 | 4.00 | 8 | 1.5-16.0 | 1 | 2.4 | | | | | | | |
| 16 | 16 | 16 | 19.00 | 9 | 2.0-6.0 | 14 | 7.1 | | | | | | | |
| 17 | 17 | 17 | 23.50 | 9 | 9.0-9.0 | 10 | 4.1 | | | | | | | |
| 18 | 18 | 18 | 8.25 | 3 | 2.0-7.0 | 6 | 7.0 | | | | | | | |
| 19 | 19 | 19 | 6.25 | 10 | 2.5-2.5 | 30 | 46.1 | | | | | | | |
| 19 | 19 | 20 | 8.75 | 12 | 2.5-2.5 | 11 | 11.0 | | | | | | | |
| 20 | 21 | 21 | 6.25 | 9 | 1.5-2.0 | 58 | 89.1 | | | | | | | |
| 23 | 22 | 22 | 2.00 | 8 | 2.0-18.0 | 3 | 14.4 | | | | | | | |
| McTavish Arm (south) | | | | | | | | | | | | | | |
| July 30 | 1 | 1 | 8.75 | 11 | 3.0-54.8 | 34 | 37.3 | July 24 | 17 | 16 | 10.00 | 8 | 1.5-3.0 | 3 |
| 31 | 2 | 2 | 8.67 | 10 | 4.0-45.7 | 15 | 16.6 | 25 | 17 | 19 | 17.50 | 9 | 2.0 | 11 |
| 31 | 3 | 3 | 3.00 | 9 | 5.0-36.6 | 2 | 6.4 | 18 | 10 | 20 | 18.75 | 12 | 4.0-7.0 | 20 |
| Aug. 2 | 4 | 4 | 3.00 | 10 | 6.0-79.2-6.0 | 13 | 41.6 | 19 | 22 | 21 | 14.00 | 11.5 | 1.5-3.0 | 19 |
| Aug. 3 | 5 | 5 | 8.50 | 13 | 5.0-27.4 | 23 | 26.0 | 20 | 23 | 23 | 11.00 | 9.0 | 2.0-5.0 | 11 |
| 5 | 6 | 6 | 8.83 | 9 | 9.1-9.1 | 27 | 36.7 | | | | | | | |
| 6 | 7 | 7 | 9.00 | 12 | 6.1-18.2 | 19 | 20.3 | | | | | | | |
| 7 | 8 | 8 | 9.00 | 10 | 9.1-42.6 | 21 | 22.4 | | | | | | | |
| 9 | 9 | 9 | 9.30 | 10.5 | 3.0-12.2 | 9 | 9.3 | | | | | | | |
| 10 | 10 | 10 | 3.00 | 11 | 9.50 | 6 | 16.0 | | | | | | | |
| 12 | 11 | 11 | 9.50 | 12 | 6.0-22.9 | 43 | 43.5 | | | | | | | |
| 13 | 12 | 12 | 9.00 | 9 | 4.6-42.7 | 24 | 25.6 | | | | | | | |
| 13 | 13 | 13 | 10.25 | 5 | 4.0-12.8 | 54 | 50.6 | | | | | | | |
| 14 | 13 | 13 | 9.30 | 8 | 6.1-61.0 | 90 | 92.9 | | | | | | | |
| 15 | 14 | 14 | 9.30 | 8 | 6.1-11.7 | 7 | 24.4 | | | | | | | |
| 15 | 15 | 15 | 2.75 | 8.5 | 9.0-12.5 | 5 | 19.2 | | | | | | | |
| 15 | 16 | 16 | 2.50 | 7 | 9.1-7.6 | 7 | 2.1 | | | | | | | |
| McTavish Arm (north) | | | | | | | | | | | | | | |
| July 30 | 1 | 1 | 8.75 | 11 | 3.0-54.8 | 34 | 37.3 | July 3 | 1 | 1 | 7.00 | 14 | 2.0-6.0 | 81 |
| 31 | 2 | 2 | 8.67 | 10 | 4.0-45.7 | 15 | 16.6 | 25 | 2 | 2 | 9.50 | 4 | 3.5-3.5 | 34 |
| 31 | 3 | 3 | 3.00 | 9 | 5.0-36.6 | 2 | 6.4 | 18 | 10 | 15 | 22.50 | 12 | 1.0-2.5 | 11 |
| Aug. 2 | 4 | 4 | 3.00 | 10 | 6.0-79.2-6.0 | 13 | 41.6 | 19 | 22 | 15 | 23.00 | 11 | 1.0-2.5 | 15 |
| Aug. 3 | 5 | 5 | 8.50 | 13 | 5.0-27.4 | 23 | 26.0 | 20 | 23 | 17 | 13.25 | 10 | 1.0-3.0 | 20 |
| 5 | 6 | 6 | 8.83 | 9 | 9.1-9.1 | 27 | 36.7 | | | | | | | |
| 6 | 7 | 7 | 9.00 | 12 | 6.1-18.2 | 19 | 20.3 | | | | | | | |
| 7 | 8 | 8 | 9.00 | 10 | 9.1-42.6 | 21 | 22.4 | | | | | | | |
| 9 | 9 | 9 | 9.30 | 10.5 | 3.0-12.2 | 9 | 9.3 | | | | | | | |
| 10 | 10 | 10 | 3.00 | 11 | 9.50 | 6 | 16.0 | | | | | | | |
| 12 | 11 | 11 | 9.50 | 12 | 6.0-22.9 | 43 | 43.5 | | | | | | | |
| 13 | 12 | 12 | 9.00 | 9 | 4.6-42.7 | 24 | 25.6 | | | | | | | |
| 13 | 13 | 13 | 10.25 | 5 | 4.0-12.8 | 54 | 50.6 | | | | | | | |
| 14 | 13 | 13 | 9.30 | 8 | 6.1-61.0 | 90 | 92.9 | | | | | | | |
| 15 | 14 | 14 | 9.30 | 8 | 6.1-11.7 | 7 | 24.4 | | | | | | | |
| 15 | 15 | 15 | 2.75 | 8.5 | 9.0-12.5 | 5 | 19.2 | | | | | | | |
| 15 | 16 | 16 | 2.50 | 7 | 9.1-7.6 | 7 | 2.1 | | | | | | | |
| McTavish Arm (south) | | | | | | | | | | | | | | |
| July 5 | 1 | 1 | 2.17 | 14 | 1.5-23.0 | - | - | July 3 | 1 | 1 | 7.00 | 14 | 2.0-6.0 | 81 |
| 7 | 2 | 2 | 3.47 | 9 | 3.0-21.3 | 1 | 2.8 | 25 | 2 | 2 | 9.50 | 4 | 3.5-3.5 | 34 |
| 8 | 3 | 3 | 4.00 | 16 | 3.0-45.7 | 3 | 7.2 | 24 | 2 | 2 | 10.75 | 4 | 3.0-3.0 | 11 |
| 8 | 4 | 4 | 8.85 | 4 | 4.0-31.7 | 2 | 7.2 | 25 | 2 | 2 | 10.75 | 5 | 4.5-5.5 | 49 |
| 9 | 5 | 5 | 9.35 | 5 | 6.5-7.0 | 4 | 4.1 | 26 | 2 | 2 | 10.75 | 5 | 4.5-5.5 | 44.7 |
| 10 | 6 | 6 | 8.50 | 12 | 11.0-34.0 | 5 | 5.6 | 27 | 2 | 2 | 10.75 | 6 | 3.0-5.0 | 6 |
| 11 | 7 | 7 | 8.90 | 14 | 7.0-21.0 | 11 | 12.0 | 17 | 2 | 2 | 10.75 | 6 | 3.0-12.0 | 19 |
| 12 | 8 | 8 | 17.10 | 12 | 2.0-11.0 | 14 | 7.9 | 13 | 2 | 2 | 10.75 | 7 | 4.5-7.0 | 21.3 |
| 12 | 9 | 9 | 9.25 | 11 | 9.0-12.5 | 2 | 1.1 | 14 | 2 | 2 | 10.75 | 7 | 4.5-7.0 | 21 |
| 13 | 10 | 10 | 15.10 | 9 | 2.0-61.0 | 20 | 12.7 | 19 | 2 | 2 | 10.75 | 7 | 4.5-7.0 | 21 |
| 15 | 11 | 11 | 17.80 | 6 | 3.0-12.5 | - | - | 19 | 2 | 2 | 10.75 | 7 | 4.5-7.0 | - |
| 19 | 12 | 12 | 8.70 | 10 | 3.0-13.5 | 3 | 3.3 | 22 | 2 | 2 | 10.75 | 6 | 4.5-6.5 | 2 |
| 20 | 13 | 13 | 7.80 | 7 | 3.0-85.3 | 7 | 8.6 | 27 | 2 | 2 | 10.75 | 6 | 5.0-8.0 | 20 |
| 21 | 14 | 14 | 8.65 | 5 | 3.0-73.0 | 13 | 14.4 | 18 | 2 | 2 | 10.75 | 6 | 5.0-8.0 | 19.6 |
| 22 | 15 | 15 | 6.60 | 9 | 2.0-76.0 | 7 | 10.2 | 13 | 2 | 2 | 10.75 | 7 | 5.0-8.0 | 19.6 |
| 23 | 16 | 16 | 8.00 | 12 | 3.0-36.6 | 8 | 9.6 | 20 | 2 | 2 | 10.75 | 7 | 5.0-8.0 | 19.6 |

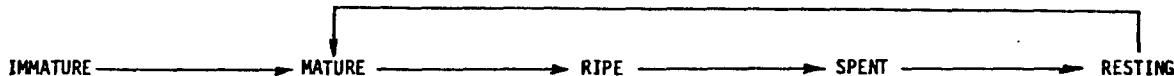
^aNumber fish/100 m²/24 h
138, 64, 89, 114 mm mesh x 50 m each
233 mm x 45 m; 64, 89, 114, 139 mm mesh x 50 m each
N/A = not available

Appendix 6. Summary of weight-length relationships ($\log_{10} W = a + b \log_{10} L$) for each fish species (sexes combined), Great Bear Lake, 1984-95.

| Species | N | Y-intercept (a) | Slope (b) | Standard Dev. of b (SD _b) | 95% C.I. of b | Species | N | Y-intercept (a) | Slope (b) | Standard Dev. of b (SD _b) | 95% C.I. of b |
|------------------------------|-----|--------------------|--------------|--|------------------|---|-----|-------------------------------|----------------------------|--|---|
| Dease Arm | | | | | | | | | | | |
| Lake trout gillnetted | 96 | -5.0806 | 3.0391 | 0.0509 | 2.9880-3.1402 | Round whitefish gillnetted | 12 | -5.6692 | 3.2574 | 0.2378 | 2.7276-3.7872 |
| angled | 292 | -4.3619 | 2.3032 | 0.0540 | 2.6794-2.9090 | Northern pike gillnetted | 2 | -3.8737 | 2.5476 | 0.0 | - |
| combined | 388 | -5.0819 | 3.0543 | 0.0363 | 2.9832-3.1254 | | | | | | |
| Lake whitefish gillnetted | 8 | -3.2098 | 2.4837 | 0.5534 | 1.0295-3.7379 | Lake cisco gillnetted | 35 | -2.8824 | 2.1452 | 0.2291 | 1.6774-2.6130 |
| Arctic grayling angled | 73 | -4.3070 | 2.7708 | 0.1136 | 2.5439-2.9977 | | | | | | |
| Lake cisco gillnetted | 21 | -5.0809 | 3.4832 | 0.3050 | 2.8448-4.1216 | Lake trout gillnetted angled combined | 159 | -4.9566 -4.791 -4.8841 | 3.0028 2.9409 2.9802 | 0.0551 0.0566 0.0395 | 2.8948-3.1108 2.8299-3.0519 2.9027-3.0576 |
| McTavish Arm (north) | | | | | | | | | | | |
| Lake trout gillnetted | 182 | -5.3391 | 3.1429 | 0.0326 | 3.0790-3.2068 | Lake whitefish gillnetted combined | 202 | -5.2196 -5.2265 | 3.1236 3.1263 | 0.0543 0.0542 | 3.0172-3.2300 3.0201-3.2325 |
| angled | 542 | -5.1104 | 3.0594 | 0.0252 | 3.0100-3.1088 | | | | | | |
| combined | 724 | -5.2430 | 3.1069 | 0.0167 | 3.0742-3.1396 | | | | | | |
| Lake whitefish gillnetted | 5 | -5.5578 | 3.2615 | 0.8001 | 0.7156-5.8074 | Round whitefish gillnetted | 35 | -5.3113 | 3.1425 | 0.1929 | 2.7486-3.5364 |
| Arctic grayling angled | 155 | -5.1073 | 3.0617 | 0.0655 | 2.9333-3.1901 | Arctic grayling gillnetted angled combined | 25 | 0.6212 -3.9654 -3.7731 | 0.8850 2.6441 2.5716 | 0.3309 0.0992 0.0969 | 0.2004-1.5696 2.4497-2.8385 2.3817-2.7615 |
| Lake cisco gillnetted | 6 | -6.3614 | 3.5808 | 0.4176 | 2.4215-4.7401 | Northern pike gillnetted angled combined | 4 | -4.7146 -4.7556 -5.0532 | 2.8443 2.8755 2.9788 | 0.0640 0.1639 0.1093 | 2.5689-3.1197 2.5428-3.2082 2.7579-3.1997 |
| McTavish Arm (south) | | | | | | | | | | | |
| Lake trout gillnetted | 126 | -4.9839 | 3.0151 | 0.0351 | 2.9463-3.0339 | Lake cisco gillnetted | 18 | -8.2167 | 4.3746 | 0.5586 | 3.1960-5.5532 |
| angled | 260 | -1.8155 | 1.8945 | 0.1143 | 1.5705-2.1185 | | | | | | |
| combined | 386 | -3.9099 | 2.6300 | 0.0642 | 2.5042-2.7558 | | | | | | |
| Arctic grayling angled | 28 | -4.2425 | 2.7513 | 0.1407 | 2.4620-3.0406 | | | | | | |
| Northern pike angled | 11 | -4.1990 | 2.6625 | 0.2039 | 2.2013-3.1237 | | | | | | |
| McVicar Arm (north) | | | | | | | | | | | |
| Lake trout gillnetted | 131 | -4.7264 | 2.9255 | 0.0491 | 2.8293-3.0217 | | | | | | |
| angled | 52 | -4.2964 | 2.7848 | 0.1116 | 2.5607-3.0689 | | | | | | |
| combined | 183 | | | | | | | | | | |
| Lake whitefish gillnetted | 36 | -5.9364 | 3.4070 | 0.2753 | 2.8448-3.9692 | | | | | | |

Appendix 7. A discription of the relative stages of maturity used for northern fishes.

MATURITY FLOW CHART



FISH MATURITY CODE

| Maturity Stage | | Female | | Male |
|-------------------------|----|--|----|--|
| Immature (virgin) | 1 | -Ovaries granular in texture -hard and triangular in shape -up to full length of body cavity -membrane firm -eggs distinguishable | 6 | -Testes long and thin -tubular and scalloped shape -up to full body length -putty like firmness |
| Mature | 2 | -Current year spawner -ovary fills body cavity -eggs near full size but not loose -not expelled by pressure | 7 | -Current year spawner -testes large and lobate -white to purplish color -centers may be fluid -milt not expelled by pressure |
| Ripe | 3 | -Ovaries greatly extended & fill body cavity -eggs full size and transparent -expelled by slight pressure | 8 | -Testes full size -white and lobate -milt expelled by slight pressure |
| Spent | 4 | -Spawning complete -ovaries ruptured and flaccid -seed eggs visible -some retained eggs in body cavity | 9 | -Spawning complete -testes flaccid with some milt -blood vessels obvious -testes violet-pink in color |
| Resting | 5 | -Ovary 40-50% of body cavity -membrane thin, loose, & semi-transparent -healed from spawning -seed eggs apparent with few atretic eggs -some eggs may be retained in body cavity | 10 | -Testes tubular, less lobate -healed from spawning -no fluid in center -usually full length -mottled and purplish in color |
| Unknown (Virgin) | 0 | -cannot be sexed -gonads long or short & thin -transparent or translucent | | |
| Unknown (non-virgin) | 11 | -resting fish -has spawned but gonads regenerated -sexing not possible | | |

Appendix 8. Biological data by length interval for angled and retained arctic grayling, Dease Arm (Great Bear Lake area), Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | | |
|----------------------------|-------|--------------------|-------------------|---------|---------|-----|----|--------------------|-------------------|---------|------|----------|------|
| | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | % SD | K | MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | % SD | K | % MAT | |
| 320 | - | - | - | - | - | - | 1 | 349 | 500 | - | 1 | 325 | 400 |
| 340 | - | - | - | - | - | - | 1 | 349 | 500 | 2 | 2 | 347 | 525 |
| 360 | 2 | 365 | 575 | 35 | 1.18 | 0 | 2 | 364 | 575 | 0 | 4 | 364 | 575 |
| 370 | 1 | 370 | 650 | - | 1.28 | 100 | 2 | 374 | 725 | 35 | 1.39 | 372 | 700 |
| 380 | - | - | - | - | - | - | 1 | 388 | 850 | - | 1.46 | 388 | 850 |
| 390 | 2 | 395 | 750 | 0 | 1.22 | 100 | - | - | - | 2 | 395 | 750 | 0 |
| 400 | 1 | 406 | 1000 | - | 1.49 | 100 | 1 | 404 | 800 | - | 1.21 | 100 | 2 |
| 410 | - | - | - | - | - | - | 1 | 415 | 1000 | - | 1.40 | 405 | 900 |
| 420 | 4 | 425 | 913 | 48 | 1.19 | 100 | 7 | 423 | 957 | 61 | 1.26 | 100 | 1 |
| 430 | 2 | 436 | 1025 | 177 | 1.24 | 50 | 5 | 435 | 1030 | 120 | 1.26 | 100 | 11 |
| 440 | 2 | 443 | 1050 | 71 | 1.21 | 100 | 3 | 445 | 1083 | 104 | 1.23 | 100 | 8 |
| 450 | 7 | 455 | 1186 | 131 | 1.26 | 100 | 4 | 453 | 1138 | 95 | 1.23 | 100 | 13 |
| 460 | 5 | 465 | 1120 | 57 | 1.11 | 100 | 1 | 461 | 1200 | - | 1.22 | 100 | 7 |
| 470 | 4 | 476 | 1288 | 103 | 1.19 | 100 | 1 | 479 | 1250 | - | 1.14 | 100 | 6 |
| 480 | 3 | 481 | 1467 | 76 | 1.32 | 100 | - | - | - | - | 3 | 481 | 1467 |
| 490 | 3 | 494 | 1367 | 76 | 1.13 | 100 | - | - | - | 4 | 495 | 1313 | 125 |
| TOTAL MEAN | 36 | 447 | 1101 | 250 | 1.21 | | 29 | 423 | 960 | 201 | 1.26 | 73 | 435 |
| | | | | | | | | | | | | | 1034 |
| | | | | | | | | | | | | | 250 |
| | | | | | | | | | | | | | 1.23 |

Appendix 9. Biological data by age group for angled and retained arctic grayling, Dease Arm (Great Bear Lake area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | FEMALES | | | | COMBINED | | | | |
|-------------|-------|--------------------|-------------------|---------|---------|------|-----|--------------------|-------------------|---------|-----|----------|-----|
| | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | % SD | K | MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | % SD | K | % MAT | |
| 9 | - | - | - | - | - | - | 1 | 451 | - | 1200 | - | 1 | 451 |
| 10 | 1 | 454 | - | 1200 | - | 1.28 | 100 | - | - | 1 | 454 | - | |
| TOTAL MEAN | 1 | 454 | - | 1200 | - | 1.28 | 9.0 | 451 | - | 1200 | - | 1 | |
| MEAN AGE | 10.0 | | | | | | | 9.5 | | | | 1.30 | |

Appendix 10. Biological data by length interval for angled and retained northern pike, Dease Arm (Great Bear Lake Lodge area), Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | | | | |
|----------------------------|-------|------|------------|-----------|---------|------|------------|-----------|----------|------|------------|-----------|-----|------|-----|
| | N | MEAN | LENGTH(MM) | WEIGHT(G) | N | MEAN | LENGTH(MM) | WEIGHT(G) | N | MEAN | LENGTH(MM) | WEIGHT(G) | | | |
| | | MEAN | SD | K | MAT | MEAN | SD | K | MAT | MEAN | SD | K | MAT | | |
| 640 | - | - | - | - | - | - | - | - | - | 1 | 655 | 1850 | - | 0.66 | 100 |
| TOTAL | 0 | - | - | - | 0 | - | - | - | - | 1 | 655 | 1850 | - | 0.66 | |
| MEAN | | | | | | | | | | | | | | | |

Appendix 11. Biological data by age group for angled and retained northern pike, Dease Arm (Great Bear Lake Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | FEMALES | | | | COMBINED | | | | | | | |
|-------------|-------|------|------------|-----------|---------|------|------------|-----------|----------|------|------------|-----------|------|---|------|-----|
| | N | MEAN | LENGTH(MM) | WEIGHT(G) | N | MEAN | LENGTH(MM) | WEIGHT(G) | N | MEAN | LENGTH(MM) | WEIGHT(G) | | | | |
| | | MEAN | SD | K | MAT | MEAN | SD | K | MAT | MEAN | SD | K | MAT | | | |
| 9 | - | - | - | - | - | - | - | - | - | 1 | 655 | - | 1850 | - | 0.66 | 100 |
| TOTAL | 0 | - | - | - | 0 | - | - | - | - | 1 | 655 | - | 1850 | - | 0.66 | |
| MEAN AGE | - | | | | - | | | | | 9.0 | | | | | | |

Appendix 12. Biological data by length interval for angled and retained lake trout (taxidermist sample). Dease Arm (Great Bear Lake Lodge area), Great Bear Lake, 1985.

Appendix 13. Biological data by age group for angled and retained lake trout (*taxidermist sample*), Dease Arm (Great Bear Lake Lodge area), Great Bear Lake, 1985.

Appendix 14. Biological data by length interval for angled and retained lake whitefish, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | |
|----------------------|-------|--------------------|-------------------------|---------------------------|---------|--------------------|-------------------------|---------------------------|----------|--------------------|-------------------------|---------------------------|
| | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN SD | % K MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN SD | % K MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN SD | % K MAT |
| 410 | 1 | 415 | 800 | - 1.12 0 K MAT | 1 | - | - | - | 1 | 415 | 800 | - 1.12 0 K MAT |
| 510 | 1 | 515 | 1800 | - 1.32 100 K MAT | 1 | - | - | - | 1 | 515 | 1800 | - 1.32 100 K MAT |
| 530 | 1 | 534 | 1900 | - 1.25 100 K MAT | 1 | - | - | - | 1 | 534 | 1900 | - 1.25 100 K MAT |
| 550 | 1 | 550 | 2400 | - 1.44 100 K MAT | 1 | 551 | 2700 | - 1.61 100 K MAT | 2 | 551 | 2550 | - 1.53 100 K MAT |
| 560 | - | - | - | - | 1 | 563 | 2600 | - 1.46 100 K MAT | 1 | 563 | 2600 | - 1.46 100 K MAT |
| 590 | - | - | - | - | - | - | - | - | 1 | 599 | 2850 | - 1.33 0 K MAT |
| 600 | 1 | 606 | 2750 | - 1.24 100 K MAT | 1 | - | - | - | 1 | 606 | 2750 | - 1.24 100 K MAT |
| 660 | - | - | - | - | - | - | - | - | 1 | 667 | 4400 | - 1.48 0 K MAT |
| TOTAL | 5 | 524 | 1930 | 740 1.27 | 2 | 557 | 2650 | 71 1.54 | 9 | 556 | 2467 | 974 1.36 |
| MEAN | | | | | | | | | | | | |

Appendix 15. Biological data by age group for angled and retained lake whitefish, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | FEMALES | | | | COMBINED | | | |
|----------|-------|--------------------|-------------------------|---------------|---------|--------------------|-------------------------|---------------|----------|--------------------|-------------------------|-----------------|
| | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN SD | % K MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN SD | % K MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN SD | % K MAT |
| 10 | 2 | 465 | 71 | 1300 707 1.22 | 50 | 1 | 563 | - | 2 | 465 | 71 | 1300 707 1.22 |
| 14 | 2 | 542 | 11 | 2150 354 1.35 | 100 | 1 | 551 | - | 3 | 549 | 15 | 2300 361 1.38 |
| 17 | - | - | - | - | - | 1 | 551 | - | 1 | 551 | - | 2700 - 1.61 100 |
| TOTAL | 4 | 504 | 61 | 1725 670 1.28 | 2 | 557 | 8 | 2650 71 1.54 | 6 | 521 | 55 | 2033 706 1.37 |
| MEAN AGE | 12.0 | | | 15.5 | | 13.2 | | | | | | |

Appendix 16. Biological data by length interval for angled and retained arctic grayling, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | |
|----------------------------|------------|------|-----------|-----|------------|-----|-----------|-----|------------|------|-----------|-----|
| | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | |
| | N | MEAN | MEAN | SD | K | % | MEAN | SD | K | MEAN | SD | K |
| 210 | - | - | - | - | 1 | 218 | 200 | - | 1 | 218 | 200 | - |
| 280 | 2 | 283 | 275 | 35 | 1.22 | 0 | - | - | 2 | 283 | 275 | 35 |
| 300 | 2 | 302 | 325 | 35 | 1.19 | 0 | - | - | 2 | 302 | 325 | 35 |
| 320 | 2 | 324 | 400 | 71 | 1.18 | 0 | 2 | 320 | 350 | 71 | 1.07 | 50 |
| 330 | 7 | 333 | 400 | 58 | 1.09 | 57 | 4 | 336 | 413 | 25 | 1.09 | 100 |
| 340 | 2 | 347 | 450 | 0 | 1.08 | 50 | 5 | 346 | 440 | 65 | 1.06 | 100 |
| 350 | 6 | 353 | 467 | 41 | 1.06 | 100 | 9 | 353 | 467 | 75 | 1.06 | 100 |
| 360 | 7 | 364 | 507 | 45 | 1.05 | 100 | 5 | 366 | 530 | 27 | 1.08 | 100 |
| 370 | 10 | 374 | 600 | 58 | 1.15 | 100 | 5 | 374 | 600 | 35 | 1.15 | 100 |
| 380 | 7 | 384 | 600 | 87 | 1.06 | 100 | 1 | 386 | 750 | - | 1.30 | 100 |
| 390 | 2 | 390 | 700 | 0 | 1.18 | 50 | 4 | 392 | 675 | 29 | 1.12 | 100 |
| 400 | - | - | - | - | - | - | 4 | 405 | 825 | 50 | 1.24 | 100 |
| 410 | - | - | - | - | - | - | 4 | 415 | 838 | 48 | 1.17 | 100 |
| 420 | 2 | 426 | 850 | 71 | 1.10 | 100 | 3 | 426 | 850 | 87 | 1.10 | 67 |
| 430 | 4 | 434 | 938 | 48 | 1.15 | 100 | 2 | 431 | 1050 | 71 | 1.31 | 100 |
| 440 | 2 | 445 | 1000 | 71 | 1.13 | 100 | 1 | 448 | 1050 | - | 1.17 | 100 |
| 450 | 1 | 452 | 1000 | - | 1.08 | 100 | 2 | 452 | 1100 | 0 | 1.19 | 100 |
| 460 | - | - | - | - | - | - | 3 | 464 | 1167 | 29 | 1.17 | 100 |
| 470 | - | - | - | - | - | - | - | - | - | - | - | - |
| 480 | 1 | 485 | 1400 | - | 1.23 | 100 | - | - | - | - | - | - |
| 490 | - | - | - | - | - | - | - | - | - | - | - | - |
| TOTAL | 57 | 371 | 588 | 223 | 1.11 | 55 | 380 | 656 | 251 | 1.14 | 155 | 393 |
| MEAN | | | | | | | | | | | | |

Appendix 17. Biological data by age group for angled and retained arctic grayling, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | | | |
|-------------|------------|-----|-----------|-----|-----|------|------------|----|-----------|----|------|-----|------------|-----|-----------|-----|---------------|------|-----|------|-----|
| | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % N MAT | | | | |
| | N MEAN | SD | MEAN | SD | K | MAT | N MEAN | SD | MEAN | SD | K | MAT | N MEAN | SD | MEAN | SD | K | MAT | | | |
| 3 | - | - | 314 | 26 | 379 | 81 | 1.21 | 14 | - | - | 200 | - | 1 | 218 | - | 200 | - | 1.93 | 0 | | |
| 4 | 7 | - | 314 | 26 | 379 | 81 | 1.21 | 14 | - | - | 200 | - | 7 | 314 | 26 | 379 | 81 | 1.21 | 14 | | |
| 5 | 7 | 337 | 22 | 421 | 122 | 1.07 | 71 | 2 | 347 | 14 | 475 | 106 | 1.13 | 100 | 9 | 340 | 21 | 433 | 115 | 1.09 | 78 |
| 6 | 8 | 352 | 15 | 481 | 80 | 1.09 | 75 | 18 | 361 | 23 | 528 | 113 | 1.11 | 94 | 26 | 358 | 21 | 513 | 104 | 1.10 | 88 |
| 7 | 18 | 376 | 17 | 572 | 103 | 1.07 | 100 | 15 | 375 | 32 | 603 | 180 | 1.11 | 100 | 34 | 377 | 25 | 596 | 149 | 1.09 | 100 |
| 8 | 8 | 403 | 35 | 750 | 242 | 1.11 | 100 | 4 | 368 | 30 | 525 | 189 | 1.02 | 100 | 12 | 391 | 36 | 675 | 244 | 1.08 | 100 |
| 9 | 9 | 413 | 32 | 800 | 141 | 1.14 | 100 | 8 | 428 | 29 | 975 | 156 | 1.24 | 100 | 10 | 425 | 29 | 940 | 163 | 1.22 | 100 |
| 10 | 3 | 444 | 7 | 967 | 29 | 1.10 | 100 | 2 | 446 | 27 | 975 | 247 | 1.09 | 50 | 5 | 445 | 14 | 970 | 125 | 1.10 | 80 |
| 11 | - | - | - | - | - | - | - | 2 | 452 | 0 | 1100 | 0 | 1.19 | 100 | 2 | 452 | 0 | 1100 | 0 | 1.19 | 100 |
| TOTAL | 53 | 368 | 40 | 571 | 201 | 1.10 | | 52 | 379 | 46 | 649 | 247 | 1.14 | | 106 | 374 | 43 | 612 | 228 | 1.12 | |
| MEAN AGE | 6.6 | | | | | | | | | | | | | | 7.2 | | | | | | 6.9 |

Appendix 18. Biological data by length interval for angled and retained northern pike, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

Appendix 19. Biological data by age group for angled and retained northern pike, McTavish Arm (north), (Arctic Circle Lodge area), Great Bear Lake, 1984.

| AGE (VR) | MALES | | | | FEMALES | | | | COMBINED | | | |
|-------------|-------|------|----|------|---------|------|-----|---|----------|------|----|------|
| | N | MEAN | SD | % | N | MEAN | SD | % | N | MEAN | SD | % |
| 5 | 1 | 532 | - | 1050 | - | 0.70 | 100 | - | - | - | - | 100 |
| TOTAL | 1 | 532 | - | 1050 | - | 0.70 | 100 | - | - | - | - | 100 |
| MEAN | | | | | 0 | - | - | - | 1 | 532 | - | 1050 |
| MEAN AGE | | | | | 5.0 | - | - | - | 5.0 | - | - | 0.70 |

Appendix 20. Biological data by length interval for angled and retained lake whitefish, McTavish Arm (south), (Bransons Lodge area), Great Bear Lake, 1984.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | |
|----------------------------|-------|------|----|---|---------|------|-----|---|----------|------|-----|------|
| | N | MEAN | SD | % | N | MEAN | SD | % | N | MEAN | SD | % |
| 330 | - | - | - | - | 1 | 335 | 550 | - | 1.46 | 0 | 1 | 335 |
| TOTAL | 0 | - | - | - | 1 | 335 | 550 | - | 1.46 | 1 | 335 | 550 |
| MEAN | | | | | 5.0 | - | - | - | 5.0 | - | - | 1.46 |

Appendix 21. Biological data by age group for angled and retained lake whitefish, McTavish Arm (south), (Bransons Lodge area), Great Bear Lake, 1984.

| AGE (VR) | MALES | | | | FEMALES | | | | COMBINED | | | |
|-------------|-------|------|----|---|---------|------|----|---|----------|------|-----|------|
| | N | MEAN | SD | % | N | MEAN | SD | % | N | MEAN | SD | % |
| 5 | - | - | - | - | 1 | 335 | - | - | 1.46 | 0 | 1 | 335 |
| TOTAL | 0 | - | - | - | 1 | 335 | - | - | 1.46 | 1 | 335 | - |
| MEAN | | | | | 5.0 | - | - | - | 5.0 | - | - | 1.46 |
| MEAN AGE | | | | | 5.0 | - | - | - | 5.0 | - | - | 1.46 |

Appendix 22. Biological data by length interval for angled and retained arctic grayling, McTavish Arm (south), (Bransons Lodge area). Great Bear Lake. 1984.

Appendix 23. Biological data by age group for angled and retained arctic grayling, McTavish Arm (south), (Bransons Lodge area), Great Bear Lake, 1984.

Appendix 24. Biological data by length interval for angled and retained northern pike, McTavish Arm (south), (Bransons Lodge area), Great Bear Lake, 1984.

Appendix 25. Biological data by age group for angled and retained northern pike, McTavish Arm (south), (Bransons Lodge area), Great Bear Lake, 1984.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | |
|-------------|------------|------|-----------|------|-------|------|------------|------|-----------|------|-------|------|------------|------|-----------|------|-------|------|
| | LENGTH(MM) | | WEIGHT(G) | | % MAT | | LENGTH(MM) | | WEIGHT(G) | | % MAT | | LENGTH(MM) | | WEIGHT(G) | | % MAT | |
| | N | MEAN | SD | MEAN | SD | K | N | MEAN | SD | MEAN | SD | K | N | MEAN | SD | MEAN | SD | K |
| 5 | 1 | 625 | - | 1750 | - | 0.72 | 100 | - | - | 1400 | 424 | 0.67 | 1 | 625 | - | 1750 | 424 | 0.72 |
| 6 | - | - | - | - | - | - | 2 | 591 | 64 | 100 | 50 | 2 | 591 | 64 | 1400 | 424 | 0.67 | |
| 7 | - | - | - | - | - | - | 1 | 703 | - | 2650 | - | 1 | 703 | - | 2650 | - | 0.76 | |
| 8 | 1 | 690 | - | 2100 | - | 0.64 | 100 | 2 | 774 | 20 | 3050 | 212 | 0.66 | 100 | 3 | 746 | 50 | 2733 |
| 9 | 2 | 672 | 2 | 2400 | 71 | 0.79 | 100 | - | - | - | - | - | 2 | 672 | 2 | 2400 | 71 | 0.79 |
| 12 | - | - | - | - | - | - | 1 | 799 | - | 3550 | - | 0.70 | 100 | 1 | 799 | - | 3550 | - |
| 14 | 1 | 986 | - | 5500 | - | 0.57 | 100 | - | - | - | - | - | 1 | 986 | - | 5500 | - | 0.57 |
| TOTAL | 5 | 729 | 146 | 2830 | 1517 | 0.70 | 6 | 705 | 99 | 2517 | 935 | 0.69 | 11 | 716 | 116 | 2659 | 1177 | 0.69 |
| MEAN AGE | 9.0 | | | | | | 7.8 | | | | | | 8.4 | | | | | |

Biological data by length interval for angled and retained lake trout (taxidermist samples), Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

| LENGTH INTERVAL (MM) | MALES | | | FEMALES | | | COMBINED | | | | | | | | | | | |
|----------------------|-------|-----|-----------------|----------------|------|------|----------|-----------------|----------------|------|---|------|-------|-----------------|----------------|------|------|----------|
| | N | % | LENGTH(MM) MEAN | WEIGHT(G) MEAN | SD | N | % | LENGTH(MM) MEAN | WEIGHT(G) MEAN | SD | K | N | % | LENGTH(MM) MEAN | WEIGHT(G) MEAN | SD | K | % FEMALE |
| 850 | 1 | 20 | 864 | 7258 | - | 1.13 | - | - | - | - | 1 | 1 | 864 | 7258 | - | 1.13 | - | |
| 950 | 1 | 20 | 965 | 7711 | - | 0.86 | - | - | - | - | 1 | 1 | 965 | 7711 | - | 0.86 | - | |
| 975 | 1 | 20 | 991 | 8618 | - | 0.89 | - | - | - | - | 1 | 1 | 991 | 8618 | - | 0.89 | - | |
| 1025 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1050 | 2 | 40 | 1067 | 17237 | 2566 | 1.42 | - | - | - | - | - | - | - | 1067 | 17237 | 2566 | 1.42 | - |
| 1075 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1092 | 16783 | - | 1.42 | - |
| 1150 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1168 | 21773 | - | 1.37 | - |
| 1175 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1181 | 21065 | - | 1.28 | - |
| TOTAL MEAN | 5 | 991 | 11612 | 5315 | 1.14 | 2 | 1130 | 19278 | 3528 | 1.33 | 9 | 1048 | 14184 | 5868 | 1.17 | 29 | | |

Appendix 27. Biological data by age group for angled and retained lake trout (taxidermist sample), Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

| AGE (YR) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | | | |
|-------------|------------|-----|-----------|----|------------|---|-----------|----|------------|---|-----------|----|----------|------|------|------|--------|-------|------|------|
| | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | | MEAN | | SD | | K | | | |
| | N | % | MEAN | SD | N | % | MEAN | SD | N | % | MEAN | SD | MEAN | SD | | | FEMALE | % | | |
| 27 | 1 | 5.0 | 965 | - | 7111 | - | 0.86 | - | - | - | - | - | 1 | 20 | 965 | - | 7711 | - | 0.86 | |
| 28 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 20 | 1041 | - | 9979 | - | 0.88 | |
| 30 | 1 | 5.0 | 1067 | - | -19051 | - | 1.57 | - | - | - | - | - | 1 | 20 | 1067 | - | 19051 | - | 1.57 | |
| 32 | - | - | - | - | - | - | 1 | 50 | 1168 | - | -21773 | - | 1 | 37 | 1168 | - | 21773 | - | 1.37 | |
| 36 | - | - | - | - | - | - | 1 | 50 | 1092 | - | -16783 | - | 1 | 29 | 1092 | - | 16783 | - | 1.29 | |
| TOTAL | 2 | | | | | | 2 | | 1130 | | 5419278 | | 1.33 | 5 | | 1067 | 74 | 15059 | 5996 | 1.19 |
| MEAN AGE | 28.5 | | 1016 | | 7213381 | | 8019 | | 34.0 | | | | | 30.6 | | | | | | 50 |

Appendix 28. Biological data by length interval for angled and retained lake whitefish, Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | | | | | | |
|----------------------------|-------|--------------------|-------------------|---|----------|---|--------------------|-------------------|----------|----------|-----|--------------------|-------------------|------|----------|------|-----|
| | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | K | % MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | K | % MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | K | % MAT | | |
| 550 | - | - | - | - | - | 1 | 550 | 2400 | - | 1.44 | 100 | 1 | 550 | 2400 | - | 1.44 | 100 |
| TOTAL MEAN | 0 | - | - | - | - | 1 | 550 | 2400 | - | 1.44 | 1 | 550 | 2400 | - | 1.44 | 100 | |

Appendix 29. Biological data by length interval for angled and retained arctic grayling, Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

| LENGTH INTERVAL (MM) | MALES | | | | FEMALES | | | | COMBINED | | | | | | | | | |
|----------------------------|-------|--------------------|-------------------|-----|----------|-----|--------------------|-------------------|----------|----------|------|--------------------|-------------------|-----|----------|------|------|-----|
| | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | K | % MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | K | % MAT | N | LENGTH(MM) MEAN | WEIGHT(G) MEAN | K | % MAT | | | |
| 310 | 1 | 319 | 400 | - | 1.23 | 0 | - | - | - | - | 1 | 319 | 400 | - | 1.23 | 0 | | |
| 330 | 1 | 330 | 450 | - | 1.25 | 0 | 1 | 338 | 500 | - | 1.29 | 0 | 334 | 475 | - | 1.27 | 0 | |
| 340 | 1 | 341 | 450 | - | 1.13 | 0 | 1 | 340 | 450 | - | 1.14 | 0 | 2 | 341 | 450 | 0 | 1.14 | 0 |
| 350 | 2 | 353 | 550 | 71 | 1.25 | 0 | 2 | 354 | 575 | 35 | 1.30 | 100 | 5 | 354 | 580 | 57 | 1.31 | 40 |
| 360 | 2 | 364 | 675 | 35 | 1.40 | 50 | 2 | 369 | 625 | 35 | 1.25 | 100 | 5 | 366 | 650 | 35 | 1.33 | 60 |
| 370 | 3 | 375 | 717 | 58 | 1.36 | 100 | 11 | 374 | 709 | 80 | 1.36 | 82 | 15 | 374 | 713 | 72 | 1.36 | 80 |
| 380 | 6 | 386 | 767 | 93 | 1.33 | 67 | 21 | 383 | 776 | 58 | 1.38 | 100 | 29 | 384 | 779 | 68 | 1.38 | 86 |
| 390 | 21 | 395 | 769 | 97 | 1.25 | 90 | 16 | 393 | 822 | 63 | 1.35 | 94 | 45 | 394 | 793 | 86 | 1.30 | 76 |
| 400 | 19 | 403 | 858 | 75 | 1.31 | 89 | 9 | 405 | 856 | 88 | 1.29 | 78 | 29 | 404 | 859 | 77 | 1.31 | 83 |
| 410 | 10 | 415 | 840 | 88 | 1.18 | 100 | 2 | 412 | 900 | 71 | 1.29 | 100 | 15 | 414 | 857 | 82 | 1.21 | 80 |
| 420 | 2 | 427 | 950 | 0 | 1.22 | 100 | 2 | 428 | 975 | 35 | 1.25 | 100 | 4 | 427 | 963 | 25 | 1.23 | 100 |
| 430 | 7 | 435 | 1029 | 57 | 1.25 | 100 | 4 | 435 | 1100 | 91 | 1.34 | 100 | 13 | 435 | 1054 | 80 | 1.28 | 85 |
| 440 | 2 | 443 | 1000 | 0 | 1.15 | 100 | 2 | 448 | 1200 | 212 | 1.34 | 100 | 7 | 445 | 1057 | 143 | 1.20 | 57 |
| 450 | 2 | 458 | 1275 | 106 | 1.33 | 100 | - | - | - | - | 5 | 457 | 1160 | 119 | 1.22 | 40 | | |
| 460 | 2 | 464 | 1150 | 141 | 1.15 | 100 | 1 | 468 | 1350 | - | 1.32 | 100 | 3 | 465 | 1217 | 153 | 1.21 | 100 |
| 470 | 2 | 473 | 1400 | 141 | 1.33 | 100 | - | - | - | - | 4 | 474 | 1313 | 131 | 1.24 | 50 | | |
| 480 | 1 | 485 | 1500 | - | 1.31 | 100 | - | - | - | - | 2 | 486 | 1375 | 177 | 1.20 | 50 | | |
| 490 | - | - | - | - | - | - | 1 | 491 | 1350 | - | 1.14 | 100 | 1 | 491 | 1350 | - | 1.14 | 100 |
| TOTAL MEAN | 84 | 405 | 852 | 201 | 1.26 | 75 | 393 | 821 | 172 | 1.34 | 187 | 402 | 850 | 188 | 1.30 | | | |

Appendix 30. Biological data by age group for angled and retained arctic grayling, Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

| AGE (YR) | MALES | | | | FEMALES | | | | COMBINED | | | |
|-------------|------------|------|-----------|------|------------|------|-----------|-----|------------|------|-----------|------|
| | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | | LENGTH(MM) | | WEIGHT(G) | |
| | N | MEAN | SD | K | N | MEAN | SD | K | N | MEAN | SD | K |
| 4 | 6 | 360 | 32 | 642 | 204 | 1.34 | 50 | 2 | 354 | 23 | 600 | 141 |
| 5 | 5 | 366 | 22 | 630 | 160 | 1.26 | 40 | 14 | 376 | 18 | 736 | 141 |
| 6 | 34 | 399 | 12 | 816 | 81 | 1.29 | 94 | 33 | 386 | 9 | 780 | 76 |
| 7 | 27 | 413 | 19 | 861 | 133 | 1.22 | 89 | 14 | 399 | 15 | 843 | 145 |
| 8 | 4 | 437 | 29 | 1063 | 266 | 1.25 | 100 | 5 | 409 | 26 | 840 | 156 |
| 9 | 3 | 465 | 26 | 1350 | 260 | 1.33 | 100 | 3 | 435 | 12 | 1133 | 189 |
| 10 | 1 | 439 | - | 1100 | - | 1.30 | 100 | 2 | 480 | 16 | 1350 | 0 |
| 11 | - | - | - | - | - | - | - | 1 | 447 | - | 1050 | - |
| TOTAL | 80 | 403 | 28 | 843 | 191 | 1.27 | 74 | 6.4 | 393 | 25 | 816 | 168 |
| MEAN AGE | 6.4 | | | | | | | | | | 156 | 398 |
| | | | | | | | | | | | 27 | 6.4 |
| | | | | | | | | | | | 829 | 179 |
| | | | | | | | | | | | 179 | 1.30 |

Appendix 31. Biological data by length interval for angled and retained northern pike, Smith Arm, (Trophy Lodge area). Great Bear Lake, 1985.

| LENGTH INTERVAL (MM) | MALES | | | | | | FEMALES | | | | | | COMBINED | | | | | |
|----------------------|------------|------|-----------|-----|------|-----|------------|------|-----------|------|------|-----|------------|------|-----------|------|------|-----|
| | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | | LENGTH(MM) | | WEIGHT(G) | | % | |
| | N | MEAN | MEAN | SD | K | MAT | N | MEAN | MEAN | SD | K | MAT | N | MEAN | MEAN | SD | K | MAT |
| 580 | - | - | - | - | - | - | 1 | 580 | 1400 | - | 0.72 | 0 | 1 | 580 | 1400 | - | 0.72 | 0 |
| 600 | - | - | - | - | - | - | 1 | 615 | 1700 | - | 0.73 | 0 | 2 | 608 | 1750 | 71 | 0.78 | 0 |
| 620 | - | - | - | - | - | - | 2 | 627 | 2050 | 71 | 0.83 | 50 | 3 | 630 | 2167 | 208 | 0.87 | 33 |
| 640 | 2 | 643 | 2025 | 106 | 0.76 | 50 | 1 | 644 | 1950 | - | 0.73 | 100 | 4 | 645 | 2063 | 144 | 0.77 | 50 |
| 660 | 1 | 674 | 2300 | - | 0.75 | 100 | 2 | 675 | 2200 | 141 | 0.72 | 50 | 4 | 673 | 2338 | 229 | 0.77 | 50 |
| 680 | 1 | 695 | 2860 | - | 0.85 | 0 | 2 | 696 | 2525 | 35 | 0.75 | 100 | 3 | 696 | 2637 | 195 | 0.78 | 67 |
| 700 | 1 | 714 | 2900 | - | 0.80 | 100 | 4 | 712 | 2838 | 287 | 0.79 | 75 | 5 | 712 | 2850 | 250 | 0.79 | 80 |
| 720 | 1 | 736 | 3150 | - | 0.79 | 100 | - | - | - | - | - | 2 | 732 | 3100 | 71 | 0.79 | 50 | |
| 740 | 1 | 750 | 3150 | - | 0.75 | 100 | 1 | 742 | 3000 | - | 0.73 | 100 | 5 | 744 | 3280 | 196 | 0.80 | 40 |
| 760 | 2 | 768 | 3000 | 566 | 0.66 | 100 | 2 | 766 | 3450 | 283 | 0.77 | 50 | 4 | 767 | 3225 | 448 | 0.72 | 75 |
| 780 | 1 | 785 | 3700 | - | 0.76 | 100 | 2 | 780 | 3850 | 1202 | 0.81 | 100 | 3 | 782 | 3800 | 854 | 0.80 | 100 |
| 800 | - | - | - | - | - | - | 1 | 808 | 3600 | - | 0.68 | 100 | 1 | 808 | 3600 | - | 0.68 | 100 |
| 860 | - | - | - | - | - | - | 1 | 872 | 5550 | - | 0.84 | 100 | 1 | 872 | 5550 | - | 0.84 | 100 |
| 920 | - | - | - | - | - | - | - | - | - | - | - | 1 | 930 | 6050 | - | 0.75 | 0 | |
| TOTAL MEAN | 10 | 717 | 2811 | 571 | 0.76 | 20 | 710 | 2835 | 999 | 0.77 | 39 | 713 | 2904 | 956 | 0.78 | | | |

Appendix 32. Biological data by age group for angled and retained northern pike, Smith Arm, (Trophy Lodge area), Great Bear Lake, 1985.

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