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**Angler Creel Census in the
Lake Winnipegosis, Waterhen,
Lake Manitoba and Dauphin
Areas in 1977 and 1**

DEPARTMENT OF NATURAL RESOURCES

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ABSTRACT

An intensive summer creel census was carried out in 1977 in Lake Winnipegosis, Lake Waterhen, Lake Manitoba, Dauphin River and the Fairford-St. Martin area. In 1978, the census was repeated in part of the Waterhen and in the Fairford-Dauphin River area. In a stratified sampling procedure, all fishing parties were interviewed on each sampling day as they left the angling site. Catch by species, hours spent angling, numbers of anglers per party and angler's place of residence were recorded. From each area, a sample of walleye were measured, weighed and had scale samples taken.

Angler's place of residence were as follows: Local residents ranged from 0.6% to 54.9%; other Manitobans ranged from 48.0% to 91.1%; Canadians ranged from 0.3% to 8.1%; and Americans ranged from 5.8% to 19.6% of the total numbers of anglers sampled for each area.

1977 walleye production for the census area between May 14 and September 9 was 113,100 ± 18,700 pounds. Total numbers of other species caught were 1,800 sauger, 23,500 pike and 6,000 perch.

Success in 1977 ranged from 0.12 to 0.57 walleye per angler-hour over the selected areas.

In 1978, production at Dauphin River was similar to that estimated for 1977, while Waterhen production declined.

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INTRODUCTION

In 1977, an angler creel census was carried out in the Lake Winnipegosis, Waterhen, Lake Manitoba, Lake St. Martin and Dauphin River areas to determine the quantity of walleye and other game fish species taken by anglers. In 1978, part of the same census was repeated to provide information about year-to-year changes in angling pressure and production.

All of the areas listed are either commercially fished or are directly adjacent to commercial fisheries. These commercial fisheries are managed primarily for walleye, and walleye is also the species most sought after by anglers; these two user groups are as a result, competing for a common resource. Because the resource is finite, neither group can be allowed unlimited access to it. Total available production must be allocated in some manner, and to do this, the impact of both groups must be known.

Commercial production information is relatively easy to obtain, but a reliable estimate of angler production is both more difficult and more costly to get. Prior to this census, information on angler walleye production was limited, although available evidence indicated that harvest by anglers was large, perhaps of the same order of magnitude as commercial walleye production in some areas.

Specific locations surveyed in 1977 included Curve Bay and the Overflowing, Red Deer, Steeprock, Sclater and Mossey rivers flowing into Lake Winnipegosis, all of the ten access points on the Waterhen Rivers, the Manipogo Campsite, Crane River and the Narrows on Lake Manitoba, the Fairford River Dam, the Big Rock Campsite on Lake St. Martin and Dauphin River, a

total of twenty-two angling sites (See Figure 1).

The 1978 census included the three most popular angling sites in the Waterhen system plus Dauphin River and Fairford.

METHODS

Data collection in 1977 was carried out from the opening day of walleye season (May 14 in all areas except streams entering Lake Winnipegosis, where the season opened June 1) until September 9, except at the Sclater and Mossey Rivers, three heavily used access points in the Waterhen, the Narrows and Dauphin River. In the first five areas, the data collection period was extended until September 30 and in the last two areas, the data collection period was extended until October 9. In addition, sampling at one minor Waterhen access point, LePerre's South Dock, did not start until June 1; consequently no data was available for the month of May at this particular site.

Each of the access points was surveyed as a unit, that is, a separate sampling survey was designed and carried out and a production estimate was obtained for each access point. The design sampling and analysis procedures were as follows:

- (a) from previous creel census information, the number of sampling days required to get $\pm 20\%$ precision was determined,
- (b) on each of these sampling days, a complete count of the catch of a given fish species was obtained,
- (c) from the sample of complete daily counts, an average catch per day was calculated. This mean catch per day was multiplied by the total number of days in the sampling period to give an estimate of total catch during the sampling period.

Data collection in 1978 was carried out from May 13 to October 31 at the Waterhen access points and from May 13 to August 31 at Fairford and Dauphin River.

Each access point was surveyed on a randomly selected set of days throughout the sampling period, such that on each sampling day, a complete daily count of each attribute measured was obtained: each party of anglers was interviewed as it left the access point and number of anglers, number of hours spent fishing, number of each species of fish, anglers' place of residence and whether or not the party had been interviewed previously on that fishing trip was recorded for each party. Walleye taken through the access point were also subsampled at approximately 10% intensity to provide length, weight and age information, except in the Waterhen area in 1978, where this information was not obtained.

Sampling days were selected according to a stratified scheme. The purpose of the stratification procedure was to remove variability in the data which was due to predictable differences between weekends and weekdays and among months, as opposed to unpredictable variability: the sampling period was divided into twelve strata consisting of the six months, May through October and two types of days within each month, weekends and weekdays, so that stratum one consisted of May weekdays, stratum two consisted of May weekends and so on. A sample of days was then selected at random from within each stratum.

The proportion of the total number of sampling days allocated to each stratum, at a given access point, was made to conform as closely as possible to optimum allocation (Cochran, 1963) based on available previous creel census information. In result, weekend days were sampled more intensively than week days, because it was expected that most of the fish produc-

tion would occur on weekends. The total number of sampling days at each access point was decided upon in advance, to result in an average of $\pm 20\%$ precision in the estimates of walleye production at each access point.

For a detailed description of design and analysis procedures, see Appendix 1.

RESULTS

(1) Production

Estimated 1977 production of walleye, sauger, pike and perch is given in tables 1, 2, 3 and 4 respectively. These estimated production figures represent totals for the areas indicated, except for the Lake Winnipegosis and Waterhen areas during the September 10 - September 30 period. During this period, only three out of the ten Waterhen access points were surveyed and only two of the six Lake Winnipegosis access points were surveyed. Consequently, the Lake Winnipegosis and the Waterhen 1977 production figures can be regarded as complete only up until September 9. Estimated production figures after September 9 represent an extension to the census as originally planned for these areas; lack of funds prevented a complete extension from being carried out. In any event, the main purpose of the extension was to obtain at least some information about fall angling, to determine whether or not this period should be included in future surveys.

Interval estimates for 1977 walleye production are given in table 5. The period of time for which each estimate applies is as indicated, and in each case is the longest period during which a complete survey was carried out. An estimated total poundage for all surveyed areas in 1977 is also given, for the period May 14 - September 9, which is the longest period of time for which complete data is available in all areas.

Production estimates for 1978 are given in table 6. Fewer walleye were caught in total at LePerre's camp, North Star north dock and Skownan in 1978 as compared to the same three locations in 1977 (significant at the 5% level). At Dauphin River, no significant change in walleye production occurred. 1977 production estimates for LePerre's camp, North Star north dock and Skownan are included in these tables, as are 1977 Fairford and Dauphin River estimates to August 31. This allows a direct comparison between the two years.

Place of residence is presented as local resident, Manitoban, Canadian (non-Manitoban) or American. Negligible numbers of anglers from other countries were encountered, and these numbers are not presented. Local residents were arbitrarily defined (see Figure 5). In all the areas surveyed local and other residents of Manitoba formed the majority of anglers present, while American anglers were generally second in abundance. Non-residents of Manitoba (Canadians) were seldom encountered.

(2) Angler-Hours

Total hours spent angling in each area in 1977 are given in table 7.

(3) Angler's Place of Residence

Place of residence of anglers interviewed in 1977 is given in figures 2, 3, and 4.

For a complete list of data as collected at each access point, see Appendix 2. Production estimates for each access point including catch per angler-hour, are also provided in Appendix 2.

DISCUSSION AND CONCLUSIONS

The 1977 total walleye production estimate of 113,100 pounds should be regarded with certain reservations when considering the effects of angling

pressure in the census area.

First, as indicated in table 6, this figure applies only to the period May 14 - September 9, and consequently cannot be considered an estimate of annual production. For example, 6,000 pounds of walleye were taken through the three largest Waterhen access points between September 10 and September 30. No data is available for the remaining seven access points for this period, but if the ratio of production of the larger three to the small seven established during the previous four months maintained itself, then approximately 9,900 pounds of walleye was taken from the Waterhen area between September 10 and September 30. This would give a May 14 - September 30 total of 46,100 pounds. No data were collected during October, but it appears likely that Waterhen walleye production for the whole of 1977 would be in excess of 50,000 pounds. Similarly, a total 1977 walleye production from all censused areas was probably at least 140,000 pounds.

Second, a certain amount of angling undoubtedly occurred at places not covered by the creel census, such as the Steeprock area on Lake Manitoba. It is likely that relatively more pike production was missed than walleye production, due to the generally greater availability of the first species; the amount of walleye production missed is probably small.

These precautions only apply to inferences about annual production or about pike production from an entire lake or series of lakes. Relative to the objectives of the census, the results are reliable.

A reduction in walleye production occurred between 1977 and 1978 for the part of the Waterhen area which was surveyed in both years. It appeared that this decrease was due to decreased effort by anglers. Total estimated angler-hours at LePerre's camp, North Star north dock and Skownan went from 55,000 in 1977 to 31,000 in 1978 (up to September 30 in both years). Average

number of walleye caught per angler-hour actually increased from 0.36 in 1977 to 0.60 in 1978. No significant difference was observed at Dauphin River, while Fairford showed a significant increase.

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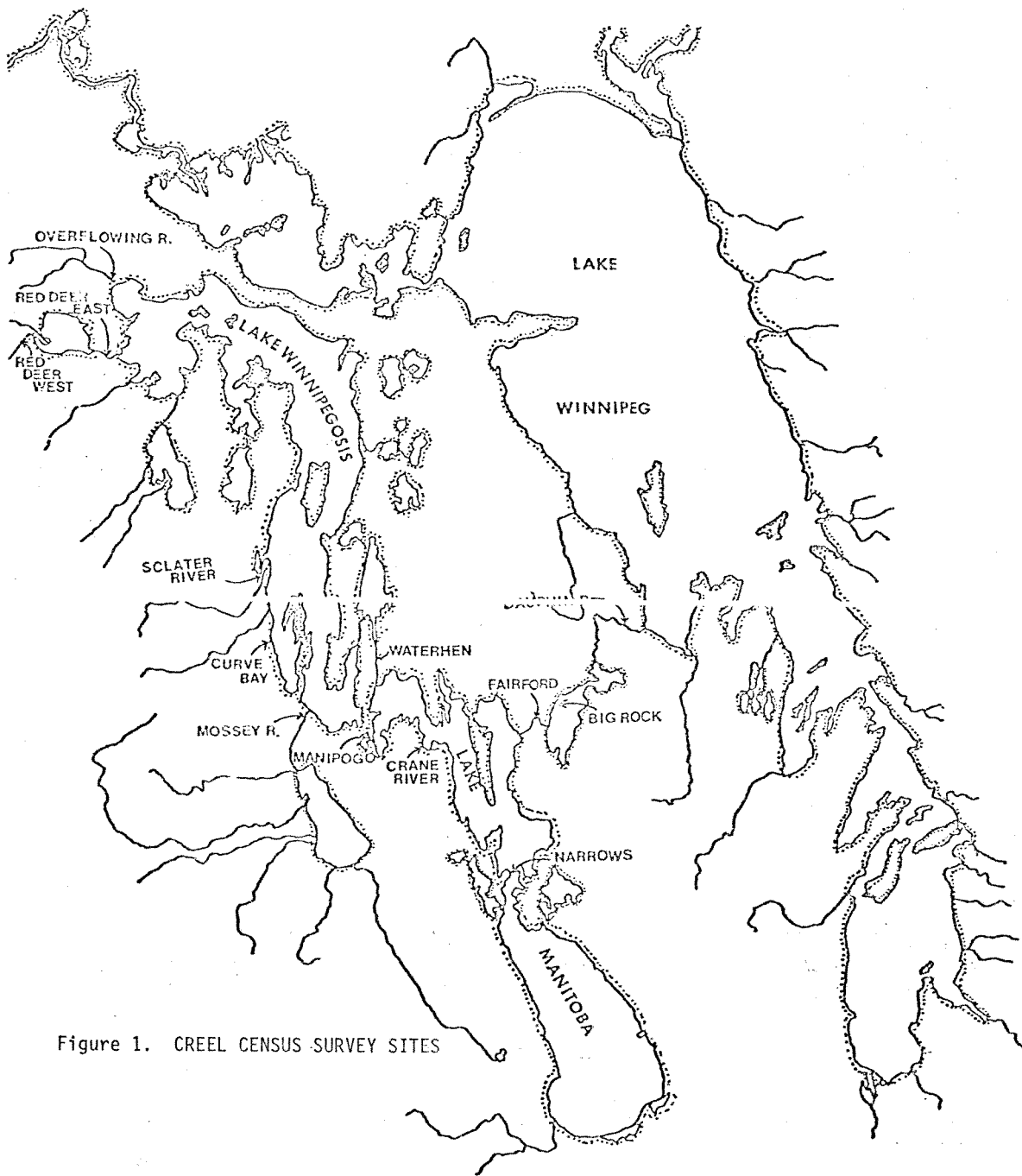
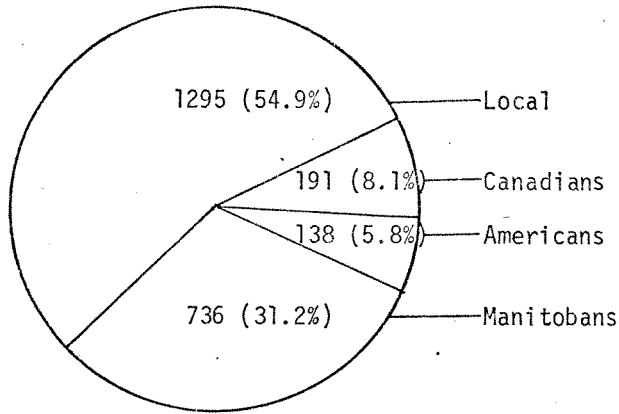


Figure 1. CREEL CENSUS SURVEY SITES

FIGURE 2. Numbers of Anglers and Place of Residence, 1977

Lake Winnipegosis Numbers of Anglers.



Waterhen Numbers of Anglers

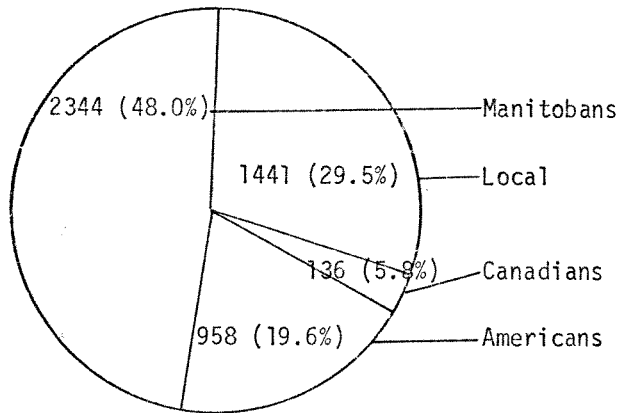
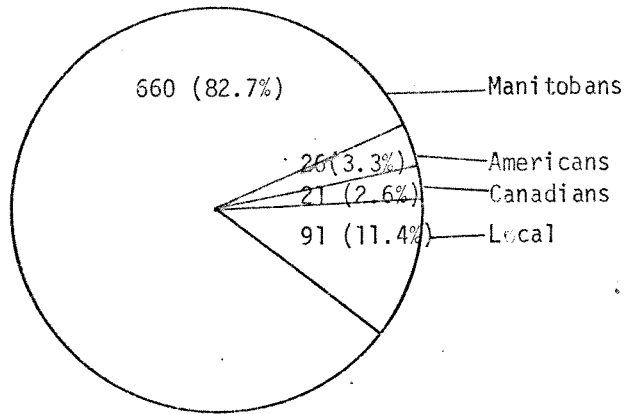


FIGURE 3. Numbers of Anglers and Place of Residence, 1977

Lake Manitoba (exc. Narrows) Numbers of Anglers



Lake Manitoba Narrows Numbers of Anglers

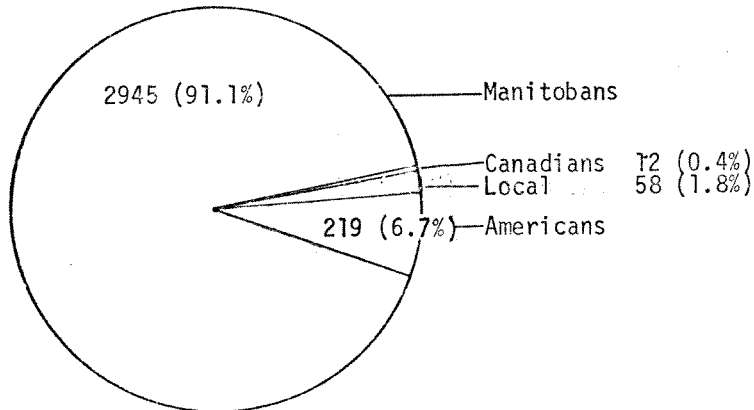
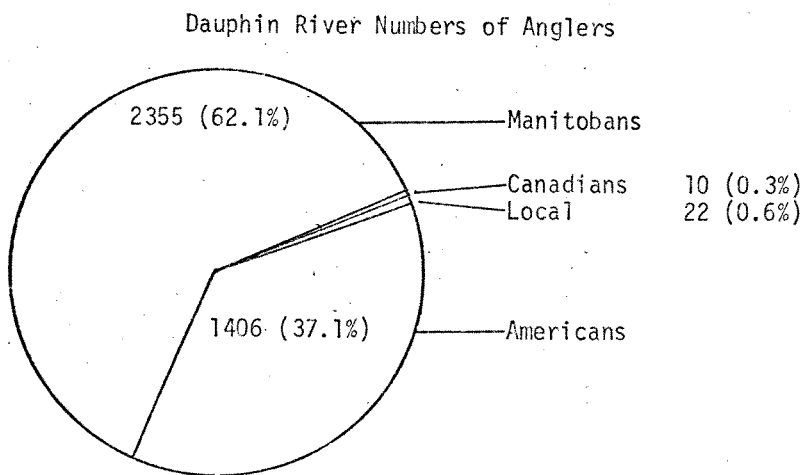
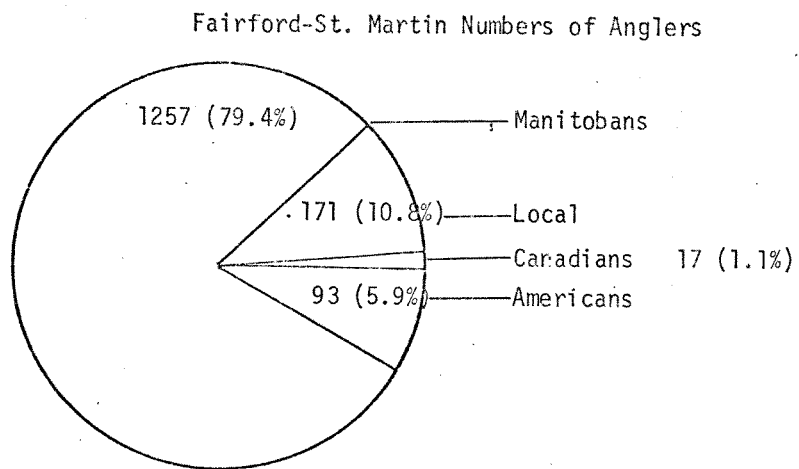


FIGURE 4. Numbers of Anglers and Place of Residence, 1977



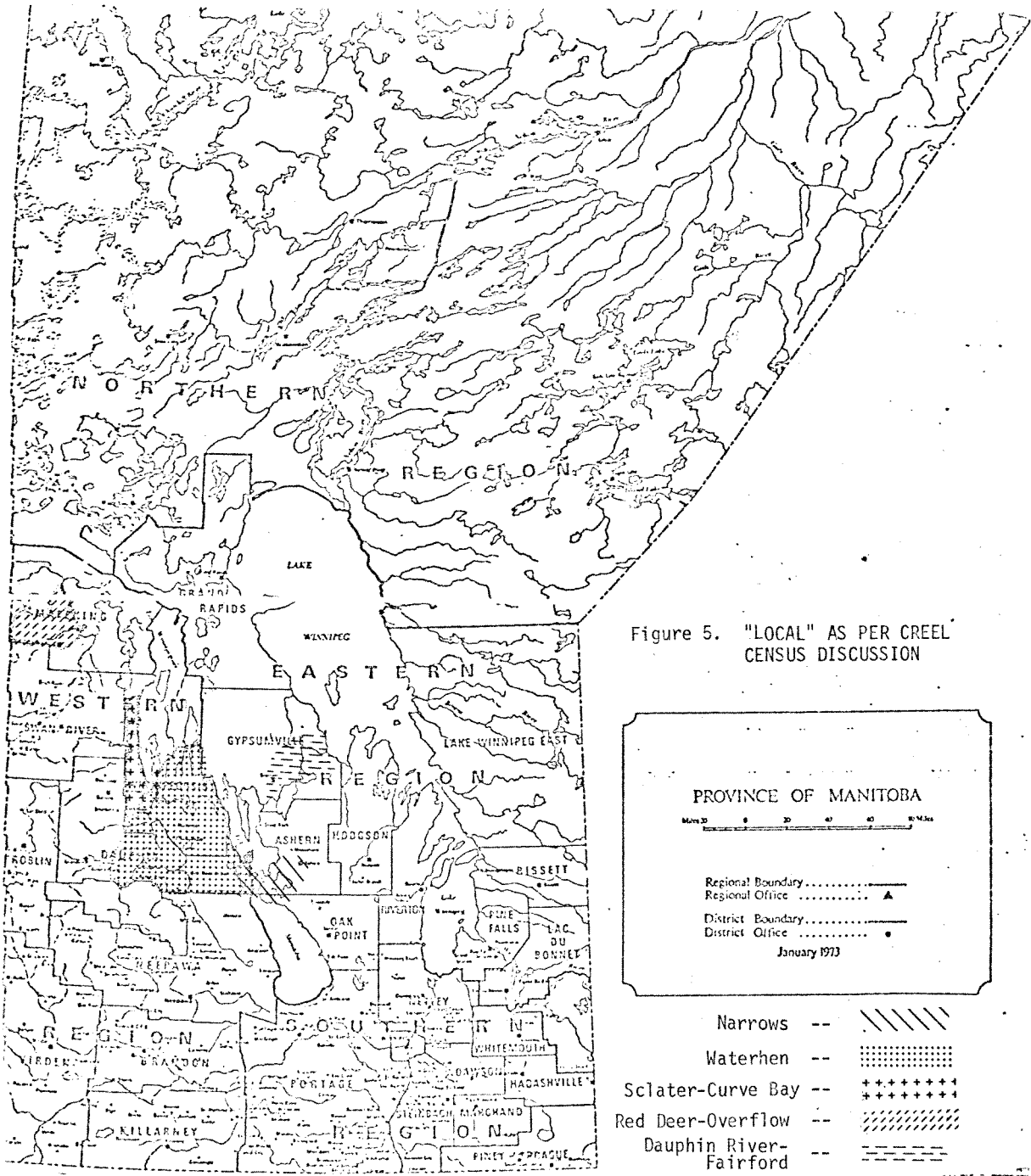


Figure 5. "LOCAL" AS PER CREEL CENSUS DISCUSSION

PROVINCE OF MANITOBA

0 20 40 60 Miles
 0 20 40 60 Kilometers

Regional Boundary
 Regional Office ▲
 District Boundary
 District Office ●
 January 1973

- Narrows -- // // // //
- Waterhen --
- Sclater-Curve Bay -- * * * * *
- Red Deer-Overflow -- / / / / /
- Dauphin River-Fairford -- - - - - -

Table 1. 1977 Walleye Production (lb.)

	May 14-31	June 1 - Sept. 9	September 10-30	October 1 -10	TOTAL
Lake Winnipegosis		15,300	1,500	-	16,800*
Waterhen	19,300	16,900	6,000	-	42,200*
Lake Manitoba - except Narrows	2,200	1,100	-	-	3,300
Narrows	2,100	6,300	400	400	9,200
Fairford - Lake St. Martin	100	7,500	-	-	7,600
Dauphin River	17,700	24,600	4,700	1,200	48,200

*These totals are incomplete, since the September 10-30 totals refer only to a subset of the access points, as described in the text.

Table 2. 1977 Sauger Production (Nos.)

	May 14-31	June 1 - Sept. 9	September 10-30	October 1 -10	TOTAL
Lake Winnipegosis	-	100	0	-	100
Waterhen	200	200	0	-	400
Lake Manitoba - except Narrows	0	0	-	-	100
Narrows	400	700	200	0	1,300
Fairford - Lake St. Martin	0	200	-	-	200
Dauphin River	0	0	0	0	0

Table 3. 1977 Pike Production (Nos.)

	May 1-31	June 1 - Sept. 9	September 10-30	October 1 -10	TOTAL
Lake Winnipegosis	-	3,600	100	0	3,700*
Waterhen	1,900	2,500	100	-	4,500*
Lake Manitoba - except the Narrows	1,000	700	-	-	1,700
Narrows	1,300	1,800	100	200	3,400
Fairford - Lake St. Martin	1,300	1,600	-	-	2,900
Dauphin River	6,200	1,600	300	-	8,100

Table 4. 1977 Perch Production (Nos.)

	May 14-31	June 1 - Sept. 9	September 10-30	October 1 -10	TOTAL
Lake Winnipegosis	-	1,100	0	-	1,100
Waterhen	200	800	100	-	1,100*
Lake Manitoba - except Narrows	300	300	-	-	600
Narrows	700	2,200	100	0	3,000
Fairford - Lake St. Martin	0	100	-	-	100
Dauphin River	100	200	0	0	300

Table 5. 1977 Interval Estimates of Walleye Production (lb.)

AREA	SAMPLING PERIOD	ESTIMATE	PRECISION AS % OF ESTIMATE
1) Lake Winnipegosis	June 1 - Sept. 9	15,300 ± 2,900	19.0
2) Waterhen	May 14 - Sept. 9	36,200 ± 5,500	15.2
3) Lake Manitoba - except Narrows	May 14 - Sept. 9	3,300 ± 1,100	33.3
4) Narrows	May 14 - Oct. 9	9,200 ± 2,900	29.7
5) Fairford - Lake St. Martin	May 14 - Sept. 9	7,600 ± 2,300	31.0
6) Dauphin River	May 14 - Oct. 9	48,200 ± 17,200	35.7
TOTAL OF AREAS 1) through 6)	May 14 - Sept. 9	113,100 ± 18,700	16.7

Table 6. 1977 vs 1978 Walleye Production (Nos.)

	WALLEYE	SAUGER	PIKE	PERCH	ANGLER-HOURS
Leperre's) North Star North } -to Sept. 30/77 Skownan)	22,000	200	3,600	700	55,000
Leperre's) North Star North } -to Sept. 30/78 Skownan)	15,000	-	1,300	300	31,000
Fairford to Aug. 31/77	1,000	200	2,700	-	14,000
Fairford to Aug. 31/78	7,000	500	5,000	100	31,000
Dauphin River to Aug. 31/77	29,000	-	1,400	300	51,000
Dauphin River to Aug. 31/78	27,000	-	3,500	100	48,000

Table 7. Estimated 1977 Angler-Hours and Number of Walleye Per Angler-Hour For Each Area.

AREA	SAMPLING PERIOD	ANGLER-HOURS	NO. OF WALLEYE PER ANGLER-HOUR
1) Lake Winnipegosis	June 1 - Sept. 9	30,000	0.28
2) Waterhen	May 14 - Sept. 9	78,000	0.44
3) Lake Manitoba - except Narrows	May 14 - Sept. 9	10,000	0.32
4) Narrows	May 14 - Oct. 9	48,000	0.12
5) Fairford - Lake St. Martin	May 14 - Sept. 9	21,000	0.28
6) Dauphin River	May 14 - Oct. 9	58,000	0.57

Appendix 1. Creel Census Design and Analysis of the Data

1) General

The statistical design used is well-known and is used for a wide range of applications, but to my knowledge, it has seldom been used for creel census work. More commonly used are various "roving" types of creel census, in which a body of water is patrolled, usually by boat and anglers are interviewed to determine their success while angling.

The two advantages of the design used here as compared to most roving designs are that the estimates of fish production are unbiased, and variances of the estimates are easy to calculate. Consequently it is a straightforward matter to determine the sampling intensity required to obtain the required level of precision.

The key element in this design is that a complete total for each attribute (number of fish, number of angler-hours, etc.) is obtained for each unit sampled. In this census, a 24-hour sampling unit was selected; within reasonable limits, a smaller or larger sampling unit would probably have worked as well.

Where this design would run into trouble would be a situation where anglers could access a lake at say, 100 different locations. Unless the census taker could cover a substantial fraction of the shoreline and interview exiting anglers, this situation would probably be too expensive to be practical. Unless stated otherwise, the following discussion is based on the design of the 1977 census only.

2) Design

To summarize the structure of the census, a stratified random

sampling design was used to estimate fish production and on each census day the set of attributes (number of walleye, number of angler-hours, etc.) was determined. The estimated total for each attribute was obtained by calculating the average daily value and multiplying this daily average by the total number of days in the sampling interval. A more detailed description is as follows:

a) Sampling and data collection

The following definitions apply:

Y_{ih} = the total number of walleye (or pike, etc.) caught on the i^{th} sampling day, in the h^{th} stratum.

n_h = the sample size (number of days selected) in the h^{th} stratum.

n = $\sum_h n_h$
= total sample size

N_h = size of the h^{th} stratum in days

N = $\sum_h N_h$
= the total number of days in the sampling period

W_h = N_h/N
= the proportion of the sampling period taken up by the h^{th} stratum

Rather than taking a simple random sample of days, a stratification scheme was set up: it was expected that daily catches would be higher on weekends than on weekdays and higher in some months than in others. Therefore, the sampling interval was partitioned into strata consisting of May weekdays, May weekends, June weekdays and so on. A simple random sample was then taken from within each stratum. (Table 8)

Prior to conducting the census, it was necessary to decide how many

samples to take in total and also how many of these samples to take from within each stratum.

In order to select an appropriate sample size and allocation of sampling effort, some information about the probable pattern of walleye catches was required. In 1977, available preliminary data consisted of one 1972 creel census carried out on the Sclater River and another census done the same year on the Dauphin River. The Sclater data consisted of complete daily counts of walleye caught on 85 days between May and September, 1972, while the Dauphin River data consisted of incomplete daily counts of angler-hours on 42 days between June and August, 1972. It was assumed that angler-hours at Dauphin River would be positively correlated with the number of walleye caught, and consequently that the relationship among the within-stratum variances of daily angler-hours would be similar to the relationship among the within-stratum variances of daily walleye catches.

A formula for the determination of "n" to obtain a fixed level of precision in stratified designs is given by Cochran (1963). Setting the " n_h " proportional to " $N_h \cdot \sigma_h$ " insures that overall variance is a minimum for fixed "n". (This is known as optimum allocation and effectively means taking more samples in the larger, more variable strata.)

Sample size and optimum allocation were estimated from the 1972 Sclater River census and then checked against the Dauphin River census. The two agreed reasonably well, but where differences existed, emphasis was placed on the Sclater census since the Sclater data were more reliable. It appeared that a sampling intensity of 25% would be required to obtain $\pm 20\%$ precision, so an average of 25 days out of the 101-day (May 14 - September 9) sampling period was selected at each access point. However, because it was anticipated that greater production would occur at some access points than at others,

some precision was sacrificed at the less important access points in order to insure that sufficiently precise estimates would be obtained at the high production locations: the actual number of days sampled varied from a low of 17 at Crane River to a high of 35 at Dauphin River.

The allocation used also varied somewhat among the access points. In each case, the sampling days were allocated as close to optimal as possible, contingent on two factors. First, optimum allocation suggested applying less than two sampling days to certain strata, but a minimum of two days were sampled in almost all of the first eight strata so that a within-stratum variance estimate could be obtained without pooling. Meeting this condition in strata 9 and 10 (September 1 - 9) was not worth the cost involved because of the small size of these strata, so it was decided instead to pool strata 7 with 9 and 8 with 10 in most areas when calculating production. Second, because of the sometimes large number of access points being surveyed by a single crew of employees, it was not possible to sample certain strata as intensively as they should have been. For example, two crews of three people each were assigned to the ten Waterhen access points and, because of limited accommodation facilities, only one crew could be in the area at one time. Each member of a crew surveyed a different access point, so on a given sampling day, three access points were surveyed. There were a total of six days in stratum 2 (May weekends), so an average of only $(6 \times 3) / 10 = 1.8$ days of data could be collected at each access point during this stratum. Because the optimum allocation based on the 1972 data only recommended two samples in stratum 2, this did not appear to be a major problem.

3) Data Analysis

For each access point, an estimate of the total number of fish

caught was made using stratified estimation procedures as described in Snedecor and Cochran (1967).

a) Estimation of number caught

The mean number of walleye caught per day in the h^{th} stratum is estimated by

$$\bar{y}_h = \frac{\sum_{i=1}^{n_h} y_{ih}}{n_h}$$

and the within-stratum variance is estimated by

$$s_h^2 = \frac{\sum_{i=1}^{n_h} (y_{ih} - \bar{y}_h)^2}{(n_h - 1)}$$

The average number of walleye caught per day in the sampling period is estimated by

$$\bar{y}_{st} = \sum_h w_h \cdot \bar{y}_h$$

which is just an average of the within-stratum means, weighted by the sizes of the strata.

The total number of walleye caught during the sampling period is estimated by

$$\hat{\tau} = N \bar{y}_{st}$$

The variance of $\hat{\tau}$ is estimated by

$$\hat{V}(\hat{\tau}) = N \sum_h w_h^2 \frac{s_h^2}{n_h} (1 - \phi_h),$$

where $(1 - \phi_h) = 1 - \left(\frac{n_h}{N_h}\right)$, the finite population correction factor.

An interval estimate of the total number of walleye caught during the sampling period was calculated as

$$\hat{\tau} \pm 2 \sqrt{\hat{V}(\hat{\tau})}$$

b) Estimation of walleye production, expressed as weight

Using the weight information obtained from the 10% daily sub-sample of walleye, a mean individual fish weight was calculated for each stratum, at each access point. Since there was no reason to expect that the average weight of fish should be different on weekends than on weekdays, all of the weight samples obtained in a given month were used to obtain an average weight for the month and this same average was used for both strata (weekdays and weekends) in that month.

The average daily poundage for the sampling period was estimated by:

$$\bar{P}_{st} = \sum_h W_h \cdot \bar{Y}_h \cdot P_h ,$$

where " P_h " is the average weight of an individual walleye caught in the h^{th} stratum.

Total poundage for the sampling period, and variance of this total were estimated the same way as were total numbers of fish, except that " \bar{Y}_h " the average number of fish caught per day in the h^{th} stratum, was replaced by " $\bar{Y}_h P_h$ ", the average number of pounds of fish caught per day in the h^{th} stratum.

The above procedure is not strictly correct, since it assumes that the average weight of walleye caught on a given sampling day is known exactly, when in fact it is estimated, based on a 10% sample of a given day's catch. In result, the estimated variance of total poundage is probably biased to some extent, either upward or downward. This can be best explained by use of an example: if a variable "y" has variance " σ^2 ", then the variable $Z = K.Y$ where "K" is a constant, has variance " $K^2 \sigma^2$ ", and this is analogous to the procedure

followed here. If, however, "K" is another variable rather than a constant, then the variance of "Z" is not necessarily equal to " $K^2 \sigma^2$ ", although if the variance of "K" is small, it should be close.

c) Estimation of total production

An estimate of total production for e.g. the Waterhen area was obtained as the sum of the estimated productions from each of the individual access points.

It was assumed that these estimates were independent of one another, which implies that an over or underestimate of production at one access point did not increase the probability of a corresponding over or underestimate at any other access point. Since the sampling days for each access point were selected both at random and independently of one another, this assumption is probably justified. Consequently, an interval estimate of total production was obtained using the result that

$$v\left(\sum_i \hat{z}_i\right) = \sum_i v(\hat{z}_i),$$

or that the variance of a sum of independent random variables is equal to the sum of the individual variances.

4) Precision

It can be seen by inspection of table 5 that the relative precision of the production estimates varies considerably among the different areas. This variation is largely due to variation in the number of access points represented in the given estimates. For example, the estimated Waterhen walleye production is the sum of ten individual access point estimates. These

ten estimates are of comparable precision to the Dauphin River estimate, but their sum is more precise on a percentage basis, because the standard error only increases in proportion to the square root of the estimate itself.

It can also be seen from table 5 that the target level of precision ($\pm 20\%$) was not reached at most access points. This was mainly due to the unexpected large variability in daily walleye production in May. No May data was available from the 1972 Dauphin River census, while the 1972 Sclater River census did not show a great deal of difference between May and June. Consequently it was assumed, for lack of any better information, that average daily production in May would be only slightly higher than average daily production in June. This assumption was a poor one, and the result was that the sampling intensity during May, particularly May weekends, was too low; the estimates of May production were imprecise and the overall level of precision was reduced. After June 1, the precision of the estimates is generally closer to the target level. For example, a 95% confidence interval for June 1 - October 9 walleye production at the Dauphin River is 30,400 lb. \pm 8,000 lbs., which represents a precision level of $\pm 26\%$, a considerable improvement over the $\pm 36\%$ confidence level obtained for the May 14 - October 9 period.

From table 1, the sampling allocation used at the Dauphin River for strata 1 through 12 was the following sequence of days:

3, 2, 5, 4, 4, 5, 5, 3, 4, 5, 2, 2.

It is possible to recalculate an optimum allocation based on the within-stratum variance estimates actually obtained in 1977. Given the same sample size of 44 days, the allocation which results is:

4, 7, 9, 8, 2, 2, 2, 2, 2, 2, 2.

This suggests that more samples should have been taken in May (seven sampling days for May weekends represents 100% sampling intensity) and also in June,

with fewer samples in succeeding months. If this allocation had been used, $\pm 14\%$ precision would have been achieved.

If the same 44 days had been selected as a simple random sample, precision would have been $\pm 41\%$. The precision level which was actually achieved thus represents only a moderate improvement over simple random sampling. If a more efficient allocation had been used, precision could have been improved considerably with no increase in effort. At most of the other access points, May walleye production was less erratic, the allocation was closer to optimum and the design gave a greater improvement over simple random sampling.

At many of the access points, precision could also have been improved somewhat by pooling some or all of the strata as originally set up. In some cases, the best level of precision was obtained by using only two strata, May weekends and all other days. This pooling was not done except where necessary due to lack of a sufficient (size 2) sample in an individual stratum. Because of the relatively large number of access points involved in this study, analysis was confined to the original design to simplify the presentation of results.

In 1978, the following numbers of samples were taken at Dauphin River, strata 1 to 8:

4, 6, 4, 4, 2, 2, 2, 2,

This is not exactly the same as optimum based on the 1977 Dauphin River results, but it is close. As compared to the allocation actually used in 1977, sampling was more intensive in May, about the same in June and less intensive in July and August. The May 13 - August 31 interval estimate for walleye poundage at Dauphin River was 40,000 lb. \pm 10,600 lb., which represents a precision level of $\pm 27\%$. The 1978 design gave a greater improvement over simple random

sampling than the 1977 design did, at a lower sampling intensity. The target level of precision ($\pm 20\%$) was still not attained, however, due to large variability in July production. This suggests that an optimum allocation in one year is not necessarily the best allocation to use the following year, due to unpredictable changes in catch patterns.

Table 8. Number of Days Sampled in Each Stratum, at Each Access Point, 1977.

	MAY		JUNE		JULY		AUG.		SEPT. 1 - 9		SEPT. 10-30		TOTAL
	WD	WE	WD	WE	WD	WE	WD	WE	WD	WE	WD	WE	
WINNIPEGOSIS													
Curve Bay	-	-	11	3	2	2	0	0	0	0	-	-	28
Overflow	-	-	4	2	4	2	4	2	1	1	-	-	20
Red Deer East	-	-	3	2	3	3	8	4	2	0	-	-	25
Red Deer West	-	-	2	3	3	3	2	1	1	1	-	-	16
Steepprock	-	-	4	3	4	2	2	3	0	2	-	-	20
Sclater	-	-	6	4	5	3	7	5	2	2	4	3	41
Mossey	-	-	3	3	2	3	1	1	1	1	2	2	19
WATERHEN													
Hill's	1	3	5	2	4	5			1	2	-	-	29
LePerre's	2	2	5	3	5	4	5	3	2	1	2	2	36
North Star	1	3	5	2	4	4	5	3	1	1	-	-	29
Waterhen Cabins	2	2	4	2	2	4	2	2	1	1	-	-	22
Huhtala's	2	2	5	3	3	3	3	2	1	1	-	-	25
Baker's Point	2	2	4	2	2	2	2	2	1	0	-	-	19
North Star North	2	2	5	3	6	3	4	4	2	0	2	2	35
Skownan	2	2	4	3	4	4	5	4	0	1	2	2	33
West Bridges	2	2	4	2	3	4	3	2	1	1	-	-	34
LePerre's South Dock	0	0	5	3	3	3	3	3	1	1	-	-	22
Manipogo	2	2	4	2	5	3	3	4	1	1	-	-	27
Crane River	2	2	3	2	2	2	2	2	0	0	-	-	17
Narrows	2	2	4	2	5	4	5	2	8	3	1	2	40
Fairford	3	2	5	4	5	4	4	1	1	0	-	-	29
Lake St. Martin	3	2	5	4	2	3	7	6	0	1	-	-	33
Dauphin River	3	2	5	4	4	5	5	3	4	5	2	2	44

Appendix 2. Individual Access Points Production Estimates, 1977.

1977 FAIRFORD walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	33	9.4	44	12.4	391	0.08
may we	14	0.0	19	0.0	1669	0.01
jun wd	255	100.2	338	132.6	1945	0.13
jun we	186	39.8	246	52.6	2379	0.08
jul wd	283	66.1	374	87.5	2570	0.11
jul we	266	51.6	351	68.3	1322	0.20
aug wd	859	324.0	1136	428.5	1665	0.52
+ sep wd						
aug we	2102	483.9	2780	640.1	3038	0.69
total	3997	598.2	5287	791.3	14978	0.27

1977 FAIRFORD sauger

stratum	#fish	std error	a-h	no./a-h
may wd	4	3.1	391	0.01
may we	4	3.0	1669	0.00
jun wd	75	21.7	1945	0.04
jun we	36	7.1	2379	0.02
jul wd	20	10.6	2570	0.01
jul we	8	2.8	1322	0.01
aug wd	2	1.8	1665	0.00
+ sep wd				
aug we	0	0.0	3038	0.00
total	148	25.7	14978	0.01

1977 FAIRFORD pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	521	154.0	391	1.33
may we	777	195.2	1669	0.47
jun wd	598	160.1	1945	0.31
jun we	524	29.6	2379	0.22
jul wd	189	99.1	2570	0.07
jul we	36	9.1	1322	0.03
aug wd	70	39.9	1665	0.04
+ sep wd				
aug we	23	5.1	3038	0.01
<u>total</u>	<u>2737</u>	<u>316.0</u>	<u>14978</u>	<u>0.18</u>

1977 FAIRFORD perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	7	6.3	391	0.02
may we	14	5.9	1669	0.01
jun wd	5	7.7	1945	0.00
jun we	6	2.7	2379	0.00
jul wd	11	4.8	2570	0.00
jul we	8	2.8	1322	0.01
aug wd	19	9.5	1665	0.01
+ sep wd				
aug we	8	1.8	3038	0.00
<u>total</u>	<u>82</u>	<u>16.3</u>	<u>14978</u>	<u>0.01</u>

1977 CURVE BAY walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)				
may we	0	observation(s)				
jun wd	772	170.2	939	207.0	1222	0.63
jun we	200	121.5	243	147.8	383	0.52
jul wd	495	146.5	632	187.0	728	0.68
jul we	116	104.5	147	133.4	550	0.21
aug wd	0	observation(s)				
aug we	0	observation(s)				
sep wd	0	observation(s)				
sep we	0	observation(s)				
<u>total</u>	<u>1583</u>	<u>275.9</u>	<u>1962</u>	<u>342.7</u>	<u>2882</u>	<u>0.55</u>

1977 CURVE BAY sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)		
may we	0	observation(s)		
jun wd	0	0.0	1222	0.00
jun we	0	0.0	383	0.00
jul wd	0	0.0	728	0.00
jul we	0	0.0	550	0.00
aug wd	0	observation(s)		
aug we	0	observation(s)		
sep wd	0	observation(s)		
sep we	0	observation(s)		
<u>total</u>	<u>0</u>	<u>0.0</u>	<u>2882</u>	<u>0.00</u>

1977 CURVE BAY pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)		
may we	0	observation(s)		
jun wd	104	40.0	1222	0.13
jun we	64	7.3	383	0.17
jul wd	78	12.7	728	0.11
jul we	88	69.6	550	0.16
aug wd	0	observation(s)		
aug we	0	observation(s)		
sep wd	0	observation(s)		
sep we	0	observation(s)		
<u>total</u>	<u>394</u>	<u>82.0</u>	<u>2882</u>	<u>0.14</u>

1977 CURVE BAY perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)		
may we	0	observation(s)		
jun wd	72	13.6	1222	0.06
jun we	40	3.7	383	0.10
jul wd	75	30.9	728	0.10
jul we	22	9.9	550	0.04
aug wd	0	observation(s)		
aug we	0	observation(s)		
sep wd	0	observation(s)		
sep we	0	observation(s)		
<u>total</u>	<u>209</u>	<u>35.4</u>	<u>2882</u>	<u>0.07</u>

1977 OVERFLOW walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
Jun wd	11	9.9	16	14.3	430	0.03
Jun we	16	13.9	23	19.9	678	0.02
Jul wd	105	54.3	150	77.9	518	0.20
Jul we	22	19.9	32	28.5	303	0.07
Aug wd	722	223.2	1035	319.8	1688	0.43
+ sep wd						
Aug we	696	63.5	997	91.0	1512	0.46
+ sep we						
total	1572	239.7	2253	343.5	5129	0.31

1977 OVERFLOW sauger

stratum	#fish	std error	a-h	no./a-h
Jun wd	0	0.0	430	0.00
Jun we	0	0.0	678	0.00
Jul wd	0	0.0	518	0.00
Jul we	0	0.0	303	0.00
Aug wd	0	0.0	1688	0.00
+ sep wd				
Aug we	0	0.0	1512	0.00
+ sep we				
total	0	0.0	5129	0.00

1977 OVERFLOW pike

stratum	#fish	std error	a-h	no./a-h
Jun wd	165	54.2	430	0.38
Jun we	132	107.4	678	0.19
Jul wd	15	8.6	518	0.03
Jul we	0	0.0	303	0.00
Aug wd	129	51.8	1688	0.08
+ sep wd				
Aug we	116	85.3	1512	0.08
+ sep we				
total	557	156.5	5129	0.11

1977 OVERFLOW perch

stratum	#fish	std error	a-h	no./a-h
Jun wd	50	20.5	430	0.12
Jun we	28	24.2	678	0.04
Jul wd	35	25.7	518	0.07
Jul we	0	0.0	303	0.00
Aug wd	28	19.7	1688	0.02
+ sep wd				
Aug we	0	0.0	1512	0.00
+ sep we				
total	141	45.3	5129	0.03

1977 RDE walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
Jun wd	183	170.4	263	244.1	1166	0.16
Jun we	21	20.0	34	27.8	974	0.02
Jul wd	793	623.1	1137	892.8	1473	0.54
Jul we	220	131.4	315	188.4	1228	0.18
Aug wd	701	349.9	1005	501.3	1352	0.52
Aug we	618	197.9	886	283.6	1506	0.41
sep wd	21	12.2	30	17.6	176	0.12
total	2561	772.4	3670	1106.9	7875	0.33

1977 RDE sauger

stratum	#fish	std error	a-h	no./a-h
Jun wd	0	0.0	1166	0.00
Jun we	0	0.0	974	0.00
Jul wd	0	0.0	1473	0.00
Jul we	0	0.0	1228	0.00
Aug wd	0	0.0	1352	0.00
Aug we	0	0.0	1506	0.00
sep wd	0	0.0	176	0.00
total	0	0.0	7875	0.00

1977 RDE pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	44	20.4	1166	0.04
jun we	0	0.0	974	0.00
jul wd	13	6.1	1473	0.01
jul we	4	3.1	1228	0.00
aug wd	0	0.0	1352	0.00
aug we	0	0.0	1506	0.00
sep wd	0	0.0	176	0.00
<u>total</u>	<u>61</u>	<u>21.6</u>	<u>7875</u>	<u>0.01</u>

1977 RDE perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	37	24.6	1166	0.03
jun we	0	0.0	974	0.00
jul wd	20	18.4	1473	0.01
jul we	37	26.7	1228	0.03
aug wd	11	6.6	1352	0.01
aug we	12	9.8	1506	0.01
sep wd	0	0.0	176	0.00
<u>total</u>	<u>116</u>	<u>42.4</u>	<u>7875</u>	<u>0.01</u>

1977 RDW walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	0	0.0	0	0.0	454	0.00
jun we	11	8.4	27	21.1	327	0.03
jul wd	0	0.0	0	0.0	280	0.00
jul we	0	0.0	0	0.0	534	0.00
+ sep we						
aug wd	0	0.0	0	0.0	56	0.00
+ sep wd						
<u>total</u>	<u>15</u>	<u>8.4</u>	<u>27</u>	<u>21.1</u>	<u>1650</u>	<u>0.01</u>

1977 RDW souger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	0	0.0	454	0.00
jun we	0	0.0	327	0.00
jul wd	0	0.0	288	0.00
jul we	0	0.0	534	0.00
+ sep we				
aug wd	0	0.0	56	0.00
+ sep wd				
-----	-----	-----	-----	-----
total	0	0.0	1650	0.00

1977 RDW pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	253	73.4	454	0.56
jun we	187	86.3	327	0.57
jul wd	110	66.4	288	0.38
jul we	69	40.7	534	0.13
+ sep we				
aug wd	0	0.0	56	0.00
+ sep wd				
-----	-----	-----	-----	-----
total	619	137.5	1650	0.37

1977 RDW perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	0	0.0	454	0.00
jun we	0	0.0	327	0.00
jul wd	0	0.0	288	0.00
jul we	0	0.0	534	0.00
+ sep we				
aug wd	0	0.0	56	0.00
+ sep wd				
-----	-----	-----	-----	-----
total	0	0.0	1650	0.00

1977 STEEPROCK walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
Jun wd	103	85.4	140	116.7	759	0.14
Jun we	11	8.4	15	11.5	393	0.03
Jul wd	10	9.1	13	12.4	110	0.09
+ aug wd						
Jul we	77	69.6	105	95.2	323	0.24
aug we	0	0.0	0	0.0	33	0.00
sep we	0	0.0	0	0.0	0	0.00
total	202	110.9	273	151.6	1619	0.12

1977 STEEPROCK sauger

stratum	#fish	std error	a-h	no./a-h
Jun wd	0	0.0	759	0.00
Jun we	0	0.0	393	0.00
Jul wd	0	0.0	110	0.00
+ aug wd				
Jul we	0	0.0	323	0.00
aug we	0	0.0	33	0.00
sep we	0	0.0	0	0.00
total	0	0.0	1619	0.00

1977 STEEPROCK pike

stratum	#fish	std error	a-h	no./a-h
Jun wd	147	65.0	759	0.19
Jun we	24	19.0	393	0.06
Jul wd	10	9.1	110	0.09
+ aug wd				
Jul we	6	5.0	323	0.02
aug we	6	4.9	33	0.18
sep we	0	0.0	0	0.00
total	192	68.7	1619	0.12

1977 STEEPROCK perch

stratum	#fish	std error	a-h	no./a-h
jun wd	169	105.8	759	0.22
jun we	13	10.5	393	0.03
jul wd	19	18.2	110	0.17
+ aqs wd				
jul we	94	14.9	323	0.29
aqs we	0	0.0	33	0.00
sep we	0	0.0	0	0.00
total	295	108.9	1619	0.18

1977 MOSSEY RIVER walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
jun wd	88	61.3	94	65.7	1384	0.06
jun we	8	3.7	9	4.0	120	0.07
jul wd	14	13.5	19	18.6	147	0.10
+ aqs wd						
jul we	10	8.9	13	11.5	320	0.03
+ aqs we						
sep wd	0	0.0	0	0.0	22	0.00
sep we	0	0.0	0	0.0	23	0.00
total	122	63.5	135	69.4	2016	0.06

1977 MOSSEY RIVER sauger

stratum	#fish	std error	a-h	no./a-h
jun wd	51	37.9	1384	0.04
jun we	0	0.0	120	0.00
jul wd	0	0.0	147	0.00
+ aqs wd				
jul we	0	0.0	320	0.00
+ aqs we				
sep wd	0	0.0	22	0.00
sep we	0	0.0	23	0.00
total	51	37.9	2016	0.03

1977 MOSSEY RIVER pike

stratum	#fish	std error	a-h	no./a-h
jun wd	176	70.0	1384	0.13
jun we	11	8.4	120	0.09
jul wd	28	27.0	147	0.19
+ aug wd				
jul we	5	4.5	320	0.02
+ aug we				
sep wd	0	0.0	22	0.00
sep we	0	0.0	23	0.00
total	220	76.4	2016	0.11

1977 MOSSEY RIVER perch

stratum	#fish	std error	a-h	no./a-h
jun wd	37	6.0	1384	0.03
jun we	3	2.1	120	0.02
jul wd	0	0.0	147	0.00
+ aug wd				
jul we	10	5.2	320	0.03
+ aug we				
sep wd	0	0.0	22	0.00
sep we	0	0.0	23	0.00
total	49	8.8	2016	0.02

1977 SCLATER RIVER walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	0	observation(s)				
may we	0	observation(s)				
jun wd	44	11.5	47	12.3	556	0.08
jun we	184	98.0	200	106.6	1551	0.12
jul wd	530	255.6	703	339.2	705	0.75
jul we	350	118.1	450	151.8	426	0.82
aug wd	1085	285.9	1495	393.9	1513	0.72
aug we	1127	331.1	1640	481.8	1634	0.69
sep wd	1043	432.2	1729	716.5	1670	0.62
sep we	1613	466.2	2517	727.6	2232	0.72
total	5976	827.3	8782	1256.9	10284	0.58

1977 SCLATER RIVER sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)		
may we	0	observation(s)		
jun wd	0	0.0	556	0.00
jun we	0	0.0	1551	0.00
jul wd	0	0.0	705	0.00
jul we	0	0.0	426	0.00
aug wd	0	0.0	1513	0.00
aug we	0	0.0	1634	0.00
sep wd	0	0.0	1670	0.00
sep we	0	0.0	2232	0.00
<u>total</u>	<u>0</u>	<u>0.0</u>	<u>10284</u>	<u>0.00</u>

1977 SCLATER RIVER pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)		
may we	0	observation(s)		
jun wd	127	34.8	556	0.23
jun we	664	255.9	1551	0.43
jul wd	230	127.6	705	0.33
jul we	185	87.9	426	0.43
aug wd	84	28.8	1513	0.06
aug we	126	14.2	1634	0.08
sep wd	95	34.2	1670	0.06
sep we	153	36.1	2232	0.07
<u>total</u>	<u>1663</u>	<u>307.0</u>	<u>10284</u>	<u>0.16</u>

1977 SCLATER RIVER perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)		
may we	0	observation(s)		
jun wd	6	5.0	556	0.01
jun we	77	39.4	1551	0.05
jul wd	85	52.9	705	0.12
jul we	37	11.4	426	0.09
aug wd	51	19.8	1513	0.03
aug we	16	5.7	1634	0.01
sep wd	0	0.0	1670	0.00
sep we	7	2.2	2232	0.00
<u>total</u>	<u>280</u>	<u>70.2</u>	<u>10284</u>	<u>0.03</u>

21 1977 FAIRFORD

day	str.	wal.	sous.	pike	perch	a-h	walleye mn. wt.
135	2	2	1	144	3	216.7	600.0
137	1	2	0	39	2	21.3	600.0
143	2	2	0	78	1	260.3	600.0
145	1	2	0	24	0	24.0	600.0
146	1	5	1	79	0	61.3	600.0
153	3	0	7	58	0	74.5	600.0
154	3	0	5	31	0	80.5	600.0
156	4	11	7	67	0	292.5	600.0
162	4	23	5	76	0	387.3	600.0
164	3	4	1	18	0	76.8	600.0
170	4	43	1	68	2	306.0	600.0
172	3	29	2	14	0	141.8	600.0
175	3	17	2	15	2	68.5	600.0
176	4	16	5	51	1	203.8	600.0
192	5	10	0	1	1	32.5	600.0
195	5	8	4	10	1	91.5	600.0
197	6	29	1	9	0	429.5	600.0
198	6	16	1	0	0	195.5	600.0
203	5	4	0	9	0	94.3	600.0
205	6	1	0	3	0	30.5	600.0
214	7	1	0	0	0	30.0	600.0
217	7	0	0	0	0	24.0	600.0
218	8	4	0	4	0	78.3	600.0
235	7	4	0	0	0	22.2	600.0
237	7	0	0	1	0	18.5	600.0
244	9	0	0	3	0	5.5	600.0
182	5	21	0	45	0	575.5	600.0
185	5	6	3	1	0	46.8	600.0
191	6	12	3	0	0	85.5	600.0

28 1977 BIG ROCK

day	str.	wal.	sous.	pike	perch	a-h	walleye mn. wt.
197	6	16	0	0	1	6.0	600.0
198	6	30	0	4	1	26.0	600.0
199	5	35	0	0	2	39.0	600.0
202	5	15	0	0	0	20.0	600.0
204	6	65	0	7	3	68.0	600.0
214	7	187	0	23	4	381.5	600.0
217	7	9	0	0	0	33.0	600.0
219	6	16	0	0	0	28.0	600.0
225	8	60	0	0	0	44.0	600.0
226	8	112	0	0	1	122.0	600.0
227	7	16	1	0	0	6.0	600.0
233	8	234	0	0	1	261.0	600.0
234	7	22	0	0	0	24.0	600.0
236	7	65	0	2	4	88.0	600.0
239	8	571	0	5	1	741.0	600.0
246	10	343	0	3	2	660.0	600.0
240	8	61	0	3	0	91.0	600.0
241	7	24	0	0	0	15.0	600.0
243	7	40	0	1	0	26.0	600.0

1977 BIG ROCK walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	observation(s)				
may we	0	observation(s)				
jun wd	0	observation(s)				
jun we	0	observation(s)				
jul wd	500	189.7	661	251.0	590	0.85
jul we	407	136.7	538	188.8	367	1.11
aug wd	1141	428.5	1509	566.8	1802	0.63
aug we	1581	440.7	2031	582.9	1931	0.82
sep wd	0	observation(s)				
sep we	1	observation(s)				
<u>total</u>	<u>3629</u>	<u>657.6</u>	<u>4800</u>	<u>869.9</u>	<u>4690</u>	<u>0.77</u>

1977 BIG ROCK walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
jul wd	500	189.7	661	251.0	590	0.85
jul we	407	136.7	538	188.8	367	1.11
aug wd	1452	572.0	1921	756.6	2294	0.63
aug we	2395	585.3	3168	774.1	3338	0.72
+ sep we						
<u>total</u>	<u>4754</u>	<u>851.1</u>	<u>6288</u>	<u>1125.8</u>	<u>6588</u>	<u>0.72</u>

1977 BIG ROCK sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jul wd	0	0.0	590	0.00
jul we	0	0.0	367	0.00
aug wd	4	3.5	2294	0.00
aug we	0	0.0	3338	0.00
+ sep we				
<u>total</u>	<u>4</u>	<u>3.5</u>	<u>6588</u>	<u>0.00</u>

1977 BIG ROCK pike

stratum	#fish	std error	a-h	no./a-h
Jul wd	0	0.0	590	0.00
Jul we	40	19.0	367	0.11
aug wd	104	78.3	2294	0.05
aug we	19	6.1	3338	0.01
+ sep we				
total	163	80.8	6588	0.02

1977 BIG ROCK perch

stratum	#fish	std error	a-h	no./a-h
Jul wd	20	19.0	590	0.03
Jul we	18	6.3	367	0.05
aug wd	32	17.9	2294	0.01
aug we	7	2.2	3338	0.00
+ sep we				
total	79	26.9	6588	0.01

1977 FAIRFORD walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
May wd	33	9.4	44	12.4	391	0.08
May we	14	0.0	19	0.0	1669	0.01
Jun wd	255	100.2	338	132.6	1945	0.13
Jun we	186	39.8	246	52.6	2379	0.08
Jul wd	196	51.5	259	68.1	3362	0.06
Jul we	160	50.7	211	67.1	2038	0.08
aug wd	28	18.8	36	24.9	740	0.04
aug we	1 observation(s)					
sep wd	1 observation(s)					
sep we	0 observation(s)					
total	871	131.5	1152	174.0	12524	0.07

1977 FAIRFORD walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	33	9.4	44	12.4	391	0.08
may we	14	0.0	19	0.0	1669	0.01
jun wd	255	100.2	338	132.6	1945	0.13
jun we	186	39.8	246	52.6	2379	0.08
jul wd	196	51.5	259	68.1	3362	0.06
jul we	285	100.6	377	133.1	3769	0.08
+ aug we						
aug wd	28	19.7	37	26.0	784	0.04
+ sep wd						
total	997	157.7	1319	208.6	14299	0.07

1977 FAIRFORD sauger

stratum	#fish	std error	a-h	no./a-h
may wd	4	3.1	391	0.01
may we	1	0.0	1669	0.00
jun wd	75	21.7	1945	0.04
jun we	36	7.1	2379	0.02
jul wd	28	15.1	3362	0.01
jul we	23	11.1	3769	0.01
+ aug we				
aug wd	0	0.0	784	0.00
+ sep wd				
total	169	29.9	14299	0.01

1977 FAIRFORD pike

stratum	#fish	std error	a-h	no./a-h
may wd	521	154.0	391	1.33
may we	777	195.2	1669	0.47
jun wd	598	160.1	1945	0.31
jun we	524	29.6	2379	0.22
jul wd	264	141.6	3362	0.08
jul we	74	33.7	3769	0.02
+ aug we				
aug wd	22	14.8	784	0.03
+ sep wd				
total	2780	331.3	14299	0.19

1977 FAIRFORD perch

stratum	#fish	std error	a-h	no./a-h
may wd	7	6.3	391	0.02
may we	14	5.9	1669	0.01
jun wd	9	7.7	1945	0.00
jun we	6	2.7	2379	0.00
jul wd	8	4.2	3362	0.00
jul we	0	0.0	3769	0.00
+ aug we				
aug wd	0	0.0	784	0.00
+ sep wd				
total	44	12.6	14299	0.00

1977 CRANE RIVER walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	264	79.6	283	85.4	314	0.84
may we	858	393.4	920	422.0	1684	0.51
jun wd	249	231.7	267	248.5	312	0.80
jun we	0	0.0	0	0.0	6	0.00
jul wd	0	0.0	0	0.0	0	0.00
jul we	11	9.9	12	10.7	325	0.03
aug wd	0	0.0	0	0.0	0	0.00
aug we	0	0.0	0	0.0	36	0.00
sep wd	0 observation(s)					
sep we	0 observation(s)					
total	1386	463.6	1482	497.2	2676	0.52

1977 CRANE RIVER sauger

stratum	#fish	std error	a-h	no./a-h
may wd	11	0.0	314	0.04
may we	21	5.9	1684	0.01
jun wd	0	0.0	312	0.00
jun we	0	0.0	6	0.00
jul wd	0	0.0	0	0.00
jul we	0	0.0	325	0.00
aug wd	0	0.0	0	0.00
aug we	0	0.0	36	0.00
sep wd	0 observation(s)			
sep we	0 observation(s)			
total	32	5.9	2676	0.01

1977 CRANE RIVER pike

stratum	#fish	std error	a-h	no./a-h
may wd	105	14.9	314	0.33
may we	413	118.3	1684	0.25
jun wd	51	47.7	312	0.16
jun we	8	6.9	6	1.33
jul wd	0	0.0	0	0.00
jul we	132	119.4	325	0.41
aug wd	0	0.0	0	0.00
aug we	0	0.0	36	0.00
sep wd	0 observation(s)			
sep we	0 observation(s)			
total	709	175.5	2676	0.26

1977 CRANE RIVER perch

stratum	#fish	std error	a-h	no./a-h
may wd	6	5.0	314	0.02
may we	42	5.9	1684	0.02
jun wd	7	6.8	312	0.02
jun we	0	0.0	6	0.00
jul wd	0	0.0	0	0.00
jul we	72	64.7	325	0.22
aug wd	0	0.0	0	0.00
aug we	0	0.0	36	0.00
sep wd	0 observation(s)			
sep we	0 observation(s)			
total	126	65.5	2676	0.05

1977 NARROWS walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	92	27.3	206	61.2	924	0.10
may we	837	269.2	1877	604.1	5933	0.14
jun wd	512	114.1	768	171.4	4870	0.11
jun we	552	159.3	829	239.3	6514	0.08
jul wd	604	277.8	636	292.6	3380	0.18
jul we	228	60.9	240	64.2	4628	0.05
aug wd	678	318.7	1063	499.7	4105	0.17
aug we	936	611.2	1468	958.4	5175	0.18
sep wd	422	71.2	964	162.6	4745	0.09
sep we	549	213.2	1254	486.8	5903	0.09
oct wd	1 observation(s)					
oct we	138	1.9	314	4.4	1365	0.10
total	5546	847.4	9618	1405.9	47543	0.12

1977 NARROWS walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	92	27.3	206	61.2	924	0.10
may we	837	269.2	1877	604.1	5933	0.14
jun wd	512	114.1	768	171.4	4870	0.11
jun we	552	159.3	829	239.3	6514	0.08
jul wd	604	277.8	636	292.6	3380	0.18
jul we	228	60.9	240	64.2	4628	0.05
aug wd	678	318.7	1063	499.7	4105	0.17
aug we	936	611.2	1468	958.4	5175	0.18
sep wd	477	90.4	1090	286.5	5445	0.09
sep we	549	213.2	1254	486.8	5903	0.09
oct we	138	1.9	314	4.4	1365	0.10
total	5601	849.2	9745	1411.7	48243	0.12

1977 NARROWS sauger

stratum	#fish	std error	a-h	no./a-h
may wd	22	9.4	924	0.02
may we	340	186.4	5933	0.06
jun wd	160	18.8	4870	0.03
jun we	228	58.9	6514	0.04
jul wd	56	16.8	3380	0.02
jul we	61	26.0	4628	0.01
aug wd	31	9.9	4105	0.01
aug we	99	31.7	5175	0.02
sep wd	111	29.7	5445	0.02
sep we	90	31.1	5903	0.02
oct we	5	0.0	1365	0.00
total	1201	206.3	48243	0.02

1977 NARROWS pike

stratum	#fish	std error	a-h	no./a-h
may wd	334	82.9	924	0.36
may we	970	286.9	5933	0.16
jun wd	440	146.2	4870	0.09
jun we	420	86.6	6514	0.06
jul wd	164	57.5	3380	0.05
jul we	198	30.6	4628	0.04
aug wd	242	90.7	4105	0.06
aug we	225	127.0	5175	0.04
sep wd	165	20.2	5445	0.03
sep we	128	25.6	5903	0.02
oct we	128	40.7	1365	0.09
total	3413	386.5	48243	0.07

1977 NARROWS perch

stratum	#fish	std error	a-h	no./a-h
may wd	143	42.3	924	0.15
may we	546	213.0	5933	0.09
jun wd	539	49.7	4870	0.11
jun we	524	273.7	6514	0.08
jul wd	240	61.7	3380	0.07
jul we	528	211.2	4628	0.11
aug wd	246	93.0	4105	0.06
aug we	41	19.8	5175	0.01
sep wd	76	18.5	5445	0.01
sep we	63	16.9	5903	0.01
oct we	0	0.0	1365	0.00
total	2946	427.3	48243	0.06

978 DAUPHIN RIVER walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	3295	1130.5	5941	2038.6	5599	0.59
may we	6281	787.9	11327	1430.8	12527	0.50
jun wd	4871	1542.5	6701	2121.9	8904	0.55
jun we	4224	1099.9	5811	1389.3	8019	0.53
jul wd	3670	1641.2	4151	1856.1	4670	0.79
jul we	4670	3089.4	5281	3494.0	5498	0.85
aug wd	0	0.0	0	0.0	473	0.00
aug we	297	31.7	336	35.9	1816	0.16
sep wd	0 observation(s)					
sep we	1 observation(s)					
total	27308	4187.7	39547	5316.2	47506	0.57

1978 DAUPHIN RIVER sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	5599	0.00
may we	0	0.0	12527	0.00
jun wd	0	0.0	8904	0.00
jun we	0	0.0	8019	0.00
jul wd	0	0.0	4670	0.00
jul we	0	0.0	5498	0.00
aug wd	0	0.0	473	0.00
aug we	0	0.0	1816	0.00
sep wd	0 observation(s)			
sep we	1 observation(s)			
total	0	0.0	47506	0.00

1978 DAUPHIN RIVER pike

stratum	#fish	std error	a-h	no./a-h
may wd	696	272.3	5599	0.12
may we	1631	143.5	12527	0.13
jun wd	664	271.2	8904	0.07
jun we	306	101.3	8019	0.04
jul wd	30	9.5	4670	0.01
jul we	72	44.8	5498	0.01
aug wd	11	10.5	473	0.02
aug we	41	35.7	1816	0.02
sep wd	0 observation(s)			
sep we	1 observation(s)			
total	3450	426.6	47506	0.07

1978 DAUPHIN RIVER perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	5599	0.00
may we	5	1.8	12527	0.00
jun wd	13	11.6	8904	0.00
jun we	22	5.8	8019	0.00
jul wd	0	0.0	4670	0.00
jul we	6	5.0	5498	0.00
aug wd	0	0.0	473	0.00
aug we	27	0.0	1816	0.01
sep wd	0 observation(s)			
sep we	1 observation(s)			
total	72	14.0	47506	0.00

1978 FAIRFORD walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	1595	340.1	2539	541.4	3326	0.48
may we	1610	152.2	2563	242.3	3060	0.53
jun wd	1221	273.9	1943	436.0	4937	0.25
jun we	750	81.0	1194	128.9	7293	0.10
jul wd	952	470.4	1515	748.8	4423	0.22
+ aug wd						
jul we	336	44.8	534	71.3	3670	0.09
aug we	365	11.9	580	19.0	4771	0.08
total	6828	666.2	10868	1060.5	31480	0.22

1978 FAIRFORD sauger

stratum	#fish	std error	a-h	no./a-h
may wd	11	6.2	3326	0.00
may we	20	2.9	3050	0.01
jun wd	242	76.4	4937	0.05
jun we	158	54.1	7293	0.02
jul wd	14	13.5	4423	0.00
+ aug wd				
jul we	66	49.7	3670	0.02
aug we	14	4.0	4771	0.00
total	524	107.2	31480	0.02

1978 FAIRFORD pike

stratum	#fish	std error	a-h	no./a-h
may wd	1216	117.2	3326	0.37
may we	1533	111.4	3050	0.50
jun wd	752	137.2	4937	0.15
jun we	962	135.0	7293	0.13
jul wd	280	75.1	4423	0.06
+ aug wd				
jul we	198	109.4	3670	0.05
aug we	90	39.7	4771	0.02
total	5030	287.0	31480	0.16

1978 FAIRFORD perch

stratum	#fish	std error	a-h	no./a-h
may wd	25	19.7	3326	0.01
may we	11	2.7	3050	0.00
jun wd	7	4.0	4937	0.00
jun we	0	0.0	7293	0.00
jul wd	14	13.5	4423	0.00
+ aug wd				
jul we	0	0.0	3670	0.00
aug we	0	0.0	4771	0.00
total	57	24.4	31480	0.00

1977 DAUPHIN RIVER walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	4352	1211.4	5764	1684.3	5468	0.88
may we	9044	5750.4	11977	7615.2	17057	0.53
jun wd	6455	1883.4	8313	2425.7	9122	0.71
jun we	3550	1676.3	4572	2158.9	7489	0.47
jul wd	1310	367.8	2203	618.6	2796	0.47
jul we	1236	386.1	2079	649.4	3730	0.33
aug wd	2130	455.8	4526	968.8	3592	0.59
aug we	591	351.2	1256	746.5	1837	0.32
sep wd	2032	481.4	3551	841.3	2708	0.75
sep we	1571	149.2	2746	260.8	3748	0.42
oct wd	250	116.2	422	196.3	118	2.13
oct we	555	205.3	937	346.7	794	0.70
total	33076	6466.6	48348	8622.3	58458	0.57

1977 DAUPHIN RIVER sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	5468	0.00
may we	0	0.0	17057	0.00
jun wd	13	4.7	9122	0.00
jun we	4	1.6	7489	0.00
jul wd	0	0.0	2796	0.00
jul we	0	0.0	3730	0.00
aug wd	0	0.0	3592	0.00
aug we	0	0.0	1837	0.00
sep wd	5	4.7	2708	0.00
sep we	0	0.0	3748	0.00
oct wd	0	0.0	118	0.00
oct we	3	1.9	794	0.00
total	25	7.2	58458	0.00

1977 DAUPHIN RIVER pike

stratum	#fish	std error	a-h	no./a-h
may wd	1331	440.1	5468	0.24
may we	4893	1899.0	17057	0.29
jun wd	440	167.0	9122	0.05
jun we	366	115.3	7489	0.05
jul wd	85	58.6	2796	0.03
jul we	112	36.5	3730	0.03
aug wd	97	55.6	3592	0.03
aug we	36	29.4	1837	0.02
sep wd	184	98.0	2708	0.07
sep we	509	176.0	3748	0.14
oct wd	0	0.0	118	0.00
oct we	25	7.7	794	0.03
total	8078	1972.5	58458	0.14

1977 DAUPHIN RIVER perch

stratum	#fish	std error	a-h	no./a-h
may wd	11	5.4	5468	0.00
may we	137	74.0	17057	0.01
jun wd	31	14.5	9122	0.00
jun we	108	67.0	7489	0.01
jul wd	20	17.9	2796	0.01
jul we	7	2.0	3730	0.00
aug wd	4	3.9	3592	0.00
aug we	3	2.4	1837	0.00
sep wd	0	0.0	2700	0.00
sep we	11	5.8	3748	0.00
oct wd	0	0.0	118	0.00
oct we	0	0.0	794	0.00
total	331	102.8	58458	0.01

1977 FAIRFORD walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	33	9.4	44	12.4	391	0.00
may we	14	0.0	19	0.0	1669	0.01
jun wd	255	100.2	338	132.6	1945	0.13
jun we	186	39.8	246	52.6	2379	0.08
jul wd	196	51.5	259	68.1	3362	0.06
jul we	248	85.7	328	113.3	3277	0.09
+ aug we						
aug wd	28	18.8	36	24.9	740	0.04
total	960	148.5	1269	196.5	13763	0.07

1977 FAIRFORD sauger

stratum	#fish	std error	a-h	no./a-h
may wd	4	3.1	391	0.01
may we	4	3.0	1669	0.00
jun wd	75	21.7	1945	0.04
jun we	36	7.1	2379	0.02
jul wd	28	15.1	3362	0.01
jul we	20	9.5	3277	0.01
+ aug we				
aug wd	0	0.0	740	0.00
total	166	29.3	13763	0.01

1977 FAIRFORD pike

stratum	#fish	std error	a-h	no./a-h
may wd	521	154.0	391	1.33
may we	777	195.2	1669	0.47
jun wd	598	160.1	1945	0.31
jun we	524	29.6	2379	0.22
jul wd	264	141.6	3362	0.08
jul we	64	28.7	3277	0.02
+ aug we				
aug wd	6	5.0	740	0.01
total	2754	330.5	13763	0.20

1977 FAIRFORD perch

stratum	#fish	std error	a-h	no./a-h
may wd	7	6.3	391	0.02
may we	14	5.9	1669	0.01
jun wd	9	7.7	1945	0.00
jun we	6	2.7	2379	0.00
jul wd	8	4.2	3362	0.00
jul we	0	0.0	3277	0.00
+ aug we				
aug wd	0	0.0	740	0.00
total	44	12.6	13763	0.00

1977 SKOMNAN walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	710	283.6	808	323.1	509	1.39
may we	1631	307.6	1858	350.5	4249	0.38
jun wd	182	118.4	187	122.3	1331	0.14
jun we	232	72.9	240	75.3	615	0.38
jul wd	52	32.7	61	38.1	326	0.16
jul we	83	26.0	96	30.3	400	0.21
aug wd	114	57.2	147	73.4	497	0.23
aug we	111	39.4	143	50.6	230	0.48
sep wd	152	79.9	251	132.0	263	0.58
sep we	263	19.0	451	32.6	741	0.36
total	3529	455.7	4242	526.0	9160	0.39

1977 SKOWHAN sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	509	0.00
may we	0	0.0	4249	0.00
jun wd	17	9.5	1331	0.01
jun we	11	2.1	615	0.02
jul wd	0	0.0	326	0.00
jul we	3	2.2	400	0.01
aug wd	0	0.0	497	0.00
aug we	0	0.0	230	0.00
sep wd	0	0.0	263	0.00
sep we	0	0.0	741	0.00
total	30	10.0	9160	0.00

1977 SKOWHAN pike

stratum	#fish	std error	a-h	no./a-h
may wd	94	54.7	509	0.18
may we	434	106.4	4249	0.15
jun wd	402	219.0	1331	0.30
jun we	43	14.8	615	0.07
jul wd	28	15.1	326	0.09
jul we	182	46.3	400	0.25
aug wd	57	15.7	497	0.12
aug we	6	4.9	230	0.03
sep wd	0	0.0	263	0.00
sep we	20	5.0	741	0.03
total	1384	297.6	9160	0.15

1977 SKOWHAN perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	509	0.00
may we	11	3.0	4249	0.00
jun wd	6	5.0	1331	0.00
jun we	0	0.0	615	0.00
jul wd	8	6.9	326	0.02
jul we	6	4.4	400	0.01
aug wd	0	0.0	497	0.00
aug we	0	0.0	230	0.00
sep wd	0	0.0	263	0.00
sep we	0	0.0	741	0.00
total	30	10.0	9160	0.00

1977 LEPERRE'S walleys

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	974	5.0	1109	5.7	1522	0.64
may we	2881	1056.0	3282	1203.1	6503	0.44
jun wd	1470	516.7	1518	533.6	4566	0.32
jun we	845	340.3	873	351.4	3137	0.27
jul wd	904	186.4	1055	217.5	1956	0.46
jul we	410	92.1	478	107.4	1552	0.26
aug wd	1001	353.8	1285	454.3	1981	0.51
aug we	306	132.3	393	169.9	1086	0.28
sep wd	1318	267.7	2176	442.0	3434	0.38
sep we	507	148.3	868	254.1	2441	0.21
total	10614	1333.2	13037	1552.4	28178	0.38

1977 LEPERRE'S sauger

stratum	#fish	std error	a-h	no./a-h
may wd	22	9.9	1522	0.01
may we	35	0.0	6503	0.01
jun wd	53	17.9	4566	0.01
jun we	45	13.8	3137	0.01
jul wd	3	0.0	1956	0.00
jul we	11	0.8	1552	0.01
aug wd	4	3.1	1981	0.00
aug we	0	0.0	1086	0.00
sep wd	0	0.0	3434	0.00
sep we	15	4.9	2441	0.01
total	185	26.9	28178	0.01

1977 LEPERRE'S pike

stratum	#fish	std error	a-h	no./a-h
may wd	11	9.9	1522	0.01
may we	532	343.1	6503	0.08
jun wd	378	177.0	4566	0.08
jun we	237	91.9	3137	0.08
jul wd	60	23.2	1956	0.03
jul we	17	8.4	1552	0.01
aug wd	33	21.0	1981	0.02
aug we	51	20.9	1086	0.05
sep wd	42	13.4	3434	0.01
sep we	21	6.5	2441	0.01
total	1382	399.1	28178	0.05

1977 LEPERRE'S perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	11	0.0	1522	0.01
may we	109	26.6	6503	0.02
jun wd	57	24.9	4566	0.01
jun we	27	15.2	3137	0.01
jul wd	72	23.0	1956	0.04
jul we	66	24.0	1552	0.04
aug wd	66	27.4	1981	0.03
aug we	51	4.9	1086	0.05
sep wd	42	20.4	3434	0.01
sep we	51	20.9	2441	0.02
<u>total</u>	<u>551</u>	<u>65.5</u>	<u>28178</u>	<u>0.02</u>

1977 NORTH STAR walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	548	271.5	599	296.7	1777	0.31
+ jun wd						
may we	2382	739.3	2714	842.3	4566	0.52
jun we	395	56.6	408	58.5	1487	0.28
jul wd	80	28.2	93	32.9	903	0.09
jul we	140	49.7	164	58.0	733	0.19
aug wd	45	28.5	58	36.6	361	0.12
+ sep wd						
aug we	101	54.8	162	88.3	481	0.21
+ sep we						
<u>total</u>	<u>3691</u>	<u>794.1</u>	<u>4197</u>	<u>902.5</u>	<u>10229</u>	<u>0.36</u>

1977 NORTH STAR sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	7	6.1	1777	0.00
+ jun wd				
may we	23	9.3	4566	0.01
jun we	19	5.6	1487	0.01
jul wd	0	0.0	903	0.00
jul we	0	0.0	733	0.00
aug wd	0	0.0	361	0.00
+ sep wd				
aug we	2	1.8	481	0.00
+ sep we				
<u>total</u>	<u>51</u>	<u>12.6</u>	<u>10229</u>	<u>0.00</u>

1977 NORTH STAR pike

stratum	#fish	std error	a-h	no./a-h
may wd	20	12.2	1777	0.01
+ jun wd				
may we	54	16.8	4566	0.01
jun we	19	9.2	1407	0.01
jul wd	7	6.1	903	0.01
jul we	25	19.7	733	0.03
aug wd	0	0.0	361	0.00
+ sep wd				
aug we	2	1.8	481	0.00
+ sep we				
total	126	30.8	10229	0.01

1977 NORTH STAR perch

stratum	#fish	std error	a-h	no./a-h
may wd	7	6.1	1777	0.00
+ jun wd				
may we	2	1.8	4566	0.00
jun we	0	0.0	1407	0.00
jul wd	0	0.0	903	0.00
jul we	3	2.2	733	0.00
aug wd	0	0.0	361	0.00
+ sep wd				
aug we	0	0.0	481	0.00
+ sep we				
total	12	6.7	10229	0.00

1977 NORTH STAR N walleye

stratum	#fish	std error	wt(lb)	APPROX. s.e.	a-h	no./a-h
may wd	688	621.9	783	708.5	595	1.15
may we	2482	902.2	2827	1027.9	3077	0.81
jun wd	440	206.6	454	213.4	1482	0.30
jun we	272	101.7	281	105.0	1387	0.20
jul wd	276	122.5	322	143.0	614	0.45
jul we	308	161.5	359	188.4	1936	0.16
aug wd	352	84.0	452	107.9	1339	0.26
aug we	313	110.8	402	142.3	929	0.34
sep wd	1250	233.3	2063	385.1	2205	0.57
sep we	1809	369.1	3099	632.2	3970	0.46
total	8188	1226.7	11043	1500.3	17534	0.47

1977 NORTH STAR W sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	595	0.00
may we	4	3.0	3077	0.00
jun wd	0	0.0	1482	0.00
jun we	3	2.1	1387	0.00
jul wd	0	0.0	614	0.00
jul we	0	0.0	1936	0.00
aug wd	0	0.0	1339	0.00
aug we	2	1.7	929	0.00
sep wd	0	0.0	2205	0.00
sep we	2	1.7	3970	0.00
total	11	4.3	17534	0.00

1977 NORTH STAR W pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	33	19.9	595	0.06
may we	144	32.5	3077	0.05
jun wd	61	22.1	1482	0.04
jun we	115	22.0	1387	0.08
jul wd	96	33.1	614	0.16
jul we	84	17.4	1936	0.04
aug wd	61	24.9	1339	0.05
aug we	50	19.1	929	0.05
sep wd	67	32.9	2205	0.03
sep we	108	42.7	3970	0.03
total	816	116.3	17534	0.05

1977 NORTH STAR W perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	595	0.00
may we	7	0.0	3077	0.00
jun wd	6	5.0	1482	0.00
jun we	3	2.1	1387	0.00
jul wd	0	0.0	614	0.00
jul we	0	0.0	1936	0.00
aug wd	22	14.1	1339	0.02
aug we	11	6.3	929	0.01
sep wd	28	9.9	2205	0.01
sep we	16	5.0	3970	0.00
total	92	19.8	17534	0.01

1977 LEPERRE'S S D walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
Jun wd	220	70.0	227	72.3	475	0.46
Jun we	16	6.1	17	6.3	351	0.05
Jul wd	153	85.4	179	99.6	220	0.70
Jul we	36	20.1	42	23.4	173	0.21
Aug wd	15	13.6	19	17.5	84	0.17
Aug we	5	3.4	6	4.3	23	0.20
total	444	113.3	489	126.7	1326	0.33

1977 LEPERRE'S S D sauger

stratum	#fish	std error	a-h	no./a-h
Jun wd	4	3.9	475	0.01
Jun we	0	0.0	351	0.00
Jul wd	0	0.0	220	0.00
Jul we	0	0.0	173	0.00
Aug wd	0	0.0	84	0.00
Aug we	0	0.0	23	0.00
total	4	3.9	1326	0.00

1977 LEPERRE'S S D pike

stratum	#fish	std error	a-h	no./a-h
Jun wd	31	18.9	475	0.06
Jun we	56	32.5	351	0.16
Jul wd	0	0.0	220	0.00
Jul we	0	0.0	173	0.00
Aug wd	0	0.0	84	0.00
Aug we	0	0.0	23	0.00
total	87	37.6	1326	0.07

1977 LEPERRE'S S D perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
jun wd	4	3.9	475	0.01
jun we	8	5.7	351	0.02
jul wd	7	6.1	220	0.03
jul we	6	4.4	173	0.03
aug wd	0	0.0	84	0.00
aug we	0	0.0	23	0.00
<u>total</u>	<u>25</u>	<u>10.2</u>	<u>1326</u>	<u>0.02</u>

1977 WEST BRIDGES walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	303	124.4	345	141.7	880	0.34
may we	459	245.5	522	279.7	2177	0.21
jun wd	39	22.1	40	22.8	765	0.05
jun we	184	159.3	190	164.5	1167	0.16
jul wd	0	0.0	0	0.0	163	0.00
jul we	41	19.1	48	22.2	396	0.10
aug wd	336	246.0	431	316.0	428	0.78
+ sep wd						
aug we	172	75.0	255	111.3	709	0.24
+ sep we						
<u>total</u>	<u>1534</u>	<u>410.1</u>	<u>1832</u>	<u>408.5</u>	<u>6685</u>	<u>0.23</u>

1977 WEST BRIDGES sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	880	0.00
may we	0	0.0	2177	0.00
jun wd	6	5.0	765	0.01
jun we	4	3.5	1167	0.00
jul wd	0	0.0	163	0.00
jul we	0	0.0	396	0.00
aug wd	0	0.0	428	0.00
+ sep wd				
aug we	0	0.0	709	0.00
+ sep we				
<u>total</u>	<u>10</u>	<u>6.1</u>	<u>6685</u>	<u>0.00</u>

1977 WEST BRIDGES pike

stratum	#fish	std error	a-h	no./a-h
may wd	61	34.9	880	0.07
may we	140	112.4	2177	0.06
jun wd	44	24.4	765	0.06
jun we	60	52.0	1167	0.05
jul wd	13	12.3	163	0.08
jul we	3	2.2	396	0.01
aug wd	6	5.1	428	0.01
+ sep wd				
aug we	4	3.5	709	0.01
+ sep we				
total	330	131.7	6685	0.05

1977 WEST BRIDGES perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	880	0.00
may we	14	11.8	2177	0.01
jun wd	77	63.2	765	0.10
jun we	4	3.5	1167	0.00
jul wd	33	22.2	163	0.20
jul we	3	2.2	396	0.01
aug wd	0	0.0	428	0.00
+ sep wd				
aug we	48	21.6	709	0.07
+ sep we				
total	179	71.5	6685	0.03

1977 WATERHEN CABINS walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	209	69.6	238	79.4	153	1.37
may we	616	461.5	702	525.7	844	0.73
jun wd	154	61.9	159	63.9	143	1.08
jun we	88	62.4	91	64.4	136	0.65
jul wd	0	0.0	0	0.0	0	0.00
jul we	59	19.0	68	22.2	107	0.31
aug wd	9	8.8	12	11.3	42	0.22
aug we	147	101.4	244	168.3	252	0.58
+ sep we						
total	1283	486.0	1514	565.6	1756	0.73

1977 WATERHEN CABINS sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	153	0.00
may we	14	5.9	844	0.02
jun wd	0	0.0	143	0.00
jun we	4	3.5	136	0.03
jul wd	0	0.0	0	0.00
jul we	0	0.0	187	0.00
aug wd	0	0.0	42	0.00
aug we	0	0.0	252	0.00
+ sep we				
total	18	6.9	1756	0.01

1977 WATERHEN CABINS pike

stratum	#fish	std error	a-h	no./a-h
may wd	6	5.0	153	0.04
may we	32	8.9	844	0.04
jun wd	6	5.0	143	0.04
jun we	0	0.0	136	0.00
jul wd	0	0.0	0	0.00
jul we	26	21.9	187	0.14
aug wd	0	0.0	42	0.00
aug we	24	19.6	252	0.10
+ sep we				
total	92	31.5	1756	0.05

1977 WATERHEN CABINS perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	153	0.00
may we	21	17.7	844	0.02
jun wd	0	0.0	143	0.00
jun we	0	0.0	136	0.00
jul wd	0	0.0	0	0.00
jul we	0	0.0	187	0.00
aug wd	0	0.0	42	0.00
aug we	0	0.0	252	0.00
+ sep we				
total	21	17.7	1756	0.01

1977 HUHTALA'S walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	99	69.6	113	79.4	80	1.24
may we	301	35.5	343	40.4	609	0.49
jun wd	123	94.5	127	97.5	242	0.51
jun we	112	25.6	116	26.4	347	0.32
jul wd	147	93.0	171	108.5	627	0.23
jul we	73	33.1	86	38.6	358	0.20
aug wd	129	110.5	211	180.7	207	0.62
+ sep wd						
aug we	148	112.9	248	189.5	274	0.54
+ sep we						
total	1132	224.5	1414	316.2	2744	0.41

1977 HUHTALA'S sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	80	0.00
may we	7	5.9	609	0.01
jun wd	4	3.3	242	0.02
jun we	0	0.0	347	0.00
jul wd	7	6.1	627	0.01
jul we	0	0.0	358	0.00
aug wd	0	0.0	207	0.00
+ sep wd				
aug we	0	0.0	274	0.00
+ sep we				
total	18	9.4	2744	0.01

1977 HUHTALA'S pike

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	80	0.00
may we	21	11.8	609	0.03
jun wd	18	15.5	242	0.07
jun we	24	19.0	347	0.07
jul wd	0	0.0	627	0.00
jul we	18	15.6	358	0.05
aug wd	0	0.0	207	0.00
+ sep wd				
aug we	0	0.0	274	0.00
+ sep we				
total	81	31.4	2744	0.03

1977 HUHTALA'S perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	80	0.00
may we	0	0.0	609	0.00
jun wd	0	0.0	242	0.00
jun we	0	0.0	347	0.00
jul wd	0	0.0	627	0.00
jul we	7	3.1	358	0.02
aug wd	0	0.0	207	0.00
+ sep wd				
aug we	4	3.5	274	0.01
+ sep we				
total	11	4.7	2744	0.00

1977 HILL'S walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	270	198.1	279	205.4	413	0.65
+ jun wd						
may we	2624	700.7	2640	1117.6	2400	0.37
jun we	88	76.2	91	78.7	406	0.22
jul wd	270	180.4	315	210.6	741	0.36
jul we	160	107.7	186	125.7	1189	0.13
aug wd	196	108.4	298	164.8	728	0.27
+ sep wd						
aug we	70	28.2	90	36.3	164	0.43
sep we	20	4.3	33	7.4	225	0.09
total	3396	1031.5	3940	1177.3	6273	0.54

1977 HILL'S sauger

stratum	#fish	std error	a-h	no./a-h
may wd	6	5.0	413	0.01
+ jun wd				
may we	35	21.4	2400	0.01
jun we	16	13.9	406	0.04
jul wd	0	0.0	741	0.00
jul we	0	0.0	1189	0.00
aug wd	0	0.0	728	0.00
+ sep wd				
aug we	0	0.0	164	0.00
sep we	0	0.0	225	0.00
total	57	26.0	6273	0.01

1977 HILL'S Pike

stratum	#fish	std error	a-h	no./a-h
may wd	22	19.9	413	0.05
+ jun wd				
may we	98	19.1	2488	0.04
jun we	36	24.2	486	0.09
jul wd	58	23.7	741	0.07
jul we	72	31.3	1189	0.06
aug wd	7	6.5	728	0.01
+ sep wd				
aug we	8	8.8	164	0.00
sep we	9	5.2	225	0.04
total	294	54.4	6273	0.05

1977 HILL'S perch

stratum	#fish	std error	a-h	no./a-h
may wd	11	9.9	413	0.03
+ jun wd				
may we	23	7.7	2488	0.01
jun we	4	3.5	486	0.01
jul wd	15	13.4	741	0.02
jul we	39	24.9	1189	0.03
aug wd	56	35.1	728	0.08
+ sep wd				
aug we	7	3.2	164	0.04
sep we	5	8.9	225	0.02
total	159	47.1	6273	0.03

1977 BAKER'S POINT walleye

stratum	#fish	std error	wt (lb)	approx. s.e.	a-h	no./a-h
may wd	121	19.9	138	22.7	96	1.26
may we	428	188.6	479	114.6	873	0.48
jun wd	44	48.9	45	42.2	147	0.30
jun we	96	76.2	99	78.7	128	0.75
jul wd	68	37.9	78	44.3	100	0.68
jul we	18	11.3	21	13.2	59	0.31
aug wd	117	109.8	151	148.8	73	1.60
aug we	9	7.9	12	18.2	27	0.33
total	886	177.5	1615	288.5	1503	0.59

1977 BAKER'S POINT sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	96	0.00
may we	0	0.0	873	0.00
jun wd	7	6.8	147	0.05
jun we	0	0.0	128	0.00
jul wd	0	0.0	100	0.00
jul we	0	0.0	59	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	27	0.00
total	7	6.8	1503	0.00

1977 BAKER'S POINT pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	96	0.00
may we	11	8.9	873	0.01
jun wd	0	0.0	147	0.00
jun we	0	0.0	128	0.00
jul wd	0	0.0	100	0.00
jul we	0	0.0	59	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	27	0.00
total	11	8.9	1503	0.01

1977 BAKER'S POINT perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	96	0.00
may we	0	0.0	873	0.00
jun wd	0	0.0	147	0.00
jun we	0	0.0	128	0.00
jul wd	0	0.0	100	0.00
jul we	0	0.0	59	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	27	0.00
total	0	0.0	1503	0.00

1977 LEPERRE'S walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	974	5.0	1109	5.7	1522	0.64
may we	2881	1056.0	3282	1203.1	6503	0.44
jun wd	1470	516.7	1518	533.6	4566	0.32
jun we	845	340.3	873	351.4	3137	0.27
jul wd	904	186.4	1055	217.5	1956	0.46
jul we	410	92.1	478	107.4	1552	0.26
aug wd	1001	353.8	1285	454.3	1981	0.51
aug we	306	132.3	393	159.9	1086	0.28
sep wd	1318	267.7	2176	442.0	3434	0.38
sep we	507	148.3	868	254.1	2441	0.21
total	10614	1333.2	13037	1552.4	28178	0.38

1977 LEPERRE'S sauger

stratum	#fish	std error	a-h	no./a-h
may wd	22	9.9	1522	0.01
may we	35	0.0	6503	0.01
jun wd	53	17.9	4566	0.01
jun we	15	12.2	3137	0.01
jul wd	0	0.0	1956	0.00
jul we	11	8.8	1552	0.01
aug wd	4	3.1	1981	0.00
aug we	0	0.0	1086	0.00
sep wd	0	0.0	3434	0.00
sep we	15	4.9	2441	0.01
total	185	26.9	28178	0.01

1977 LEPERRE'S pike

stratum	#fish	std error	a-h	no./a-h
may wd	11	9.9	1522	0.01
may we	532	343.1	6503	0.08
jun wd	378	177.0	4566	0.08
jun we	237	91.9	3137	0.08
jul wd	60	23.2	1956	0.03
jul we	17	8.4	1552	0.01
aug wd	33	21.0	1981	0.02
aug we	51	20.9	1086	0.05
sep wd	42	13.4	3434	0.01
sep we	21	6.5	2441	0.01
total	1382	399.1	28178	0.05

1977 LEPERRE'S perch

stratum	#fish	std error	a-h	no./a-h
may wd	11	0.0	1522	0.01
may we	109	26.6	6503	0.02
jun wd	57	24.9	4566	0.01
jun we	27	15.2	3137	0.01
jul wd	72	23.0	1956	0.04
jul we	66	24.0	1552	0.04
aug wd	66	27.4	1981	0.03
aug we	51	4.9	1086	0.05
sep wd	42	20.4	3434	0.01
sep we	51	20.9	2441	0.02
total	551	65.5	28178	0.02

1977 NORTH STAR N walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	688	621.5	703	700.5	595	1.15
may we	2482	902.2	2827	1027.9	3077	0.81
jun wd	440	206.6	454	213.4	1482	0.30
jun we	272	101.7	281	105.0	1387	0.20
jul wd	276	122.5	322	143.0	614	0.45
jul we	308	161.5	359	188.4	1936	0.16
aug wd	352	84.0	452	107.9	1339	0.26
aug we	313	110.8	402	142.3	929	0.34
sep wd	1281	307.1	2115	507.1	2103	0.61
sep we	1536	477.0	2631	817.1	3354	0.46
total	7947	1279.1	10627	1621.0	16816	0.47

1977 NORTH STAR N sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	595	0.00
may we	4	3.0	3077	0.00
jun wd	0	0.0	1482	0.00
jun we	3	2.1	1387	0.00
jul wd	0	0.0	614	0.00
jul we	0	0.0	1936	0.00
aug wd	0	0.0	1339	0.00
aug we	2	1.7	929	0.00
sep wd	0	0.0	2103	0.00
sep we	3	2.4	3354	0.00
total	11	4.7	16816	0.00

1977 NORTH STAR N pike

stratum	#fish	std error	a-h	no./a-h
may wd	33	19.9	595	0.06
may we	144	32.5	3077	0.05
jun wd	61	22.1	1482	0.04
jun we	115	22.0	1387	0.08
jul wd	96	83.1	614	0.16
jul we	84	17.4	1936	0.04
aug wd	61	24.9	1339	0.05
aug we	50	19.1	929	0.05
sep wd	47	42.5	2103	0.02
sep we	75	54.1	3354	0.02
total	764	123.9	16816	0.05

1977 NORTH STAR N perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	555	0.00
may we	7	0.0	3077	0.00
jun wd	6	5.0	1482	0.00
jun we	3	2.1	1387	0.00
jul wd	0	0.0	614	0.00
jul we	0	0.0	1936	0.00
aug wd	22	14.1	1339	0.02
aug we	11	6.3	929	0.01
sep wd	21	13.4	2103	0.01
sep we	12	6.5	3354	0.00
total	81	22.1	16816	0.00

1977 SKOWHAN walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	710	283.6	808	323.1	509	1.39
may we	1631	307.6	1858	350.5	4249	0.38
jun wd	182	118.4	187	122.3	1331	0.14
jun we	232	72.9	240	75.3	615	0.38
jul wd	52	32.7	61	38.1	326	0.16
jul we	93	26.0	96	30.3	400	0.21
aug wd	114	57.2	147	73.4	497	0.23
aug we	111	39.4	143	50.6	230	0.48
sep wd	152	79.9	251	132.0	263	0.58
sep we	263	19.0	451	32.6	741	0.36
total	3529	455.7	4242	526.0	9160	0.39

1977 SKOWHAN sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	509	0.00
may we	0	0.0	4249	0.00
jun wd	17	9.5	1331	0.01
jun we	11	2.1	615	0.02
jul wd	0	0.0	326	0.00
jul we	3	2.2	400	0.01
aug wd	0	0.0	497	0.00
aug we	0	0.0	230	0.00
sep wd	0	0.0	263	0.00
sep we	0	0.0	741	0.00
total	30	10.0	9160	0.00

1977 SKOWHAN pike

stratum	#fish	std error	a-h	no./a-h
may wd	94	54.7	509	0.18
may we	634	186.4	4249	0.15
jun wd	402	219.0	1331	0.30
jun we	43	14.0	615	0.07
jul wd	28	15.1	326	0.09
jul we	102	46.3	400	0.25
aug wd	57	15.7	497	0.12
aug we	6	4.9	230	0.03
sep wd	0	0.0	263	0.00
sep we	20	5.0	741	0.03
total	1384	297.6	9160	0.15

1977 SKOWHAN perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	509	0.00
may we	11	3.0	4249	0.00
jun wd	6	5.0	1331	0.00
jun we	0	0.0	615	0.00
jul wd	0	6.9	326	0.02
jul we	6	4.4	400	0.01
aug wd	0	0.0	497	0.00
aug we	0	0.0	230	0.00
sep wd	0	0.0	263	0.00
sep we	0	0.0	741	0.00
total	30	10.0	9160	0.00

Appendix 3. Individual Access Points Production Estimates, 1978

1978 LEPERRE'S walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	588	98.2	0	0.0	424	1.37
may we	2276	119.4	0	0.0	2451	0.93
jun wd	1368	413.6	0	0.0	2594	0.52
jun we	538	212.1	0	0.0	1493	0.36
jul wd	260	175.3	0	0.0	890	0.29
jul we	1441	1034.8	0	0.0	2857	0.50
aug wd	1005	702.7	0	0.0	1111	0.90
aug we	639	145.9	0	0.0	1139	0.56
sep wd	973	340.4	0	0.0	1737	0.56
sep we	393	189.2	0	0.0	1835	0.21
oct wd	641	389.5	0	0.0	840	0.76
oct we	250	133.4	0	0.0	270	0.93
total	10356	1475.7	0	0.0	17640	0.59

1978 LEPERRE'S sauger

stratum	#fish	std error	a-h	no./a-h
may wd	3	2.2	424	0.01
may we	1	0.4	2451	0.00
jun wd	4	3.9	2594	0.00
jun we	8	3.3	1493	0.01
jul wd	7	6.1	890	0.01
jul we	6	5.0	2857	0.00
aug wd	0	0.0	1111	0.00
aug we	0	0.0	1139	0.00
sep wd	0	0.0	1737	0.00
sep we	0	0.0	1835	0.00
oct wd	0	0.0	840	0.00
oct we	0	0.0	270	0.00
total	28	9.7	17640	0.00

1978 LEPERRE'S eike

stratum	#fish	std error	a-h	no./a-h
may wd	6	4.4	424	0.01
may we	86	14.7	2451	0.04
jun wd	141	47.2	2594	0.05
jun we	114	42.0	1493	0.08
jul wd	20	10.6	890	0.02
jul we	165	69.6	2657	0.06
aug wd	15	6.8	1111	0.01
aug we	42	23.4	1139	0.04
sep wd	7	6.1	1737	0.00
sep we	17	10.1	1835	0.01
oct wd	11	10.0	840	0.01
oct we	10	8.4	270	0.04
total	632	100.5	17640	0.04

1978 LEPERRE'S perch

stratum	#fish	std error	a-h	no./a-h
may wd	8	2.2	424	0.02
may we	20	2.0	2451	0.01
jun wd	9	4.7	2594	0.00
jun we	12	5.4	1493	0.01
jul wd	13	12.3	890	0.01
jul we	55	29.8	2657	0.02
aug wd	81	37.9	1111	0.07
aug we	15	4.9	1139	0.01
sep wd	0	0.0	1737	0.00
sep we	10	8.4	1835	0.01
oct wd	0	0.0	840	0.00
oct we	0	0.0	270	0.00
total	223	51.3	17640	0.01

1978 NSH walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	253	91.1	0	0.0	266	0.95
may we	658	248.0	0	0.0	715	0.92
jun wd	501	218.8	0	0.0	1942	0.26
jun we	368	150.7	0	0.0	1481	0.25
jul wd	20	19.0	0	0.0	230	0.09
jul we	264	161.8	0	0.0	1021	0.26
aug wd	252	176.4	0	0.0	1580	0.16
+ sep wd						
aug we	72	0.0	0	0.0	693	0.10
sep we	760	21.1	0	0.0	2407	0.32
oct we	155	62.1	0	0.0	675	0.23
total	3303	449.9	0	0.0	11010	0.30

1978 NSH sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	266	0.00
may we	0	0.0	715	0.00
jun wd	0	0.0	1942	0.00
jun we	0	0.0	1481	0.00
jul wd	0	0.0	230	0.00
jul we	0	0.0	1021	0.00
aug wd	0	0.0	1580	0.00
+ sep wd				
aug we	0	0.0	693	0.00
sep we	13	2.8	2407	0.01
oct we	0	0.0	675	0.00
total	13	2.8	11010	0.00

1978 NSN pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	15	12.5	266	0.06
may we	16	12.3	715	0.02
jun wd	88	36.3	1942	0.05
jun we	80	25.4	1481	0.05
jul wd	0	0.0	230	0.00
jul we	103	57.9	1021	0.10
aug wd	95	66.0	1580	0.06
+ sep wd				
aug we	99	63.5	693	0.14
sep we	43	10.1	2407	0.02
oct we	0	0.0	675	0.00
total	538	118.8	11010	0.05

1978 NSN perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	4	3.1	266	0.01
may we	2	1.8	715	0.00
jun wd	0	0.0	1942	0.00
jun we	0	0.0	1481	0.00
jul wd	0	0.0	230	0.00
jul we	0	0.0	1021	0.00
aug wd	21	11.5	1580	0.01
+ sep wd				
aug we	0	0.0	693	0.00
sep we	7	2.8	2407	0.00
oct we	0	0.0	675	0.00
total	34	12.4	11010	0.00

1978 SKOMNAN walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	50	44.8	0	0.0	176	0.28
may we	1194	158.8	0	0.0	1492	0.80
jun wd	198	119.8	0	0.0	352	0.56
jun we	286	40.4	0	0.0	781	0.29
jul wd	20	18.4	0	0.0	200	0.10
jul we	17	14.9	0	0.0	66	0.25
aug wd	37	34.1	0	0.0	73	0.50
aug we	0	0.0	0	0.0	41	0.00
sep wd	450	426.9	0	0.0	920	0.49
sep we	1 observation(s)					
oct wd	32	30.0	0	0.0	347	0.09
oct we	0	0.0	0	0.0	7	0.00
total	2204	477.6	0	0.0	4374	0.50

1978 SKOMNAN walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	50	44.8	0	0.0	176	0.28
may we	1194	158.8	0	0.0	1492	0.80
jun wd	198	119.8	0	0.0	352	0.56
jun we	286	40.4	0	0.0	781	0.29
jul wd	20	18.4	0	0.0	200	0.10
jul we	17	14.9	0	0.0	66	0.25
aug wd	37	34.1	0	0.0	73	0.50
aug we	63	58.1	0	0.0	222	0.29
+ sep wd						
sep wd	450	426.9	0	0.0	920	0.49
oct wd	32	30.0	0	0.0	347	0.09
oct we	0	0.0	0	0.0	7	0.00
total	2266	481.1	0	0.0	4555	0.50

1978 SKOWNAN sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	176	0.00
may we	0	0.0	1492	0.00
jun wd	0	0.0	352	0.00
jun we	0	0.0	701	0.00
jul wd	0	0.0	200	0.00
jul we	0	0.0	66	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	222	0.00
+ sep we				
sep wd	0	0.0	920	0.00
oct wd	0	0.0	347	0.00
oct we	0	0.0	7	0.00
total	0	0.0	4555	0.00

1978 SKOWNAN pike

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	176	0.00
may we	86	37.0	1492	0.06
jun wd	7	6.8	352	0.02
jun we	40	7.7	701	0.06
jul wd	0	0.0	200	0.00
jul we	0	0.0	66	0.00
aug wd	0	0.0	73	0.00
aug we	6	5.8	222	0.03
+ sep we				
sep wd	0	0.0	920	0.00
oct wd	53	49.9	347	0.15
oct we	0	0.0	7	0.00
total	192	63.2	4555	0.04

1978 SKOWHEGAN perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	176	0.00
may we	2	1.1	1492	0.00
jun wd	0	0.0	352	0.00
jun we	0	0.0	791	0.00
jul wd	0	0.0	200	0.00
jul we	0	0.0	66	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	222	0.00
+ sep we				
sep wd	20	19.0	920	0.02
oct wd	0	0.0	347	0.00
oct we	0	0.0	7	0.00
total	22	19.0	4555	0.00

1978 DAUPHIN RIVER walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	3295	1130.5	5941	2038.6	5599	0.59
may we	6281	787.9	11327	1420.8	12527	0.50
jun wd	4871	1542.5	6701	2121.9	8904	0.55
jun we	4224	1009.9	5811	1389.3	8019	0.53
jul wd	3670	1641.2	4151	1856.1	4670	0.79
jul we	4670	3089.4	5281	3494.0	5498	0.85
aug wd	0	0.0	0	0.0	903	0.00
aug we	1013	356.8	1146	403.5	4845	0.21
+ sep we						
total	28024	4202.8	40357	5331.4	50966	0.55

1978 DAUPHIN RIVER sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	5599	0.00
may we	0	0.0	12527	0.00
jun wd	0	0.0	8904	0.00
jun we	0	0.0	8019	0.00
jul wd	0	0.0	4670	0.00
jul we	0	0.0	5498	0.00
aug wd	0	0.0	903	0.00
aug we	0	0.0	4845	0.00
+ sep we				
total	0	0.0	50966	0.00

1978 DAUPHIN RIVER pike

stratum	#fish	std error	a-h	no./a-h
may wd	696	272.3	5599	0.12
may we	1631	143.5	12527	0.13
jun wd	664	271.2	8904	0.07
jun we	306	101.3	8019	0.04
jul wd	30	9.5	4670	0.01
jul we	72	44.8	5498	0.01
aug wd	21	20.5	903	0.02
aug we	165	85.6	4845	0.03
+ sep we				
total	3584	434.0	50966	0.07

1978 DAUPHIN RIVER perch

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	5599	0.00
may we	5	1.8	12527	0.00
jun wd	13	11.6	8904	0.00
jun we	22	5.8	8019	0.00
jul wd	0	0.0	4670	0.00
jul we	6	5.0	5498	0.00
aug wd	0	0.0	903	0.00
aug we	44	11.6	4845	0.01
+ sep we				
total	90	18.2	50966	0.00

1978 FAIRFORD walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	1595	348.1	2539	541.4	3326	0.48
may we	1610	152.2	2563	242.3	3860	0.53
jun wd	1221	273.9	1943	436.0	4937	0.25
jun we	750	81.0	1194	128.9	7293	0.10
jul wd	1535	508.5	2442	809.3	9299	0.17
+ aug wd						
+ sep wd						
jul we	336	44.8	534	71.3	3670	0.09
aug we	365	11.9	580	19.0	4771	0.08
total	7411	693.6	11795	1104.0	36356	0.20

1978 FAIRFORD sauger

stratum	#fish	std error	a-h	no./a-h
may wd	11	6.2	3326	0.00
may we	20	2.9	3860	0.01
jun wd	242	75.4	4937	0.05
jun we	158	54.1	7293	0.02
jul wd	31	17.3	9299	0.00
+ aug wd				
+ sep wd				
jul we	66	49.7	3670	0.02
aug we	14	4.0	4771	0.00
total	541	107.8	36356	0.01

1978 FAIRFORD pike

stratum	#fish	std error	a-h	no./a-h
may wd	1216	117.2	3326	0.37
may we	1533	111.4	3860	0.50
jun wd	752	137.2	4937	0.15
jun we	962	135.0	7293	0.13
jul wd	496	112.2	9299	0.05
+ aug wd				
+ sep wd				
jul we	198	109.4	3670	0.05
aug we	90	39.7	4771	0.02
total	5246	298.9	36356	0.14

1978 FAIRFORD perch

stratum	#fish	std error	a-h	no./a-h
may wd	25	19.7	3326	0.01
may we	11	2.7	3860	0.00
jun wd	7	4.0	4937	0.00
jun we	0	0.0	7293	0.00
jul wd	31	17.3	9299	0.00
+ aug wd				
+ sep wd				
jul we	0	0.0	3670	0.00
aug we	0	0.0	4771	0.00
total	74	26.7	36356	0.00

1978 BIG ROCK walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	1890	1159.3	3008	1845.2	4620	0.41
+ may we						
+ jun we						
+ aug we						
total	1890	1159.3	3008	1845.3	4620	0.41

1978 BIG ROCK sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	0	0.0	4620	0.00
total	0	0.0	4620	0.00

1978 BIG ROCK pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	380	132.3	4620	0.08
total	380	132.3	4620	0.08

1978 BIG ROCK perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	0	0.0	4620	0.00
total	0	0.0	4620	0.00

1978 BIG ROCK walleye

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>wt(lb)</u>	<u>approx. s.e.</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	2405	1492.9	3829	2376.3	5880	0.41
total	2405	1492.9	3829	2376.3	5880	0.41

1978 BIG ROCK sauger

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	0	0.0	5880	0.00
total	0	0.0	5880	0.00

1978 BIG ROCK pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	484	170.3	5880	0.08
total	484	170.3	5880	0.08

1978 BIG ROCK perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd + may we + jun we + aug we	0	0.0	5880	0.00
total	0	0.0	5880	0.00

1978 NSN walleye

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	253	91.1	0	0.0	266	0.95
may we	658	248.0	0	0.0	715	0.92
jun wd	501	218.8	0	0.0	1942	0.26
jun we	368	150.7	0	0.0	1481	0.25
jul wd	20	19.0	0	0.0	230	0.09
jul we	264	161.8	0	0.0	1021	0.26
aug wd	37	24.6	0	0.0	675	0.05
aug we	72	0.0	0	0.0	693	0.10
sep wd	390	379.9	0	0.0	1363	0.29
X + oct wd						
sep we	760	21.1	0	0.0	2407	0.32
oct we	155	62.1	0	0.0	580	0.27
total	3477	562.3	0	0.0	11372	0.31

1978 NSN sauger

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	266	0.00
may we	0	0.0	715	0.00
jun wd	0	0.0	1942	0.00
jun we	0	0.0	1481	0.00
jul wd	0	0.0	230	0.00
jul we	0	0.0	1021	0.00
aug wd	0	0.0	675	0.00
aug we	0	0.0	693	0.00
sep wd	0	0.0	1363	0.00
+ oct wd				
sep we	13	2.8	2407	0.01
oct we	0	0.0	580	0.00
total	13	2.8	11372	0.00

1978 NSN perch

stratum	#fish	std error	a-h	no./a-h
may wd	4	3.1	266	0.01
may we	2	1.8	715	0.00
jun wd	0	0.0	1942	0.00
jun we	0	0.0	1481	0.00
jul wd	0	0.0	230	0.00
jul we	0	0.0	1021	0.00
aug wd	15	6.8	675	0.02
aug we	0	0.0	693	0.00
sep wd	0	0.0	1363	0.00
+ oct wd				
sep we	7	2.8	2407	0.00
oct we	0	0.0	580	0.00
total	27	8.2	11372	0.00

1978 NSN pike

stratum	#fish	std error	a-h	no./a-h
may wd	15	12.5	266	0.06
may we	16	12.3	715	0.02
jun wd	88	36.3	1942	0.05
jun we	80	25.4	1481	0.05
jul wd	0	0.0	230	0.00
jul we	103	57.9	1021	0.10
aug wd	51	47.7	675	0.08
aug we	99	63.5	693	0.14
sep wd	62	20.0	1363	0.05
+ oct wd				
sep we	43	10.1	2407	0.02
oct we	0	0.0	580	0.00
total	557	111.5	11372	0.05

1978 SKOMNAN wallere

stratum	#fish	std error	wt(lb)	approx. s.e.	a-h	no./a-h
may wd	50	44.8	0	0.0	176	0.28
may we	1194	158.8	0	0.0	1492	0.80
jun wd	198	119.8	0	0.0	352	0.56
jun we	206	40.4	0	0.0	701	0.29
jul wd	20	18.4	0	0.0	200	0.10
jul we	17	14.9	0	0.0	66	0.25
aug wd	37	34.1	0	0.0	73	0.50
aug we	0	0.0	0	0.0	41	0.00
sep wd	450	426.9	0	0.0	920	0.49
sep we	50	44.7	0	0.0	140	0.36
+ oct we						
oct wd	32	30.0	0	0.0	399	0.08
total	2253	479.6	0	0.0	4560	0.49

1978 SKOMNAN sauser

stratum	#fish	std error	a-h	no./a-h
may wd	0	0.0	176	0.00
may we	0	0.0	1492	0.00
jun wd	0	0.0	352	0.00
jun we	0	0.0	701	0.00
jul wd	0	0.0	200	0.00
jul we	0	0.0	66	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	41	0.00
sep wd	0	0.0	920	0.00
sep we	0	0.0	140	0.00
+ oct we				
oct wd	0	0.0	399	0.00
total	0	0.0	4560	0.00

1978 SKOWHAN pike

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	176	0.00
may we	86	37.0	1492	0.06
jun wd	7	6.0	352	0.02
jun we	40	7.7	701	0.06
jul wd	0	0.0	200	0.00
jul we	0	0.0	66	0.00
aug wd	0	0.0	73	0.00
aug we	5	4.0	41	0.11
sep wd	0	0.0	920	0.00
sep we	0	0.0	140	0.00
+ oct we				
oct wd	53	49.9	399	0.13
total	190	63.1	4560	0.04

1978 SKOWHAN perch

<u>stratum</u>	<u>#fish</u>	<u>std error</u>	<u>a-h</u>	<u>no./a-h</u>
may wd	0	0.0	176	0.00
may we	2	1.1	1492	0.00
jun wd	0	0.0	352	0.00
jun we	0	0.0	701	0.00
jul wd	0	0.0	200	0.00
jul we	0	0.0	66	0.00
aug wd	0	0.0	73	0.00
aug we	0	0.0	41	0.00
sep wd	20	19.0	920	0.02
sep we	0	0.0	140	0.00
+ oct we				
oct wd	0	0.0	399	0.00
total	22	19.0	4560	0.00

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