**DIVISION OF FISH AND WILDLIFE**

**FISHERIES LAKE SURVEY**

AREA-310

Date of Survey 1996

Date Mapped January 1, 1957

Map Number B-212

___ Initial
___ Re-Survey
___ Population Assessment
_X_ Other Large Lake Program

## Lake Identification, Location and Accessibility

Name(s) Mille Lacs Lake | D.O.W. No. 48-2 | Watershed No. 18 | Meandered yes

County(ies) Aitkin, Mille Lacs, Crow Wing Twp. 42-45N R. 25-28W S. var.

Nearest Town (Distance and Direction) Mille Lacs Lake has Garrison on the northwest side and Isle on the south side.

Accessibility

Designated public access (Location and Ownership) The state owns nine access areas with boat ramps, one unimproved county access; four township road endings.

Other access areas There are many resort and privately owned boat ramps around the lake.

Reason for Survey and Requested by The annual large lake assessment.

Previous Investigations and Dates Annual assessments 1979-95, 1975-77, 1972 Annual creel surveys since 1981 Misc. nettings 1950-70 Lake surveys 1954, 1947, 1943 Creel studies 1976-77, 1960-62

## Lake and Drainage Basin Characteristics and Use

Lake Area **132,516** acres (Planimetered from 1957 map) D.O.W. **132,516** acres

Maximum Depth 42 ft.

Littoral Area 33,129 acres Percent Littoral 25 (1954)

Length of Shoreline 78 mile(s) Greatest Length 20 mile(s)

Lake Mille Lacs 48-2

County(ies) Aitkin, Mille Lacs, Crow Wing

Lake Water Levels Date Observed September 30, 1996

Present 1251.2 (with reference to normal)
Annual fluctuation,+_____ to -_____ feet
Long-term fluctuation,+_____ to -_____ feet
Ordinary spring high water line 1.6 feet above present level.
History of past water level fluctuations The USGS gaging station on the lake at Cove Bay public access.

Inlets (include dry and intermittent) Date observed 1986

| Name | Location(T,R,S) | Origin | Avg. Width | Avg. Depth | Flow* CFS | Barriers to Fish Movement |
|---|---|---|---|---|---|---|
| Garrison Cr. M-63-86 | T44, R28, S12 ✓ | Borden Lake | | | | none |
| Unnamed | T45, R28, S25 | marsh | NOT POSSIBLE | | inter. | none |
| Unnamed M-63-86 | T45, R26, S22 ✓ | marsh | | | | none |
| Reddy Cr. M-63-88 | T45, R26, S23 ✓ | marsh | | | NOP | spawn. area |
| Twenty Cr. M-63-90 | T45, R25, S32 ✓ | Twenty Lake | | | | none |
| Grave Cr. M-63-91 | T44, R25, S8 ✓ | marsh | | | inter. | none |
| Seventeen Cr. M-63 | T44, R25, S17 ✓ | marsh | | | | none* |
| Unnamed 92.5 O | T44, R25, S29 ✓ | marsh | | | inter. | none |
| Peterson Cr. 63-94 | T43, R25, S5 | marsh | | | | none* |
| Cedar Cr. 63-95 | T43, R25, S5 ✓ | Cedar Lake | | | | none* |
| Unnamed | | marsh | | | | none* |
| Malone Cr. 63-96 | T42, R25, S2 ✓ | Anderson Lake | | | | none* |
| Unnamed 96.5 | T42, R25, S10 ✓ | marsh | | | inter. | none |
| Unnamed 96.70 | T42, R25, S9 ✓ | marsh | | | inter. | small |
| Sucker Cr. 63-97 | T42, R25, S18 ✓ | marsh | | | inter. | none |
| West Sucker 63-98 | T42, R25, S18 ✓ | marsh | | | inter. | none* |
| Unnamed 79.5 O | T43, R27, S21 ✓ | marsh | | | inter. | none |
| Unnamed M-63-80 | T43, R27, S7 ✓ | Whitefish Lake | | | | none |
| Seguchie Cr. M-63 | T44, R28, S36 ✓ | Holt Lake | | | | none* |
| Unnamed M-63-92 | T44, R28, S24 ✓ | ~~Smith Lake~~ | | | | none* |

*Walleye spawning documented by fertile eggs being present.

Additional information on inlets (bottom type, spawning sites, etc.)

Garrison, Borden, Seventeen, Peterson, Malone, Seguchie, and two unnamed creeks have been documented to have fertile walleye eggs present. Cedar Cr. is a controllable NOP spawning area. Reddy Cr. also has state owned land for NOP spawning. Most remaining inlet streams provide some NOP spawning habitat.

Outlet Date observed 1986

| Name | Location(T,R,S) | Trib. to | Avg. Width | Avg. Depth | Flow* CFS | Barriers to Fish Movement |
|---|---|---|---|---|---|---|
| Rum River | T43N R27W S33 | Ogechie Lake | | | | none |

*Show flow calculations below:

Lake Mille Lacs Lake 48-2

County(ies) Aitkin, Mille Lacs, Crow Wing

Water Level Controls Date observed

Dams (type,location)

Gauge reading ft. Head ft.

Ownership

Other barriers (type,location)

Benchmark Date observed

Description and Location

Water level feet below benchmark

Description of other benchmarks

Immediate Watershed Use

| Type of Use | Percent | Description |
|---|---|---|
| Forest | 77 | mixed hardwoods on gently rolling glacial till |
| Agricultural | 20 | ag. fields (mostly hay) back from lake, north, east, and south |
| Municipal | 3 | Garrison and Isle are located next to lake |
| Other | | |

Nature and Use of Shoreline

Shore cover type (land abutting) mixed hardwoods on moderate sloping mixed sand, gravel, boulder soils

Shoal water soils (%) 56% sand + gravel, and 44% boulder + rubble

Shoreline marsh location Shoreline marsh is scarce and present only in protected bays in the southern part of the lake.

Shoreline Development:
Number of resorts ~61 Number of cabins at resorts N/A

Number of homes or Cottages N/A Number of Boats N/A

Location of development Development is around the entire lake.

Lake Mille Lacs 48-2

County(ies) Aitkin, Mille Lacs, Crow Wing

Fish Abundance Lake Classification 26

Test Netting Summary

a. Gillnets: 32 sets 250 ft.Experimental Nylon Net

| Species | | Total Number | Number Per Set: Number Per Set | Number Per Set: Statewide Median | Number Per Set: Mlac '83-95 Median | Total Pounds | Pounds Per Set: Pounds Per Set | Pounds Per Set: Statewide Median | Pounds Per Set: Mlac '83-95 Median |
|---|---|---|---|---|---|---|---|---|---|
| Tullibee | TLC | 489 | 15.28 | | 16.6 | 223.3 | 7.0 | | 5.2 |
| Northern Pike | NOP | 36 | 1.13 | | 1.2 | 210.3 | 6.6 | | 6.8 |
| Muskellunge | MUE | 1 | 0.03 | | 0.03 | 13.2 | 0.41 | | 0.1 |
| White Sucker | WTS | 19 | 0.59 | | 0.80 | 43.1 | 1.4 | | 1.4 |
| Bullhead spp. | BLH | 14 | 0.44 | | 0.16 | 6.1 | 0.19 | | 0.1 |
| Burbot | BUB | 10 | 0.31 | | 0.50 | 10.7 | 0.33 | | 0.5 |
| Black Crappie | BLC | 8 | 0.25 | | 0.30 | 4.3 | 0.13 | | 0.1 |
| Rock Bass | RKB | 34 | 1.06 | | 0.45 | 19.9 | 0.62 | | 0.3 |
| Smallmouth Bass | SMB | 1 | 0.03 | | 0.03 | 1.5 | 0.05 | | 0.04 |
| Largemouth Bass | LMB | 1 | 0.03 | | 0.45 | 19.9 | 0.62 | | 0.0 |
| Yellow Perch | YEP | 2498 | 78.06 | | 21.4 | 597.2 | 18.7 | | 5.2 |
| Walleye | WAE | 420 | 13.13 | | 15.9 | 745.9 | 23.3 | | 30.5 |

b. Trapnets _____-Total pots _____Double Pot Sets _____Single Pot Sets

| Species | Total Number | Number Per Set: Number Per Set | Number Per Set: Statewide Median | Number Per Set: Region Median | Total Pounds | Pounds Per Set: Pounds Per Set | Pounds Per Set: Statewide Median | Pounds Per Set: Region Median |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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Lake Mille Lacs 48-2

County(ies) Aitkin, Mille Lacs, Crow Wing

Fish Sizes

**Length-Frequency Distribution**
**Species and Number of Fish in Length Groups**

GILL NETS

| Total Length in inches | TLC | NOP | WTS | BLH | BUB | BLC | RKB | YEP | WAE |
|---|---|---|---|---|---|---|---|---|---|
| 3.5-3.9 | | | | | | | 1 | 1 | |
| 4.0-4.4 | | | | | | | 1 | | |
| 4.5-4.9 | | | | | | | | 2 | |
| 5.0-5.4 | | | | | | | 1 | 29 | |
| 5.5-5.9 | | | | | | | | 150 | |
| 6.0-6.4 | | | | | | | | 224 | |
| 6.5-6.9 | | | | | | 1 | 1 | 314 | 5 |
| 7.0-7.4 | | | | 1 | | | 1 | 490 | 1 |
| 7.5-7.9 | 25 | | 1 | 3 | | | 2 | 338 | 1 |
| 8.0-8.4 | 56 | | | 5 | | 2 | 2 | 240 | 2 |
| 8.5-8.9 | 18 | | | 1 | | 2 | 9 | 246 | 6 |
| 9.0-9.4 | 2 | | | 1 | 1 | | 5 | 168 | 9 |
| 9.5-9.9 | 12 | | 1 | 2 | | 1 | 5 | 99 | 13 |
| 10.0-10.4 | 49 | | 1 | | | | 5 | 96 | 4 |
| 10.5-10.9 | 95 | | | | | | 1 | 67 | 5 |
| 11.0-11.4 | 104 | | | | | | | 11 | 4 |
| 11.5-11.9 | 45 | | | 1 | 1 | 1 | | 12 | 11 |
| 12.0-12.9 | 46 | | | | | 1 | | 10 | 20 |
| 13.0-13.9 | 33 | | | | 1 | | | | 32 |
| 14.0-14.1 | 4 | | 2 | | | | | | 36 |
| 15.0-15.9 | | | 1 | | 1 | | | | 48 |
| 16.0-16.9 | | | 2 | | 3 | | | | 33 |
| 17.0-17.9 | | | 2 | | 2 | | | | 44 |
| 18.0-18.9 | | | 2 | | | | | | 39 |
| 19.0-19.9 | | | 5 | | 1 | | | | 40 |
| 20.0-20.9 | | 1 | 2 | | | | | | 24 |
| 21.0-21.9 | | | | | | | | | 9 |
| 22.0-22.9 | | 1 | | | | | | | 11 |
| 23.0-23.9 | | 2 | | | | | | | 7 |
| 24.0-24.9 | | 2 | | | | | | | 12 |
| 25.0-25.9 | | 4 | | | | | | | |
| 26.0-26.9 | | 5 | | | | | | | 2 |
| 27.0-27.9 | | 3 | | | | | | | |
| 28.0-28.9 | | 7 | | | | | | | 1 |
| 29.0-29.9 | | | | | | | | | 1 |
| 30.0-30.9 | | 2 | | | | | | | |
| 31.0-31.9 | | 2 | | | | | | | |
| 32.0-32.9 | | 2 | | | | | | | |
| 33.0-33.9 | | 2 | | | | | | | |
| 34.0-34.9 | | 1 | | | | | | | |
| 35.0-35.9 | | | | | | | | | |
| 36.0-36.9 | | 1 | | | | | | | |
| 37.0-37.9 | | | | | | | | | |
| 38.0-38.9 | | 1 | | | | | | | |
| Total | 489 | 36 | 19 | 14 | 10 | 8 | 34 | 2497 | 420 |

SPECIAL PROBLEMS AND CONDITIONS AFFECTING FISH AND FISHING: As in 1995, water transparency was high and may have resulted in below normal angler catch rates during daylight hours. Normal summer Secchi transparencies average about 7 ft, but in July of 1996 the average was 17 ft. Anglers appeared to change thier patterns by fishing later into the evening and in deeper water. The reason for the clear water is unknown.

ADDITIONAL FIELD NOTES: Creel Survey Data: Total 1996 open water season fishing pressure was estimated at 1,903,488 angler hours. An estimated 333,758 walleye weighing 557,910 pounds were harvested (4.21 lbs/surface acre). This was the third highest harvest documented by the creel survey. Harvests of northern pike and yellow perch were: 5,013 (24,157 lbs) and 70,955 (31,019 lbs). The mean weights of a walleye, northern pike, and yellow perch harvested were 1.67, 4.82, and 0.44 pounds, respectively. The season harvest rate for walleye was 0.18 fish per angler hour. The 1993, 1992, 1991, and 1988 year classes were abundant in the anglers catch, creating a rather wide length distribution of the catch.

PRESENT FISH POPULATION STATUS: Walleye abundance (numbers and biomass) as indicated by assessment gill netting was lower than in 1995, and was slightly below average. No one year class accounted for more than 20% of the catch in the gill net sample. The 1995, 1994, 1993, 1992, 1991, and 1988 year classes contributed between 10 and 20%. The index of year class strength indicates near average recruitment for 1991 through 1994.

SUMMARY BY SAMPLING METHOD:

**Spring trap netting:** Between April 16 and May 10, 1996 we captured 3,978 northern pike of which we tagged 2,747 (including 524 that were double tagged to estimate tag loss). There were 258 recaptures from the 1994 and 1995 taggings. Pike were more abundant than in past years. The sum of the population estimates for each individual tagging zone was 32,695, considerable higher than the past 4 years estimates (1992-14,735; 1993-12,829; 1994-24,874; 1995-14,785). Recruitment from a strong 1993 year class was the primary reason for the increase in numbers. We also caught 305 muskellunge (265 were tagged). To date we have received information from anglers who caught over 430 northern pike and 3 muskellunge tagged in 1994, 1995, and 1996.

The catch rate during the 1996 musky assessment was about 1.8/net, which was similar to what was observed in 1994 (2/net) and 1995 (1.7/net). The number of large individuals continued to increase. One of 250 in 1992 was over 45", six of 163 in 1993, 17 of 256 in 1994, 25 of 205 in 1995, and 55 of 305 in 1996. The largest musky was 49.1" and weighed 40.5 pounds. We also captured 31 yearling muskellunge, of which two were naturally reproduced (they were not fin clipped). Evidence of natural reproduction of muskellunge in Mille Lacs has been documented each year since 1991.

**Summer seining:** Growth of both YOY walleye and YOY yellow perch appeared above average, although the numbers of walleye were quite low.

**August night electrofishing and Fall trawling:** The total walleye trawl CPUE was the lowest since 1975, and young of year walleye were caught at the third lowest rate that has been observed since the trawl assessment began in 1972. The extremely clear water (10-12ft secchi) likely impacted the efficiency of the trawl. Regression analysis indicated a significant negative relation ($R^2$=0.72, p=0.004) between water clarity and trawl catch. Size was similar to last year (slightly above average). Electrofishing results indicated that the 1996 year class is likely below average in abundance, but not nearly as poor as the trawl catch would suggest. The trawl CPUE of YOY yellow perch was near average, and there was no measuralble relation between clarity and YOY perch catch rates.

**Fall gill netting:** Walleye CPUE (13.1/net) was down from last years high level; however, the number of older fish (over age 8) in the sample increased to the highest level since 1992. The higher catch of older fish was due to recuriment of the strong 1988 year class. Yellow perch CPUE (78.1/net) was down from last year but was still the second highest ever recorded. The strong 1993 year class (about 6.5-7.5 inches) accounted for the largest portion of the catch. The catch of perch in the 8-9" size range was also up, but the number of fish over 10" remained about the same as last year. Northern pike CPUE (1.1/net) was higher than last year and was supported by the increase in abundance as observed in the tagging experiment.

**Creel survey:** The 1996 open water angling effort (1,903,488 angler hours), walleye harvest (557,910 lbs), and catch rates (0.18/hour, 0.29 lbs/hour) were similar to the 1988 season. Although the harvest of walleye over 20 inches was no different than in 1988 (43,759 - 1996 vs 44,776 - 1988); the total catch was the highest that we have observed (63,105), with a 31% (19,346) release rate. The "one over 20 inches" size regulation had a greater impact in 1996 than in any other year since its inception in 1985. The regulation accounted for nearly half of the total releases of fish over 20 inches (15% of the total catch over 20 inches). Yellow perch harvest remained about the same as the last several years (31,019 lbs), as did the number of perch released (279,235 fish). Northern pike catch (11,724) and harvest (5,013 fish, 24,157 lbs) were also up from last year. The high catch of pike was due to their increased abundance and the increased effort. Muskellunge anglers again experienced excellent angling. The total catch exceeded the previous highest catch by 200 fish (1,059 released). No harvested muskellunge were observed in the creel survey. The mean size caught by anglers that were interviewed in the creel survey was 36", and 32% were over 40". The largest fish reported released by an angler in the creel was 46". Pressure directed at muskellunge or muskellunge in combination with other species continued to increase, double that of 1995 effort. In 1996, creel clerks sampled 1,314 hours of effort compared with 654 hours in 1995, 536 hours in 1994, 358 hours in 1993 and 202 hours in 1992.

Lake Mille Lacs 48-2

County(ies) Aitkin, Mille Lacs, Crow Wing

Ecological Classification **Lake Class 26**

Management Classification **walleye**

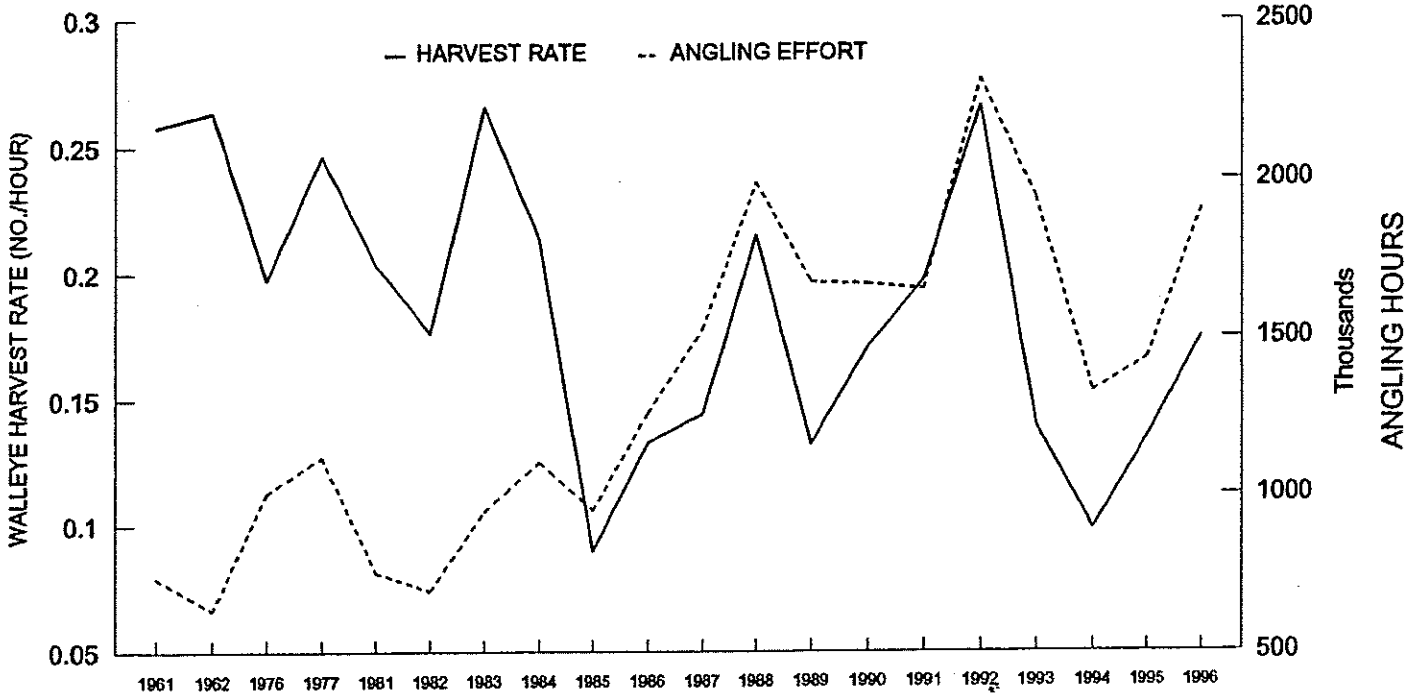
Management Recommendations:

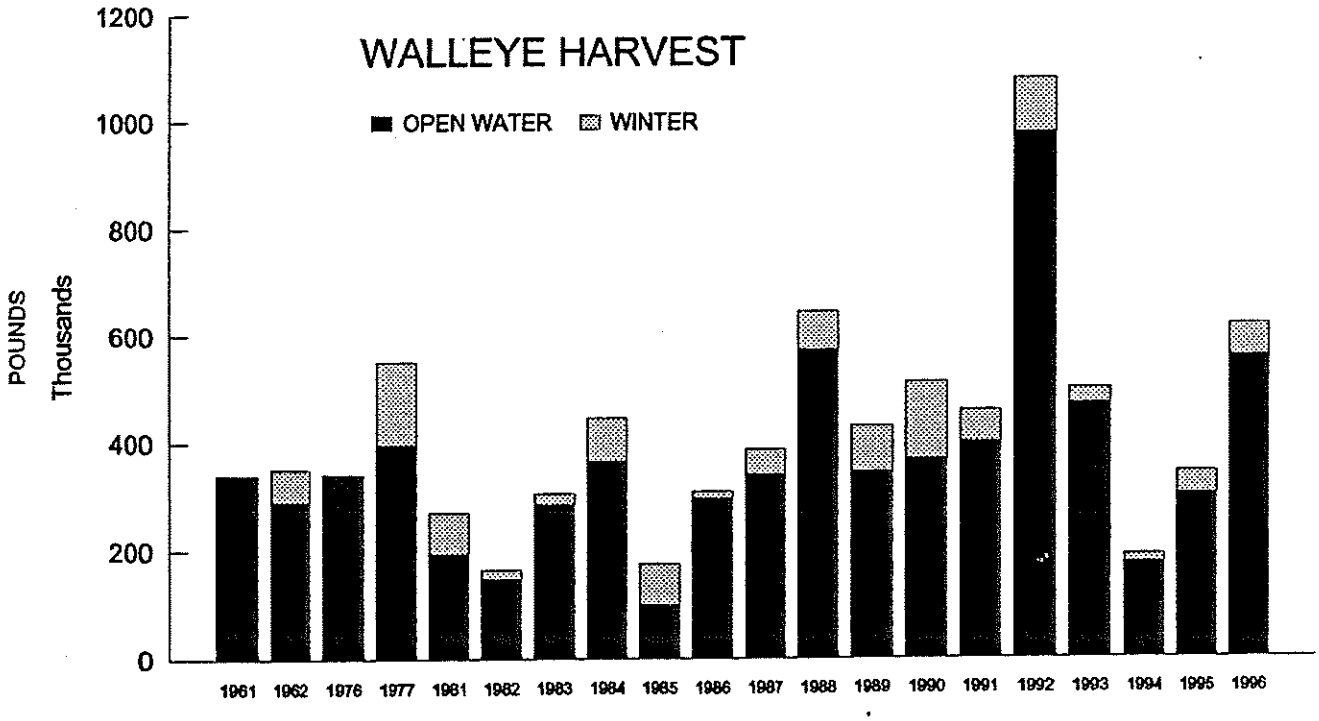
Prepared by: Richard Bruesewitz

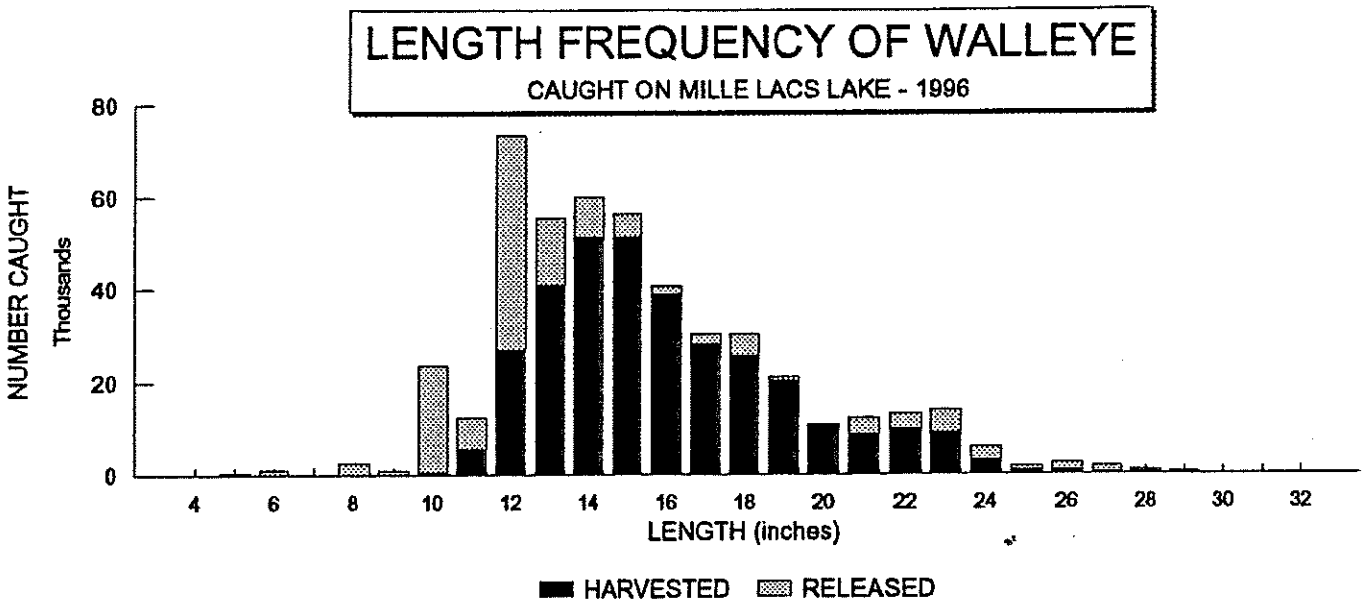
1/3/97
Area Fisheries Supervisor (Date)

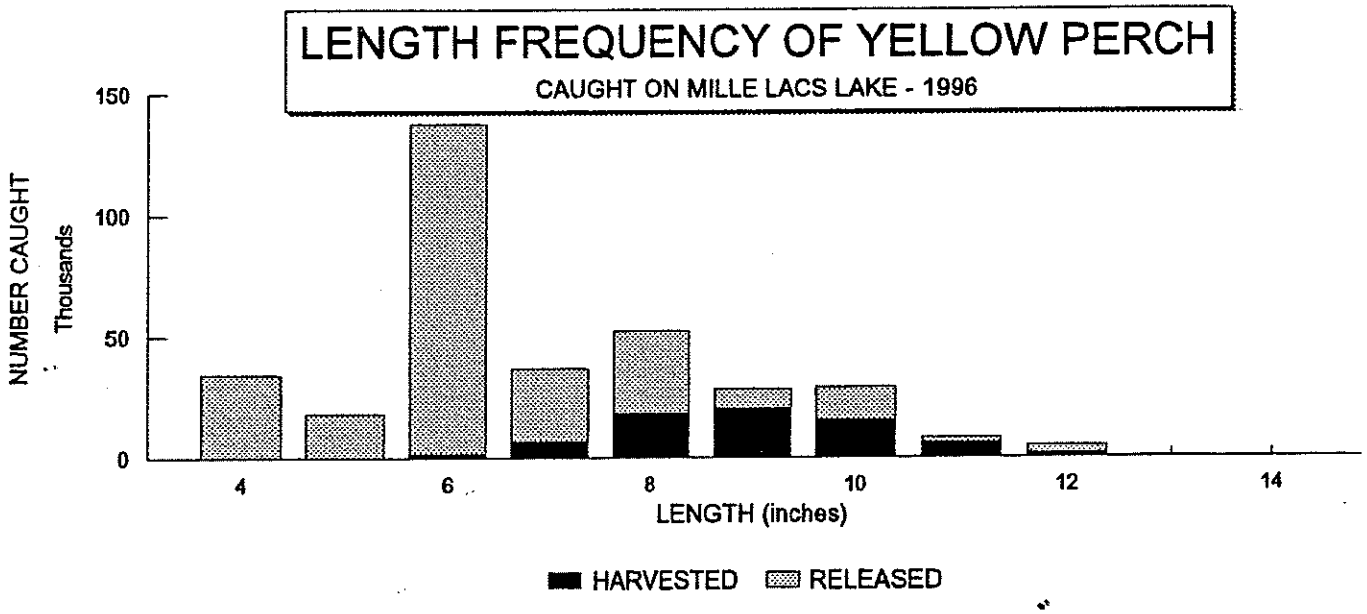
1/7/97
Regional Fisheries Manager (Date)

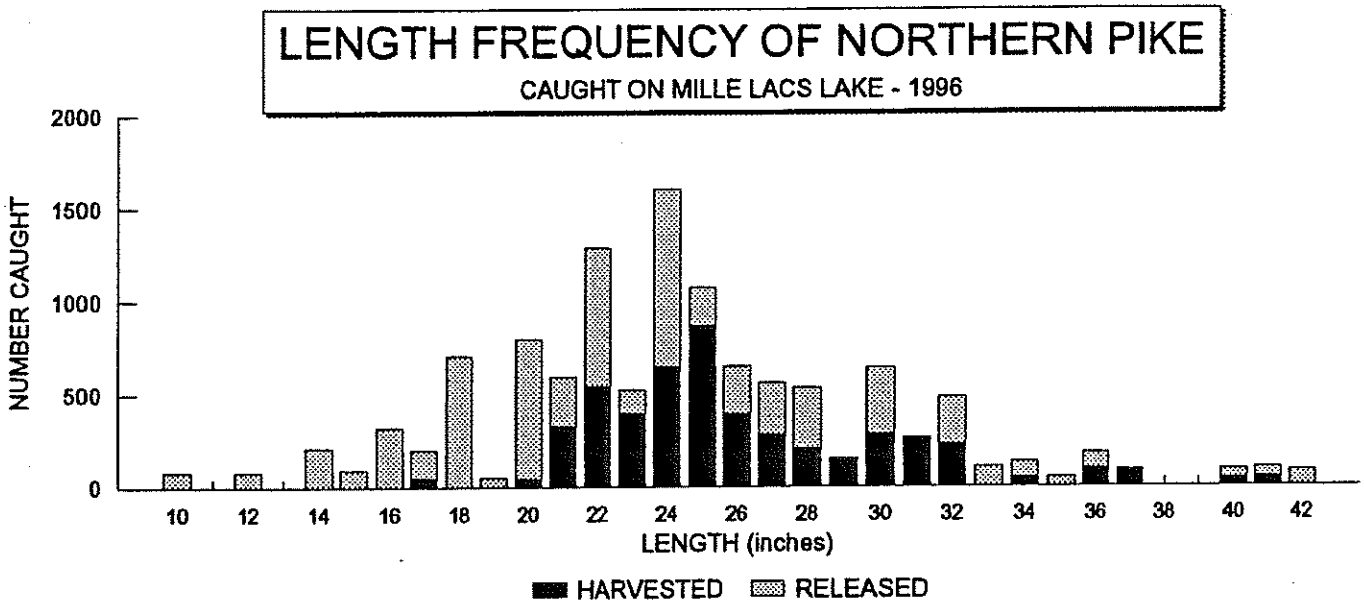
# MILLE LACS WALLEYE HARVEST AND OPEN WATER EFFORT AND HARVEST RATE




LENGTH FREQUENCY OF WALLEYE
CAUGHT ON MILLE LACS LAKE - 1996
NUMBER CAUGHT
Thousands
80
60
40
20
0
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
LENGTH (inches)
HARVESTED
RELEASED


LENGTH FREQUENCY OF YELLOW PERCH
CAUGHT ON MILLE LACS LAKE - 1996
NUMBER CAUGHT
Thousands
150
100
50
0
4
6
8
10
12
14
LENGTH (inches)
HARVESTED
RELEASED


LENGTH FREQUENCY OF NORTHERN PIKE
CAUGHT ON MILLE LACS LAKE - 1996
NUMBER CAUGHT
2000
1500
1000
500
0
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
LENGTH (inches)
HARVESTED
RELEASED

80
60
40
20
0
WALLEYE CATCH (NUMBERS)

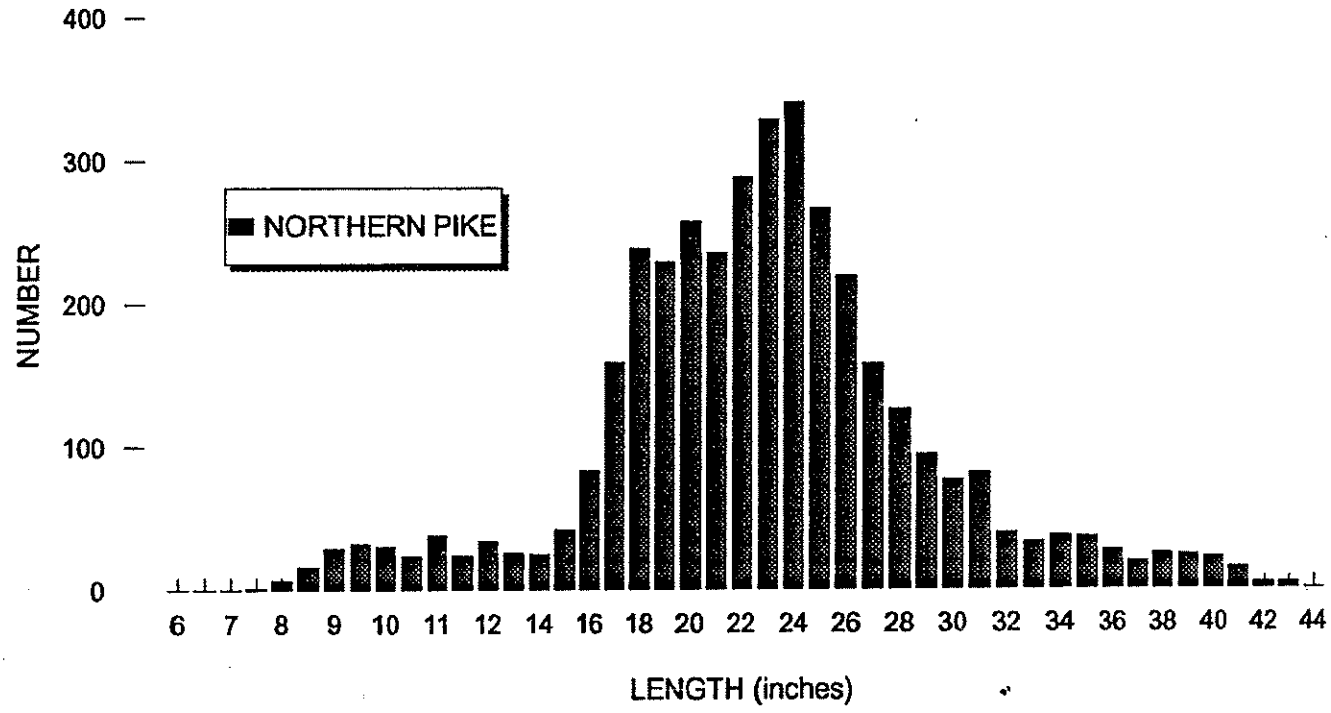
6
4
2
YELLOW PERCH CATCH (NUMBERS)

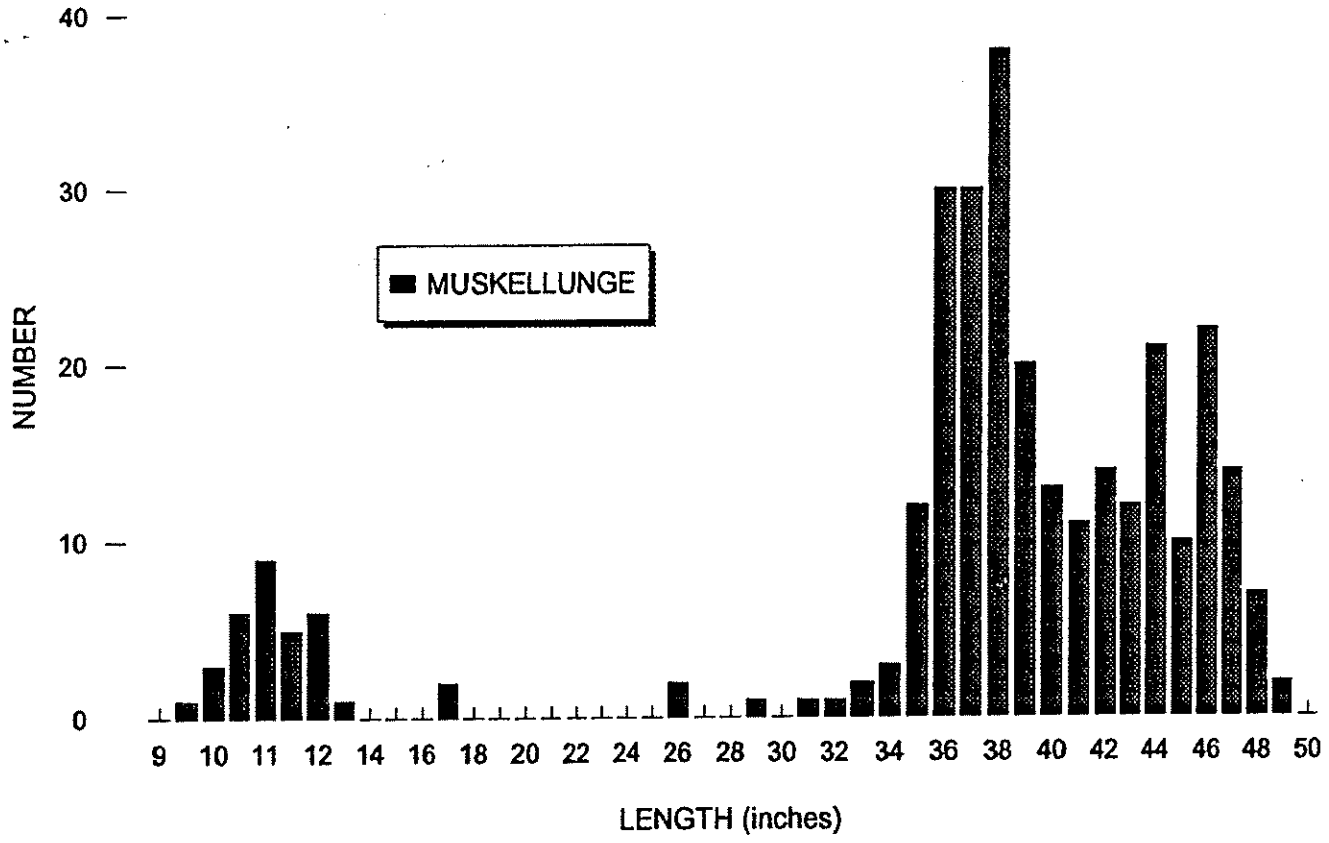
# 1996 HARVEST AND RELEASE FIGURES FOR WALLEYE CAUGHT AT MILLE LACS LAKE

| | ≥20 | ≥22 | ≥24 | ≥26 |
|---|---|---|---|---|
| CAUGHT | 63,105 | 40,023 | 13,140 | 5,434 |
| HARVESTED | 43,759 | 24,623 | 5,728 | 1,771 |
| TOTAL RELEASED | 19,346<br>31% | 15,401<br>38% | 7,412<br>56% | 3,663<br>67% |
| REGULATION RELEASED | 9,403<br>15% | 6,604<br>17% | 2,733<br>21% | 1,527<br>28% |

# LENGTH FREQUENCY DISTRIBUTIONS

## FROM SPRING TRAP NETTING - MILLE LACS 1996



SUMMARY OF FALL TULLIBEE ASSESSMENT SURVEY

| | |
|---|---|
| LAKE:<br>MILLE LACS | COUNTY:<br>MILLE LACS |
| DATE OF SURVEY: 11/4/96<br><br>SAMPLING METHOD: ELECTROFISHING | OBJECTIVE:<br>TO ASSESS AND SURVEY TULLIBEE POPULATION IN MILLE LACS LAKE. |

SAMPLING INFORMATION

| | | | | | |
|---|---|---|---|---|---|
| TOTAL SHOCKING TIME (HRS): | | | 0.5 | MILES SURVEYED: | 0.4 |
| WATER TEMPERATURE (F): | | | 39 | SHORE MILES | 76 |
| VOLTS: | 884 | AMPS: | 4.0 | BOOM SHOCKER TYPE(S): | |
| PULSES/ SECOND: | 60 | PULSE WIDTH: | 3.0 | GLIFWC DC | |
| NUMBER OF CREWS: | | | 1 | RELIABILITY: | MODERATE |

CATCH DATA

| SPECIES | NUMBER CAUGHT | LENGTH RANGE (INCHES) | CATCH/EFFORT |
|---|---|---|---|
| TULLIBEE: TOTAL | 1 | 13.5 | 1.9 / HOUR |
| TULLIBEE: MALE | 0 | | 0.0 / HOUR |
| TULLIBEE: FEMALE | 1 | 13.5 | 1.9 / HOUR |
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COMMENTS

Very rough night with high winds and waves. Survey cancelled prior to reaching anticipated end point. Began survey at Shah-bosh-kung Bay public access and ended where rocky shoreline began on the north side of Indian Point.

TULLIBEE LENGTH-FREQUENCY FORM

CREW NAMES:
Haeseker, Sheinost, Lindell

| COUNTY: | LAKE: | DATE: | SHOCKING TIME (SEC): | VOLTS: | AMPS: | PPS: | PW: |
|---|---|---|---|---|---|---|---|
| MILLE LACS | MILLE LACS | 11/4/96 | 1894 | 884 | 4.0 | 60 | 3.0 |

| SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL | SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL |
|---|---|---|---|---|---|---|---|
| <6.0 | | | 0 | 11.0 | | | 0 |
| 6.0 | | | 0 | 11.1 | | | 0 |
| 6.1 | | | 0 | 11.2 | | | 0 |
| 6.2 | | | 0 | 11.3 | | | 0 |
| 6.3 | | | 0 | 11.4 | | | 0 |
| 6.4 | | | 0 | 11.5 | | | 0 |
| 6.5 | | | 0 | 11.6 | | | 0 |
| 6.6 | | | 0 | 11.7 | | | 0 |
| 6.7 | | | 0 | 11.8 | | | 0 |
| 6.8 | | | 0 | 11.9 | | | 0 |
| 6.9 | | | 0 | 12.0 | | | 0 |
| 7.0 | | | 0 | 12.1 | | | 0 |
| 7.1 | | | 0 | 12.2 | | | 0 |
| 7.2 | | | 0 | 12.3 | | | 0 |
| 7.3 | | | 0 | 12.4 | | | 0 |
| 7.4 | | | 0 | 12.5 | | | 0 |
| 7.5 | | | 0 | 12.6 | | | 0 |
| 7.6 | | | 0 | 12.7 | | | 0 |
| 7.7 | | | 0 | 12.8 | | | 0 |
| 7.8 | | | 0 | 12.9 | | | 0 |
| 7.9 | | | 0 | 13.0 | | | 0 |
| 8.0 | | | 0 | 13.1 | | | 0 |
| 8.1 | | | 0 | 13.2 | | | 0 |
| 8.2 | | | 0 | 13.3 | | | 0 |
| 8.3 | | | 0 | 13.4 | | | 0 |
| 8.4 | | | 0 | 13.5 | | 1 | 1 |
| 8.5 | | | 0 | 13.6 | | | 0 |
| 8.6 | | | 0 | 13.7 | | | 0 |
| 8.7 | | | 0 | 13.8 | | | 0 |
| 8.8 | | | 0 | 13.9 | | | 0 |
| 8.9 | | | 0 | 14.0 | | | 0 |
| 9.0 | | | 0 | 14.1 | | | 0 |
| 9.1 | | | 0 | 14.2 | | | 0 |
| 9.2 | | | 0 | 14.3 | | | 0 |
| 9.3 | | | 0 | 14.4 | | | 0 |
| 9.4 | | | 0 | 14.5 | | | 0 |
| 9.5 | | | 0 | 14.6 | | | 0 |
| 9.6 | | | 0 | 14.7 | | | 0 |
| 9.7 | | | 0 | 14.8 | | | 0 |
| 9.8 | | | 0 | 14.9 | | | 0 |
| 9.9 | | | 0 | 15.0 | | | 0 |
| 10.0 | | | 0 | 15.1 | | | 0 |
| 10.1 | | | 0 | 15.2 | | | 0 |
| 10.2 | | | 0 | 15.3 | | | 0 |
| 10.3 | | | 0 | 15.4 | | | 0 |
| 10.4 | | | 0 | 15.5 | | | 0 |
| 10.5 | | | 0 | 15.6 | | | 0 |
| 10.6 | | | 0 | 15.7 | | | 0 |
| 10.7 | | | 0 | 15.8 | | | 0 |
| 10.8 | | | 0 | 15.9 | | | 0 |
| 10.9 | | | 0 | | | | |
| TOTAL: | 0 | | | TOTAL: | 1 | | |

SUMMARY OF FALL TULLIBEE ASSESSMENT SURVEY

| | |
|---|---|
| LAKE:<br>MILLE LACS | COUNTY:<br>MILLE LACS |
| DATE OF SURVEY: 11/5/96<br><br>SAMPLING METHOD: ELECTROFISHING | OBJECTIVE:<br>TO ASSESS AND SURVEY TULLIBEE POPULATION IN MILLE LACS LAKE. |

SAMPLING INFORMATION

| | | | | | |
|---|---|---|---|---|---|
| TOTAL SHOCKING TIME (HRS): | | | 0.7 | MILES SURVEYED: | 1.8 |
| WATER TEMPERATURE (F): | | | 39 | SHORE MILES | 76 |
| VOLTS: | 884 | AMPS: | 4.0 | BOOM SHOCKER TYPE(S): | |
| PULSES/ SECOND: | 60 | PULSE WIDTH: | 3.0 | GLIFWC DC | |
| NUMBER OF CREWS: | | 1 | | RELIABILITY: | HIGH |

CATCH DATA

| SPECIES | NUMBER CAUGHT | LENGTH RANGE (INCHES) | CATCH/EFFORT |
|---|---|---|---|
| TULLIBEE: TOTAL | 109 | 10.0-14.3 | 165.5 / HOUR |
| TULLIBEE: MALE | 105 | 10.0-14.3 | 159.4 / HOUR |
| TULLIBEE: FEMALE | 4 | 10.3-12.5 | 6.1 / HOUR |
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COMMENTS

Good conditions for sampling with light wind and relatively calm water. Started survey at where the rocky shoreline began along the north side of Indian Point and continued electrofishing to the eastern tip of Rainbow Island. Almost all fish were collected along the reef between Indian Point and Rainbow Island, and along the eastern side of Rainbow Island.

TULLIBEE LENGTH-FREQUENCY FORM

CREW NAMES:
Haeseker, Bunting, Moilanen

| COUNTY: | LAKE: | DATE: | SHOCKING TIME (SEC): | VOLTS: | AMPS: | PPS: | PW: |
|---|---|---|---|---|---|---|---|
| MILLE LACS | MILLE LACS | 11/5/96 | 2371 | 884 | 4.0 | 60 | 3.0 |

| SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL | SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL |
|---|---|---|---|---|---|---|---|
| <6.0 | | | 0 | 11.0 | 10 | | 10 |
| 6.0 | | | 0 | 11.1 | 8 | 1 | 9 |
| 6.1 | | | 0 | 11.2 | 8 | | 8 |
| 6.2 | | | 0 | 11.3 | 6 | | 6 |
| 6.3 | | | 0 | 11.4 | 5 | | 5 |
| 6.4 | | | 0 | 11.5 | 5 | | 5 |
| 6.5 | | | 0 | 11.6 | 1 | | 1 |
| 6.6 | | | 0 | 11.7 | 2 | | 2 |
| 6.7 | | | 0 | 11.8 | | | 0 |
| 6.8 | | | 0 | 11.9 | 2 | | 2 |
| 6.9 | | | 0 | 12.0 | 1 | | 1 |
| 7.0 | | | 0 | 12.1 | 1 | | 1 |
| 7.1 | | | 0 | 12.2 | 4 | | 4 |
| 7.2 | | | 0 | 12.3 | 1 | | 1 |
| 7.3 | | | 0 | 12.4 | | | 0 |
| 7.4 | | | 0 | 12.5 | 2 | 1 | 3 |
| 7.5 | | | 0 | 12.6 | 2 | | 2 |
| 7.6 | | | 0 | 12.7 | | | 0 |
| 7.7 | | | 0 | 12.8 | 2 | | 2 |
| 7.8 | | | 0 | 12.9 | | | 0 |
| 7.9 | | | 0 | 13.0 | 3 | | 3 |
| 8.0 | | | 0 | 13.1 | 2 | | 2 |
| 8.1 | | | 0 | 13.2 | 1 | | 1 |
| 8.2 | | | 0 | 13.3 | | | 0 |
| 8.3 | | | 0 | 13.4 | | | 0 |
| 8.4 | | | 0 | 13.5 | | | 0 |
| 8.5 | | | 0 | 13.6 | | | 0 |
| 8.6 | | | 0 | 13.7 | | | 0 |
| 8.7 | | | 0 | 13.8 | 1 | | 1 |
| 8.8 | | | 0 | 13.9 | | | 0 |
| 8.9 | | | 0 | 14.0 | | | 0 |
| 9.0 | | | 0 | 14.1 | | | 0 |
| 9.1 | | | 0 | 14.2 | | | 0 |
| 9.2 | | | 0 | 14.3 | 1 | | 1 |
| 9.3 | | | 0 | 14.4 | | | 0 |
| 9.4 | | | 0 | 14.5 | | | 0 |
| 9.5 | | | 0 | 14.6 | | | 0 |
| 9.6 | | | 0 | 14.7 | | | 0 |
| 9.7 | | | 0 | 14.8 | | | 0 |
| 9.8 | | | 0 | 14.9 | | | 0 |
| 9.9 | | | 0 | 15.0 | | | 0 |
| 10.0 | 2 | | 2 | 15.1 | | | 0 |
| 10.1 | | | 0 | 15.2 | | | 0 |
| 10.2 | 2 | | 2 | 15.3 | | | 0 |
| 10.3 | | 2 | 2 | 15.4 | | | 0 |
| 10.4 | 4 | | 4 | 15.5 | | | 0 |
| 10.5 | 2 | | 2 | 15.6 | | | 0 |
| 10.6 | 4 | | 4 | 15.7 | | | 0 |
| 10.7 | 5 | | 5 | 15.8 | | | 0 |
| 10.8 | 6 | | 6 | 15.9 | | | 0 |
| 10.9 | 12 | | 12 | | | | |
| TOTAL: | 39 | | | TOTAL: | 70 | | |

SUMMARY OF FALL TULLIBEE ASSESSMENT SURVEY

| | |
|---|---|
| LAKE:<br>MILLE LACS | COUNTY:<br>MILLE LACS |
| DATE OF SURVEY: 11/6/96<br><br>SAMPLING METHOD: ELECTROFISHING | OBJECTIVE:<br>TO ASSESS AND SURVEY TULLIBEE POPULATION IN MILLE LACS LAKE. |

SAMPLING INFORMATION

| | | | | | |
|---|---|---|---|---|---|
| TOTAL SHOCKING TIME (HRS): | | | 0.4 | MILES SURVEYED: | 0.6 |
| WATER TEMPERATURE (F): | | | 40 | SHORE MILES | 76 |
| VOLTS: | 884 | AMPS: | 4.0 | BOOM SHOCKER TYPE(S): | |
| PULSES/ SECOND: | 60 | PULSE WIDTH: | 3.0 | GLIFWC DC | |
| NUMBER OF CREWS: | | 1 | | RELIABILITY: | HIGH |

CATCH DATA

| SPECIES | NUMBER CAUGHT | LENGTH RANGE (INCHES) | CATCH/EFFORT |
|---|---|---|---|
| TULLIBEE: TOTAL | 31 | 10.1-13.4 | 86.1 / HOUR |
| TULLIBEE: MALE | 24 | 10.2-12.2 | 66.7 / HOUR |
| TULLIBEE: FEMALE | 7 | 10.1-13.4 | 19.4 / HOUR |
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COMMENTS

Very windy conditions, but the shoreline that was sampled was protected from the majority of the wind. The survey began at the Mille Lacs Band natural resources department building marina and proceeded along to the northeastern tip of Sherman's Point, where high winds and waves forced the survey to end. Tullibee were found throughout this length of shoreline, with no major areas of concentration.

TULLIBEE LENGTH-FREQUENCY FORM

CREW NAMES:
Haeseker, Scheinost, Rupp

| COUNTY: | LAKE: | DATE: | SHOCKING TIME (SEC): | VOLTS: | AMPS: | PPS: | PW: |
|---|---|---|---|---|---|---|---|
| MILLE LACS | MILLE LACS | 11/6/96 | 1296 | 884 | 4.0 | 60 | 3.0 |

| SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL | SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL |
|---|---|---|---|---|---|---|---|
| <6.0 | | | 0 | 11.0 | 2 | | 2 |
| 6.0 | | | 0 | 11.1 | 1 | | 1 |
| 6.1 | | | 0 | 11.2 | 1 | 1 | 2 |
| 6.2 | | | 0 | 11.3 | 2 | | 2 |
| 6.3 | | | 0 | 11.4 | | | 0 |
| 6.4 | | | 0 | 11.5 | 3 | | 3 |
| 6.5 | | | 0 | 11.6 | 1 | | 1 |
| 6.6 | | | 0 | 11.7 | | | 0 |
| 6.7 | | | 0 | 11.8 | | | 0 |
| 6.8 | | | 0 | 11.9 | | | 0 |
| 6.9 | | | 0 | 12.0 | | | 0 |
| 7.0 | | | 0 | 12.1 | | | 0 |
| 7.1 | | | 0 | 12.2 | 2 | | 2 |
| 7.2 | | | 0 | 12.3 | | | 0 |
| 7.3 | | | 0 | 12.4 | | | 0 |
| 7.4 | | | 0 | 12.5 | | | 0 |
| 7.5 | | | 0 | 12.6 | | | 0 |
| 7.6 | | | 0 | 12.7 | | | 0 |
| 7.7 | | | 0 | 12.8 | | | 0 |
| 7.8 | | | 0 | 12.9 | | | 0 |
| 7.9 | | | 0 | 13.0 | | | 0 |
| 8.0 | | | 0 | 13.1 | | | 0 |
| 8.1 | | | 0 | 13.2 | | | 0 |
| 8.2 | | | 0 | 13.3 | | | 0 |
| 8.3 | | | 0 | 13.4 | | 1 | 1 |
| 8.4 | | | 0 | 13.5 | | | 0 |
| 8.5 | | | 0 | 13.6 | | | 0 |
| 8.6 | | | 0 | 13.7 | | | 0 |
| 8.7 | | | 0 | 13.8 | | | 0 |
| 8.8 | | | 0 | 13.9 | | | 0 |
| 8.9 | | | 0 | 14.0 | | | 0 |
| 9.0 | | | 0 | 14.1 | | | 0 |
| 9.1 | | | 0 | 14.2 | | | 0 |
| 9.2 | | | 0 | 14.3 | | | 0 |
| 9.3 | | | 0 | 14.4 | | | 0 |
| 9.4 | | | 0 | 14.5 | | | 0 |
| 9.5 | | | 0 | 14.6 | | | 0 |
| 9.6 | | | 0 | 14.7 | | | 0 |
| 9.7 | | | 0 | 14.8 | | | 0 |
| 9.8 | | | 0 | 14.9 | | | 0 |
| 9.9 | | | 0 | 15.0 | | | 0 |
| 10.0 | | | 0 | 15.1 | | | 0 |
| 10.1 | | 1 | 1 | 15.2 | | | 0 |
| 10.2 | 1 | | 1 | 15.3 | | | 0 |
| 10.3 | 3 | 1 | 4 | 15.4 | | | 0 |
| 10.4 | | 1 | 1 | 15.5 | | | 0 |
| 10.5 | 3 | 2 | 5 | 15.6 | | | 0 |
| 10.6 | | | 0 | 15.7 | | | 0 |
| 10.7 | | | 0 | 15.8 | | | 0 |
| 10.8 | 3 | | 3 | 15.9 | | | 0 |
| 10.9 | 2 | | 2 | | | | |
| TOTAL: | 17 | | | TOTAL: | 14 | | |

SUMMARY OF FALL TULLIBEE ASSESSMENT SURVEY

| | |
|---|---|
| LAKE:<br>MILLE LACS | COUNTY:<br>MILLE LACS |
| DATE OF SURVEY: 11/7/96<br><br>SAMPLING METHOD: ELECTROFISHING | OBJECTIVE:<br>TO ASSESS AND SURVEY TULLIBEE POPULATION IN MILLE LACS LAKE. |

SAMPLING INFORMATION

| | | | | | |
|---|---|---|---|---|---|
| TOTAL SHOCKING TIME (HRS): | | | 0.7 | MILES SURVEYED: | 1.8 |
| WATER TEMPERATURE (F): | | | 40 | SHORE MILES | 76 |
| VOLTS: | 884 | AMPS: | 4.0 | BOOM SHOCKER TYPE(S): | |
| PULSES/ | | PULSE | | GLIFWC DC | |
| SECOND: | 60 | WIDTH: | 3.0 | | |
| NUMBER OF CREWS: | | 1 | | RELIABILITY: | HIGH |

CATCH DATA

| SPECIES | NUMBER CAUGHT | LENGTH RANGE (INCHES) | CATCH/EFFORT |
|---|---|---|---|
| TULLIBEE: TOTAL | 95 | 9.8-13.1 | 141.6 / HOUR |
| TULLIBEE: MALE | 84 | 10.0-13.1 | 125.2 / HOUR |
| TULLIBEE: FEMALE | 11 | 9.8-12.1 | 16.4 / HOUR |
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COMMENTS

Good conditions for sampling with light wind and relatively calm water. Started survey at where the rocky shoreline began alont the north side of Indian Point and continued electrofishing to the eastern tip of Rainbow Island. Almost all fish were collected along the reef between Indian Point and Rainbow Island, and along the eastern side of Rainbow Island.

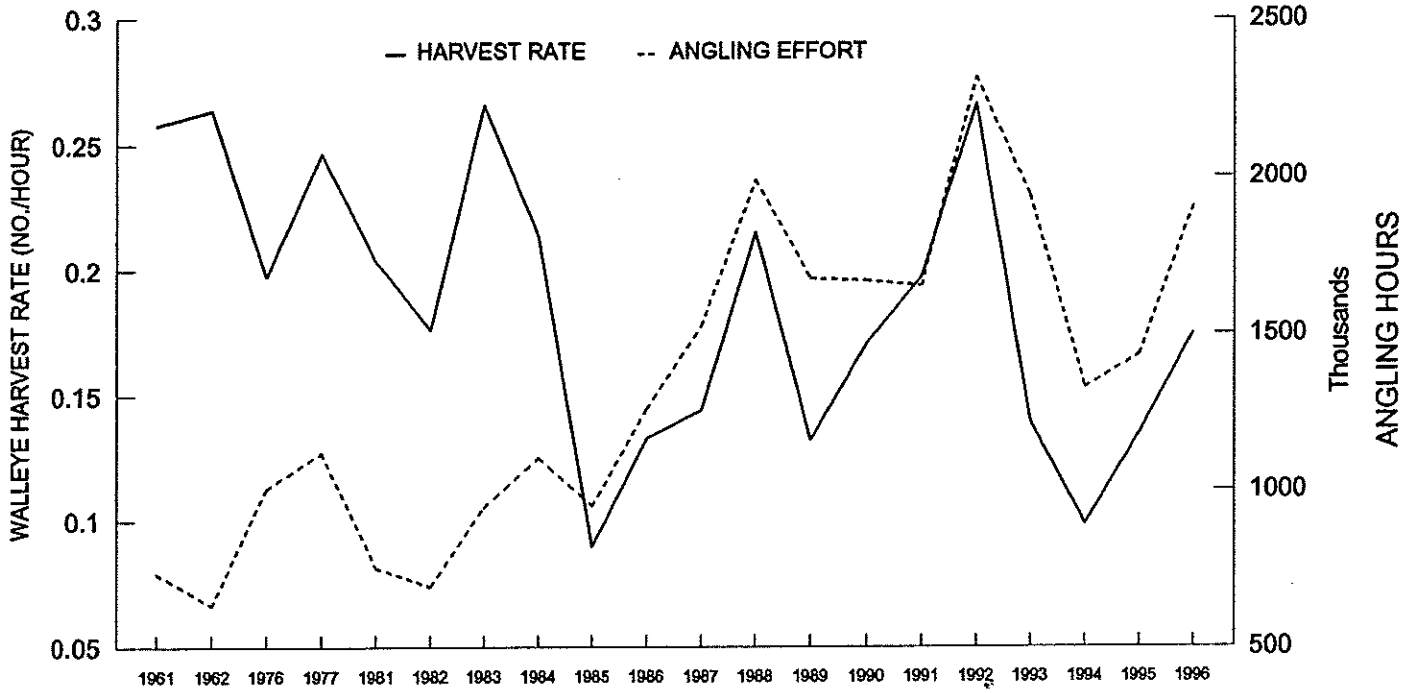
TULLIBEE LENGTH-FREQUENCY FORM

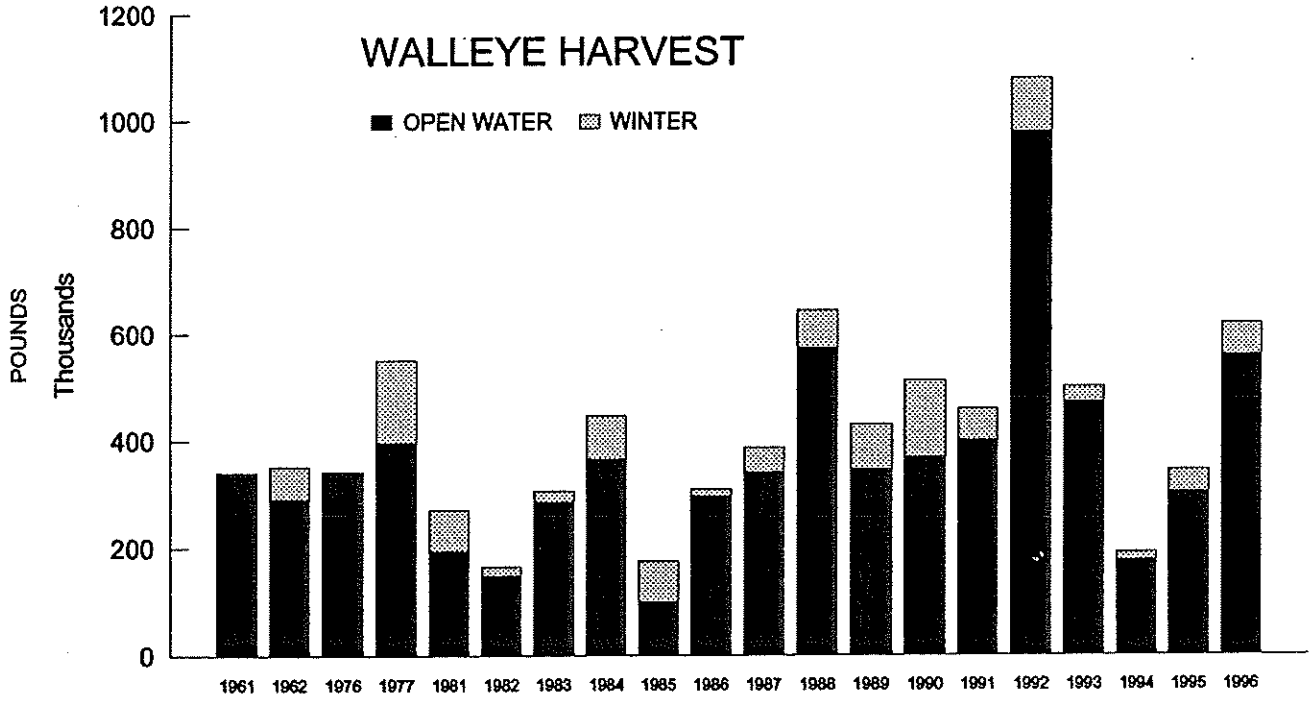
CREW NAMES:
Haeseker, Lindell, Judy

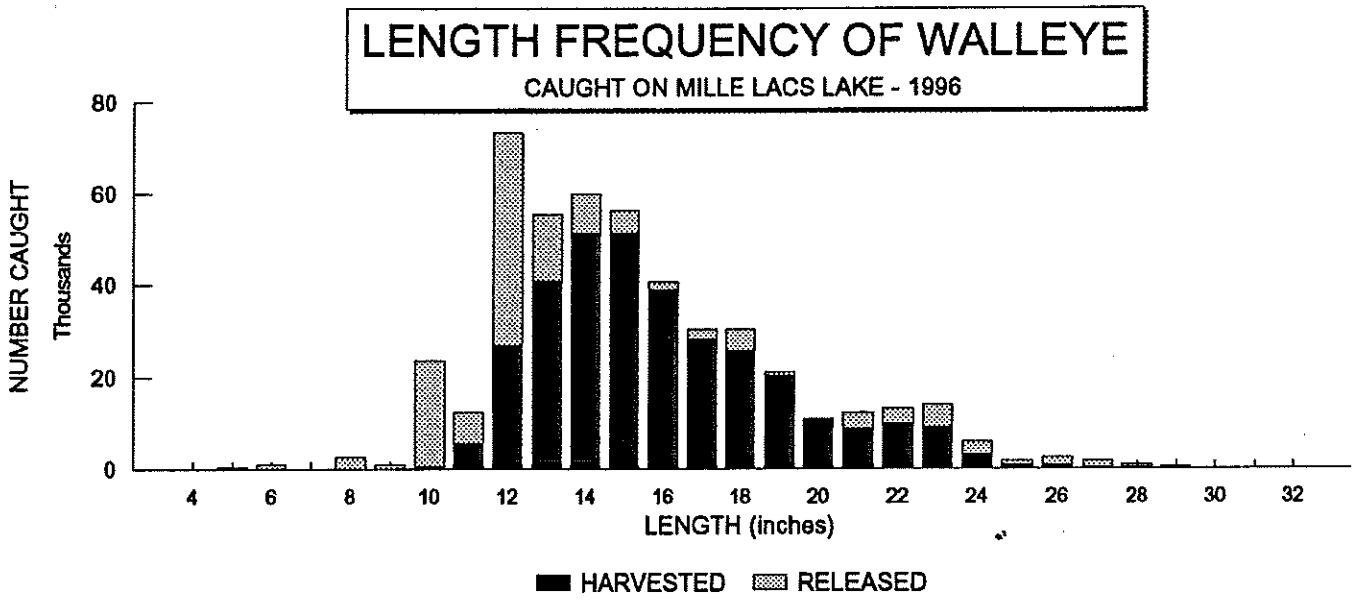
| COUNTY: | LAKE: | DATE: | SHOCKING TIME (SEC): | VOLTS: | AMPS: | PPS: | PW: |
|---|---|---|---|---|---|---|---|
| MILLE LACS | MILLE LACS | 11/7/96 | 2416 | 884 | 4.0 | 60 | 3.0 |

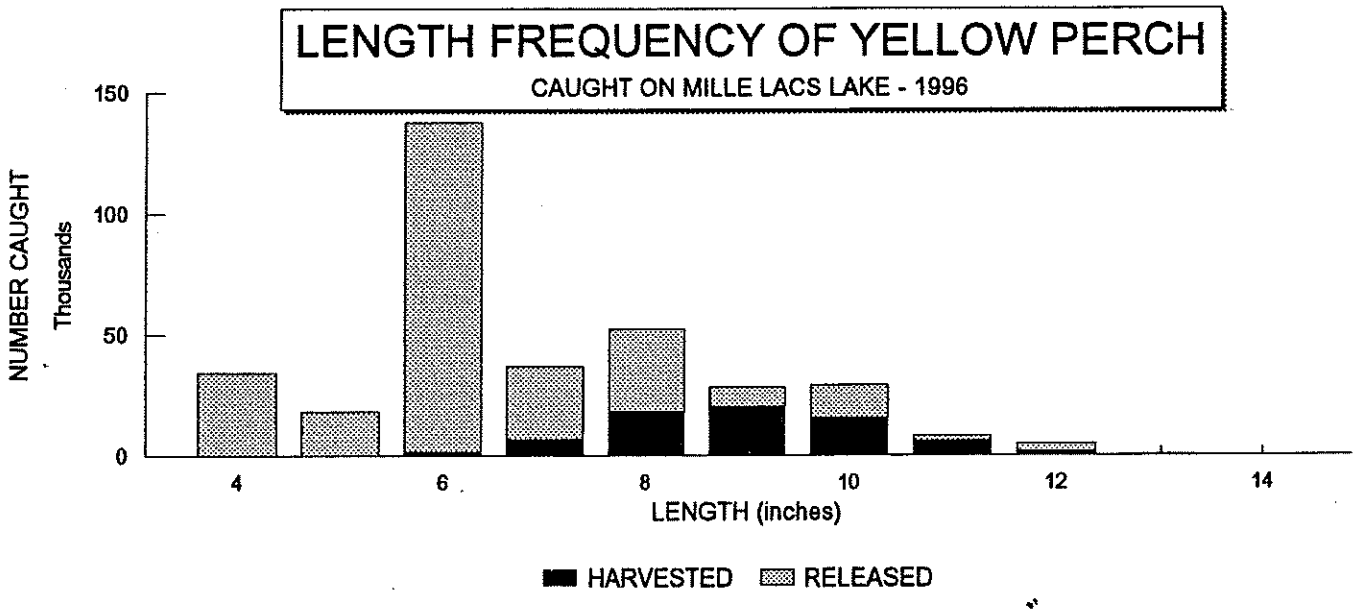
| SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL | SIZE IN INCHES | TULLIBEE LENGTHS MALE | FEMALE | TOTAL |
|---|---|---|---|---|---|---|---|
| <6.0 | | | 0 | 11.0 | 3 | | 3 |
| 6.0 | | | 0 | 11.1 | 4 | 2 | 6 |
| 6.1 | | | 0 | 11.2 | 8 | | 8 |
| 6.2 | | | 0 | 11.3 | 3 | 1 | 4 |
| 6.3 | | | 0 | 11.4 | 6 | | 6 |
| 6.4 | | | 0 | 11.5 | 5 | | 5 |
| 6.5 | | | 0 | 11.6 | 4 | 1 | 5 |
| 6.6 | | | 0 | 11.7 | 5 | | 5 |
| 6.7 | | | 0 | 11.8 | 1 | | 1 |
| 6.8 | | | 0 | 11.9 | 2 | | 2 |
| 6.9 | | | 0 | 12.0 | | | 0 |
| 7.0 | | | 0 | 12.1 | 2 | 1 | 3 |
| 7.1 | | | 0 | 12.2 | 2 | | 2 |
| 7.2 | | | 0 | 12.3 | | | 0 |
| 7.3 | | | 0 | 12.4 | 2 | | 2 |
| 7.4 | | | 0 | 12.5 | | | 0 |
| 7.5 | | | 0 | 12.6 | 1 | | 1 |
| 7.6 | | | 0 | 12.7 | | | 0 |
| 7.7 | | | 0 | 12.8 | | | 0 |
| 7.8 | | | 0 | 12.9 | | | 0 |
| 7.9 | | | 0 | 13.0 | 1 | | 1 |
| 8.0 | | | 0 | 13.1 | 1 | | 1 |
| 8.1 | | | 0 | 13.2 | | | 0 |
| 8.2 | | | 0 | 13.3 | | | 0 |
| 8.3 | | | 0 | 13.4 | | | 0 |
| 8.4 | | | 0 | 13.5 | | | 0 |
| 8.5 | | | 0 | 13.6 | | | 0 |
| 8.6 | | | 0 | 13.7 | | | 0 |
| 8.7 | | | 0 | 13.8 | | | 0 |
| 8.8 | | | 0 | 13.9 | | | 0 |
| 8.9 | | | 0 | 14.0 | | | 0 |
| 9.0 | | | 0 | 14.1 | | | 0 |
| 9.1 | | | 0 | 14.2 | | | 0 |
| 9.2 | | | 0 | 14.3 | | | 0 |
| 9.3 | | | 0 | 14.4 | | | 0 |
| 9.4 | | | 0 | 14.5 | | | 0 |
| 9.5 | | | 0 | 14.6 | | | 0 |
| 9.6 | | | 0 | 14.7 | | | 0 |
| 9.7 | | | 0 | 14.8 | | | 0 |
| 9.8 | | 1 | 1 | 14.9 | | | 0 |
| 9.9 | | | 0 | 15.0 | | | 0 |
| 10.0 | 2 | | 2 | 15.1 | | | 0 |
| 10.1 | 2 | | 2 | 15.2 | | | 0 |
| 10.2 | 5 | | 5 | 15.3 | | | 0 |
| 10.3 | 2 | 1 | 3 | 15.4 | | | 0 |
| 10.4 | 2 | | 2 | 15.5 | | | 0 |
| 10.5 | 4 | | 4 | 15.6 | | | 0 |
| 10.6 | 4 | | 4 | 15.7 | | | 0 |
| 10.7 | 4 | 1 | 5 | 15.8 | | | 0 |
| 10.8 | 5 | 2 | 7 | 15.9 | | | 0 |
| 10.9 | 4 | 1 | 5 | | | | |
| TOTAL: | 40 | | | TOTAL: | 55 | | |

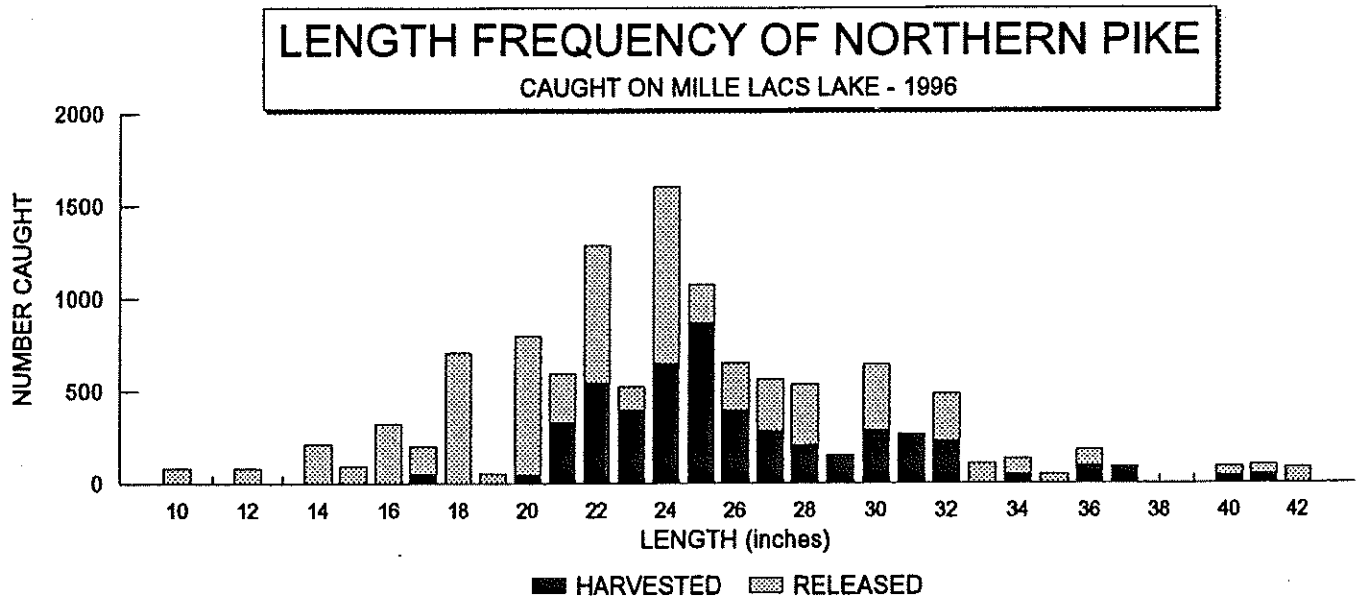
# MILLE LACS WALLEYE HARVEST AND OPEN WATER EFFORT AND HARVEST RATE




LENGTH FREQUENCY OF WALLEYE
CAUGHT ON MILLE LACS LAKE - 1996
NUMBER CAUGHT
Thousands
80
60
40
20
0
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
LENGTH (inches)
HARVESTED
RELEASED


LENGTH FREQUENCY OF YELLOW PERCH
CAUGHT ON MILLE LACS LAKE - 1996
NUMBER CAUGHT
Thousands
150
100
50
0
4
6
8
10
12
14
LENGTH (inches)
HARVESTED
RELEASED


LENGTH FREQUENCY OF NORTHERN PIKE
CAUGHT ON MILLE LACS LAKE - 1996
NUMBER CAUGHT
2000
1500
1000
500
0
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
LENGTH (inches)
HARVESTED
RELEASED

80
60
40
20
0

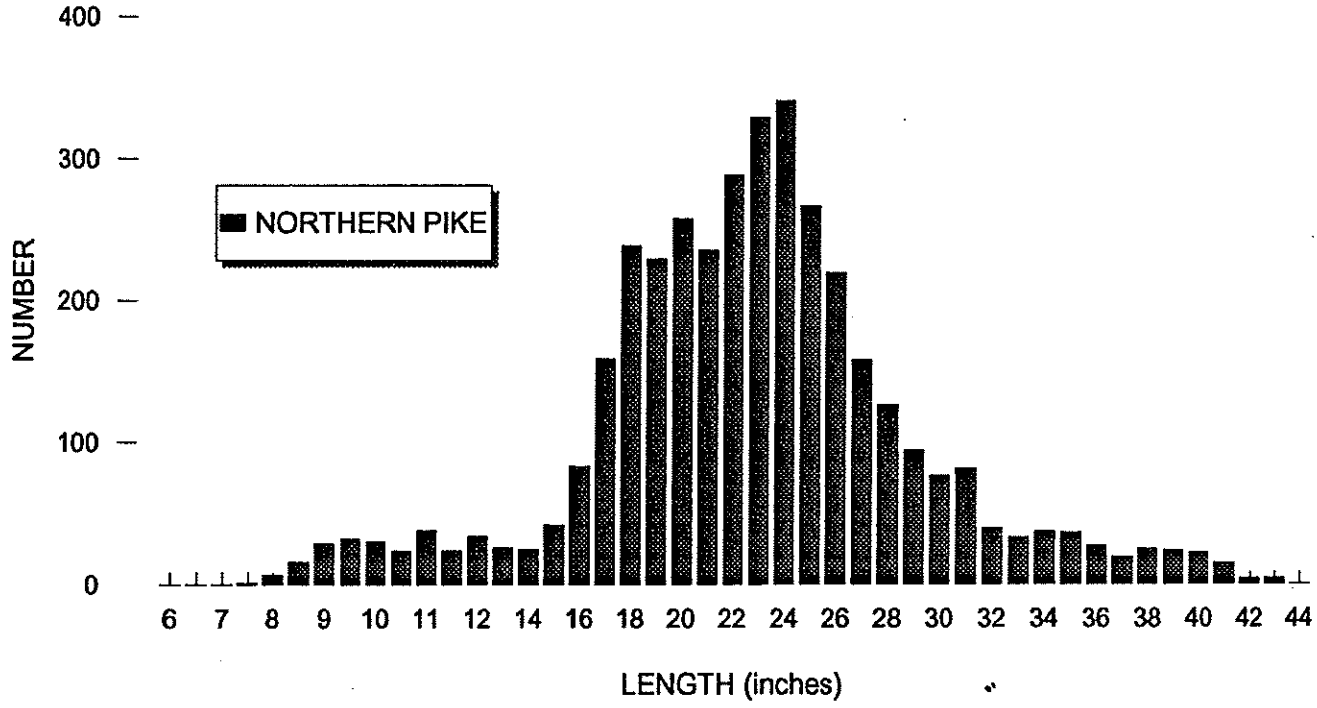
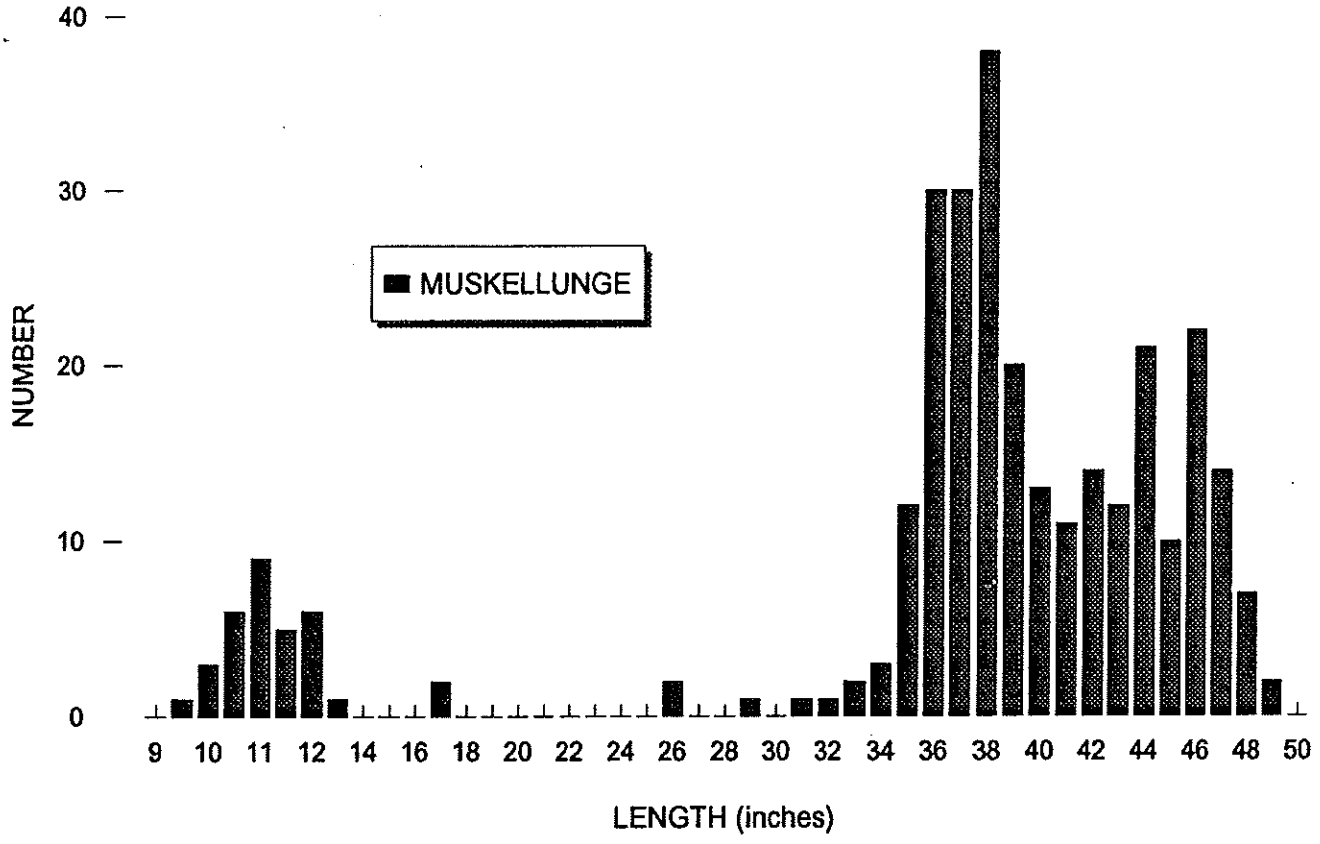
WALLEYE CATCH (NUMBERS)

# 1996 HARVEST AND RELEASE FIGURES FOR WALLEYE CAUGHT AT MILLE LACS LAKE

| | ≥20 | ≥22 | ≥24 | ≥26 |
|---|---|---|---|---|
| CAUGHT | 63,105 | 40,023 | 13,140 | 5,434 |
| HARVESTED | 43,759 | 24,623 | 5,728 | 1,771 |
| TOTAL RELEASED | 19,346<br>31% | 15,401<br>38% | 7,412<br>56% | 3,663<br>67% |
| REGULATION RELEASED | 9,403<br>15% | 6,604<br>17% | 2,733<br>21% | 1,527<br>28% |

6
4
2

YELLOW PERCH CATCH (NUMBERS)

# LENGTH FREQUENCY DISTRIBUTIONS

## FROM SPRING TRAP NETTING - MILLE LACS 1996