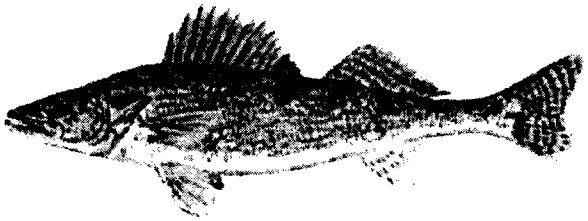

# Wisconsin Department of Natural Resources

# 2000 Ceded Territory

# Fishery Assessment Report

Patrick J. Schmalz and Andrew H. Fayram



Administrative Report # 53

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Walleye illustration Virgil Beck

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# INTRODUCTION

In 1983, the United States Court of Appeals for the Seventh Circuit acknowledged the rights of Chippewa Tribes to fish off-reservation waters in the ceded territory of Wisconsin using highly efficient methods (such as spearing and netting) as determined by the Treaties of 1837 and 1842. Since then, the Wisconsin Department of Natural Resources (WDNR) has worked to accommodate tribal harvest opportunities into existing sports fisheries in the ceded territory. In addition, the WDNR works with the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) to establish safe harvest quotas for walleyes and muskellunge on the lakes in the ceded territory and to monitor the shared fisheries.

In order to incorporate tribal harvest into existing recreational fisheries, an intensive data collection and analysis effort began. This effort has evolved over time as knowledge in fisheries science has advanced and as unique aspects of the ceded territory fisheries have been addressed. The primary goal is to collect the necessary information to protect the ceded territory fish populations from over-exploitation by the combined tribal and recreational fisheries.

Walleye *Stizostedion vitreum* and muskellunge *Esox masquinongy* are tremendously popular with anglers and are very important economically. Chippewa tribal members rely on these fisheries for preservation of their cultural heritage and as a food source. The majority of the tribal harvest occurs during a spring spearing effort while walleyes and muskellunge are congregated in shallow water during to spawn. A smaller number are harvested throughout the remainder of the year with a variety of capture methods including spearing, gillnetting, fykenetting, setlining, and angling. Netting and spearing are highly efficient methods and, unlike low efficiency methods such as angling, are not self-regulating (Beard et al. 1997, Hansen et al. 2000). Therefore, over-exploitation is a strong possibility in the absence of intensive management. Over-exploitation of any population would result in long lasting and potentially irreversible damage to the resource. Due to the popularity and economic importance of walleye and muskellunge fisheries, it is imperative to understand these populations to the best of our ability.

The WDNR assesses walleye populations using three primary methods: spring adult and total population estimates, fall young of the year relative density estimates, and creel surveys of angler catch and harvest. The GLIFWC and the United States Fish and Wildlife Service conduct population estimates and young of the year surveys on additional lakes each year. In addition, the GLIFWC monitors all tribal harvest that occurs. These methods provide information on the current harvestable population, an indication of the future harvestable population, and the degree of exploitation.

## WALLEYE POPULATION ESTIMATES

### INTRODUCTION

Population estimates are critical to the management of ceded territory lakes. Precise population estimates allow fisheries biologists to calculate the number of fish that can be safely harvested from a given population based on knowledge of the fishery and the biology of the species in question. This allows utilization of the resource without jeopardizing future abundance or presence of walleye and muskellunge.

It is logistically impossible to obtain precise population estimates from all harvested lakes in the ceded territory each year. Therefore, a random sample of lakes is selected each year for walleye population estimates and nine-month creel surveys. Fish populations in general, and walleye populations in particular, are extremely variable and can change drastically from year to year. A continuing randomized survey of lakes provides information on trends occurring in these populations.

Safe harvest levels are set on all ceded territory walleye lakes using the most accurate population estimate available. The most reliable estimate is from mark-recapture estimates performed in the same year in which the safe harvest level is set. This population estimate can also be used to estimate abundance in successive years. Additional safety factors are incorporated to account for the largest potential decrease between years (Hansen et al. 1991). Given the variability associated with all fish populations, these estimates are not as accurate as current year population estimates. If there have been no historic mark-recapture estimates or the population estimate is greater than two years

old in a given lake, then an estimate is calculated from a regression model based on lake acreage as an indicator of population abundance (Hansen 1989). Three different regression models are used depending on the primary source of walleye recruitment in the lake including models for: 1) lakes sustained primarily by natural reproduction (NR), 2) lakes sustained primarily through stocking efforts (ST), and 3) lakes with low density populations maintained through very intermittent natural reproduction (REM). Each year, new population estimates from current surveys are incorporated into the appropriate regression model used to predict abundance. These regression models are used to predict abundance and set safe harvest for the majority of the walleye lakes in the ceded territory each year.

## METHODS

The lakes sampled by the WDNR were chosen using a stratified random design. The pool of lakes from which the 2000 population survey lakes was chosen consisted of 179 lakes that had experienced tribal harvest at least three times between 1985 and 1994. Approximately 25 lakes were chosen at random (without replacement) each year, resulting in each lake being surveyed once during the seven-year period from 1997-2004. In addition, one large lake or lake chain would be surveyed each year. The calculation of population estimates on these lakes allows the WDNR to update the population status of each lake and to have at least one direct measure of exploitation roughly once per generation time of walleye.

In 2000, adult walleye populations were estimated for 33 lakes, ranging in size from 62 to 3,111 acres. This included 8 lakes in the Eagle Chain (Vilas Co.), 3 of which (Otter, Duck, and Lynx) were combined into one population estimate. In addition, total population estimates were calculated for 27 of those lakes. The 33 lakes for which adult populations were estimated included 22 lakes that were considered to have naturally reproducing walleye populations, 8 with populations sustained through stocking, and 3 classified to have either no or sporadic walleye populations. These 33 lakes also had a variety of length regulations for anglers, including 17 lakes with a 15-in minimum length

restriction, 8 lakes with a protected slot limit from 14-18 in with only one fish over 18-in allowed, 4 lakes with no minimum length restriction, and 4 lakes with a one fish greater than 14-in regulation (Table 1).

Walleyes were captured for marking in the spring shortly after ice out with fyke nets. Each fish was measured in total length and received a permanent mark (fin clip, floy or jaw tag). Adult (mature) walleyes were defined as all fish for which sex could be determined, plus all fish 15 in or longer. Adult walleyes were given a lake-specific mark. Walleyes of unknown sex and less than 15 inches in length were classified as juveniles (immature) and were marked with a different lake-specific fin clip. Marking effort was apportioned based on a goal for total marks of 10% of the anticipated spawning population estimate. The marking continued until this target number was reached or spawned out females began appearing in the fyke nets.

To estimate adult abundance, walleyes were recaptured 1-2 days after netting. Because the interval between marking and recapture was short, electrofishing of the entire shoreline (including islands) was conducted to ensure equal vulnerability of marked and unmarked walleyes to capture. All walleyes in the recapture run were measured and examined for marks. All unmarked walleyes were given the appropriate mark so that a total population estimate could be estimated. To estimate total walleye abundance, a second electrofishing recapture run was conducted 2-3 weeks after the first recapture run. Again, the entire shoreline (including islands) of the lake was electrofished.

Population estimates were calculated with the Chapman modification of a Petersen Estimator using the equation:

$$N = \frac{(M+1)(C+1)}{(R+1)}$$

where N is the population estimate, M is the total number of marked fish in the lake, C is the total number of fish captured in the recapture sample, and R is the total number of marked fish captured. This method is used because simple Petersen Estimates tend to overestimate population sizes when R is relatively small (Ricker 1975). Abundance and variance were estimated by length-class (0-11.9 in,

Table 1. 2000 walleye population estimates conducted by the WDNR in Wisconsin's ceded territory.

| Lake Name | County | Acres | 2000 Size Limit | 2000 Recruitment Type | Adult Male Population Estimate | Adult Female Population Estimate | Total Adult Population Estimate | Lower 95% Confidence Limit | Adult Densities 0-11.9" per acre | 12.0-14.9" per acre | 15.0-19.9" per acre | 20"+ per acre | Adults per acre | Total Population Estimate | Total per acre | 2000 Safe Harvest |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEAR | BARRON | 1,358 | 15 | STOCKED | 1,295 | 266 | 1,655 | 1,493 | 0.00 | 0.28 | 0.70 | 0.24 | 1.22 | 2,292 | 1.69 | 139 |
| DEVILS | BURNETT | 1,001 | 15 | STOCKED | 550 | 41 | 622 | 525 | 0.04 | 0.10 | 0.44 | 0.04 | 0.62 | 1,542 | 1.54 | 107 |
| SAND | BURNETT | 962 | 15 | STOCKED | 359 | 236 | 697 | 314 | 0.00 | 0.00 | 0.32 | 0.40 | 0.72 | 542 | 0.56 | 103 |
| LONG | CHIPPEWA | 1,052 | 14-18 SLOT; 1>18 | NATURAL | 4,864 | 653 | 5,397 | 4,188 | 1.36 | 2.28 | 1.48 | 0.01 | 5.13 | 17,271 | 16.42 | 408 |
| L MINNESUING | DOUGLAS | 432 | NONE | NATURAL | 523 | 332 | 762 | 544 | 0.00 | 0.47 | 0.88 | 0.41 | 1.76 | 1,197 | 2.77 | 176 |
| HALFMOON | EAU CLAIRE | 132 | 15 | STOCKED | 176 | 57 | 241 | 205 | 0.01 | 0.14 | 1.24 | 0.45 | 1.83 | N/A | N/A | 18 |
| KEYES | FLORENCE | 202 | 15 | NATURAL | 333 | 15 | 355 | 235 | 0.03 | 0.86 | 0.82 | 0.04 | 1.76 | 803 | 3.98 | 85 |
| PATTEN | FLORENCE | 255 | 1>14 | NATURAL | 566 | 88 | 649 | 538 | 0.11 | 0.74 | 1.56 | 0.14 | 2.55 | 1,344 | 5.27 | 106 |
| MUELLER* | LANGLADE | 88 | 15 | STOCKED | 76 | 48 | 124 | 87 | N/A | N/A | N/A | N/A | 1.41 | N/A | N/A | 12 |
| WHITE* | LANGLADE | 166 | 15 | STOCKED | 35 | 33 | 66 | 66 | 0.01 | 0.01 | 0.08 | 0.30 | 0.40 | 96 | 0.58 | 22 |
| ALEXANDER | LINCOLN | 677 | 15 | NATURAL | 439 | 179 | 764 | 123 | 0.04 | 0.70 | 0.38 | 0.01 | 1.13 | 6,370 | 9.41 | 269 |
| LONG/BASS | LINCOLN | 232 | 15 | NONE | 169 | 15 | 252 | 15 | 0.00 | 0.00 | 0.73 | 0.34 | 1.09 | N/A | N/A | N/A |
| BEARSKIN | ONEIDA | 400 | 1>14 | NATURAL | 2,044 | 1,735 | 3,076 | 2,036 | 1.42 | 2.28 | 3.95 | 0.04 | 7.69 | 4,734 | 11.84 | 376 |
| BURROWS | ONEIDA | 156 | 15 | NONE | 22 | 19 | 37 | 37 | 0.01 | 0.01 | 0.03 | 0.20 | 0.24 | 44 | 0.28 | N/A |
| CARROL | ONEIDA | 335 | 15 | STOCKED | 739 | 165 | 892 | 562 | 0.26 | 1.39 | 0.43 | 0.58 | 2.66 | 2,852 | 8.51 | 41 |
| CLEAR | ONEIDA | 846 | 15 | NATURAL | 2,292 | 805 | 3,241 | 2,671 | 0.11 | 1.63 | 1.93 | 0.16 | 3.83 | 7,160 | 8.46 | 332 |
| MADELINE | ONEIDA | 159 | 15 | REMNANT | 23 | 23 | 43 | 21 | 0.02 | 0.05 | 0.06 | 0.14 | 0.27 | 115 | 0.72 | 8 |
| MANSON | ONEIDA | 236 | 1>14 | NATURAL | 624 | 146 | 823 | 618 | 0.33 | 1.85 | 0.88 | 0.42 | 3.49 | 2,199 | 9.32 | 99 |
| SOLBERG | PRICE | 859 | NONE | NATURAL | 4,868 | 1,299 | 5,197 | 4,766 | 0.42 | 4.51 | 0.99 | 0.13 | 6.05 | 20,084 | 23.38 | 337 |
| GRINDSTONE | SAWYER | 3,111 | 14-18 SLOT; 1>18 | NATURAL | 3,294 | 196 | 3,682 | 3,065 | 0.02 | 0.37 | 0.74 | 0.06 | 1.18 | 35,781 | 11.50 | 556 |
| KATHRYN | TAYLOR | 62 | 15 | STOCKED | 45 | 53 | 110 | 68 | 0.02 | 0.13 | 0.56 | 1.08 | 1.77 | 118 | 1.90 | 9 |
| BIG CROOKED | VILAS | 682 | NONE | NATURAL | 1,149 | 2,163 | 2,239 | 1,803 | 0.05 | 0.82 | 2.36 | 0.06 | 3.28 | N/A | N/A | 325 |
| CATFISH | VILAS | 1,012 | 14-18 SLOT; 1>18 | NATURAL | 2,862 | 490 | 3,600 | 2,860 | 1.17 | 1.81 | 0.50 | 0.08 | 3.56 | 13,117 | 12.96 | 394 |
| CRAB | VILAS | 949 | 1>14 | NATURAL | 2,185 | 412 | 2,599 | 2,090 | 0.99 | 1.36 | 0.32 | 0.07 | 2.74 | 5,531 | 5.83 | 371 |
| CRANBERRY | VILAS | 956 | 14-18 SLOT; 1>18 | NATURAL | 6,165 | 739 | 7,524 | 5,699 | 1.19 | 4.27 | 1.88 | 0.53 | 7.87 | 10,828 | 11.33 | 373 |
| EAGLE | VILAS | 572 | 14-18 SLOT; 1>18 | NATURAL | 2,573 | 259 | 2,855 | 2,269 | 1.24 | 3.25 | 0.47 | 0.03 | 4.99 | 4,465 | 7.81 | 229 |
| ESCANABA | VILAS | 293 | NONE | NATURAL | 1,026 | 348 | 1,518 | 1,147 | 0.43 | 2.26 | 2.42 | 0.06 | 5.18 | N/A | N/A | 178 |
| HORSEHEAD | VILAS | 234 | 15 | NATURAL | 908 | 284 | 1,280 | 1,048 | 0.96 | 2.56 | 1.32 | 0.62 | 5.47 | 2,949 | 12.60 | 98 |
| OTTER/DUCK/LYNX | VILAS | 369 | 14-18 SLOT; 1>18 | NATURAL | 808 | 27 | 891 | 166 | 0.20 | 2.05 | 0.12 | 0.04 | 2.41 | 2,344 | 6.35 | 140 |
| SCATTERING RICE | VILAS | 267 | 14-18 SLOT; 1>18 | NATURAL | 5 | 14 | 18 | 5 | 0.00 | 0.02 | 0.03 | 0.01 | 0.07 | 310 | 1.16 | 111 |
| SNIPE | VILAS | 239 | 15 | NATURAL | 1,089 | 41 | 1,141 | 631 | 3.36 | 1.18 | 0.14 | 0.09 | 4.77 | 4,672 | 19.55 | 100 |
| WOLF | VILAS | 393 | 15 | NATURAL | 1,387 | 516 | 1,773 | 1,559 | 0.40 | 2.25 | 1.53 | 0.34 | 4.51 | N/A | N/A | 275 |
| YELLOW BIRCH | VILAS | 202 | 14-18 SLOT; 1>18 | NATURAL | 1,758 | 106 | 1,918 | 1,319 | 3.57 | 4.93 | 0.79 | 0.20 | 9.50 | 7,639 | 37.82 | 85 |

* Schnabel population estimates

12-14.9 in, 15-19.9, and ≥ 20.0 in) and summed to estimate adult and total abundance and variance for each lake. If spearing occurred after the start of the marking period, speared walleyes were subtracted from the number of marked fish at large during the recapture period. These fish were added back to the estimated number of fish present at the time of marking for the populations of interest (adult or total populations). Two exceptions were Mueller and White Lakes in Langlade County, where the Schnabel Estimator was used.

RESULTS

*Adult walleye abundance.*— Adult walleye population densities (number/acre) in 2000 ranged from 0.1 to 9.5 around a mean of 3.1 and median of 2.5 adults/acre. Adult densities were generally higher in lakes classified as NR (mean = 4.0, median = 3.7, range = 0.1-9.5 adults/acre; Table 1), compared to lakes classified as ST (mean = 1.3, median = 1.3, range = 0.4-2.7 adults/acre; Table 1). This has been the case historically (Hewett and Simonson 1998). Lakes classified as "other", which included lakes with unknown walleye populations (none), lakes where stocking had been discontinued and the walleye population was expected to disappear, and stocked waters where the population had not been established to a reasonable density (remnant), had the lowest adult walleye density (mean = 0.5, median = 0.3, range = 0.2-1.1 adults/acre; Table 1). Length-specific adult walleye densities are shown for lakes sustained primarily by natural reproduction in Figure 1 and for lakes sustained primarily by stocking in Figure 2. Mean adult walleye density for naturally reproducing populations in the ceded territory in 2000 was the highest it has been since 1992 (Figure 3). Mean adult walleye density for stocked populations in the ceded territory in 2000 was the lowest it has been since 1995 (Figure 3). Nineteen lakes sampled in 2000 had at least one historic WDNR adult walleye population estimate (Table 2). Three lakes with historical adult walleye population estimates sustained primarily by stocking (Bear Lake, Barron Co.; Devils Lake and Sand Lake, Burnett Co.) had generally low densities, but were similar in 2000 as they had been historically. Bearskin Lake (Oneida Co.) adult walleye density was high in 2000 and has been since 1990. Clear

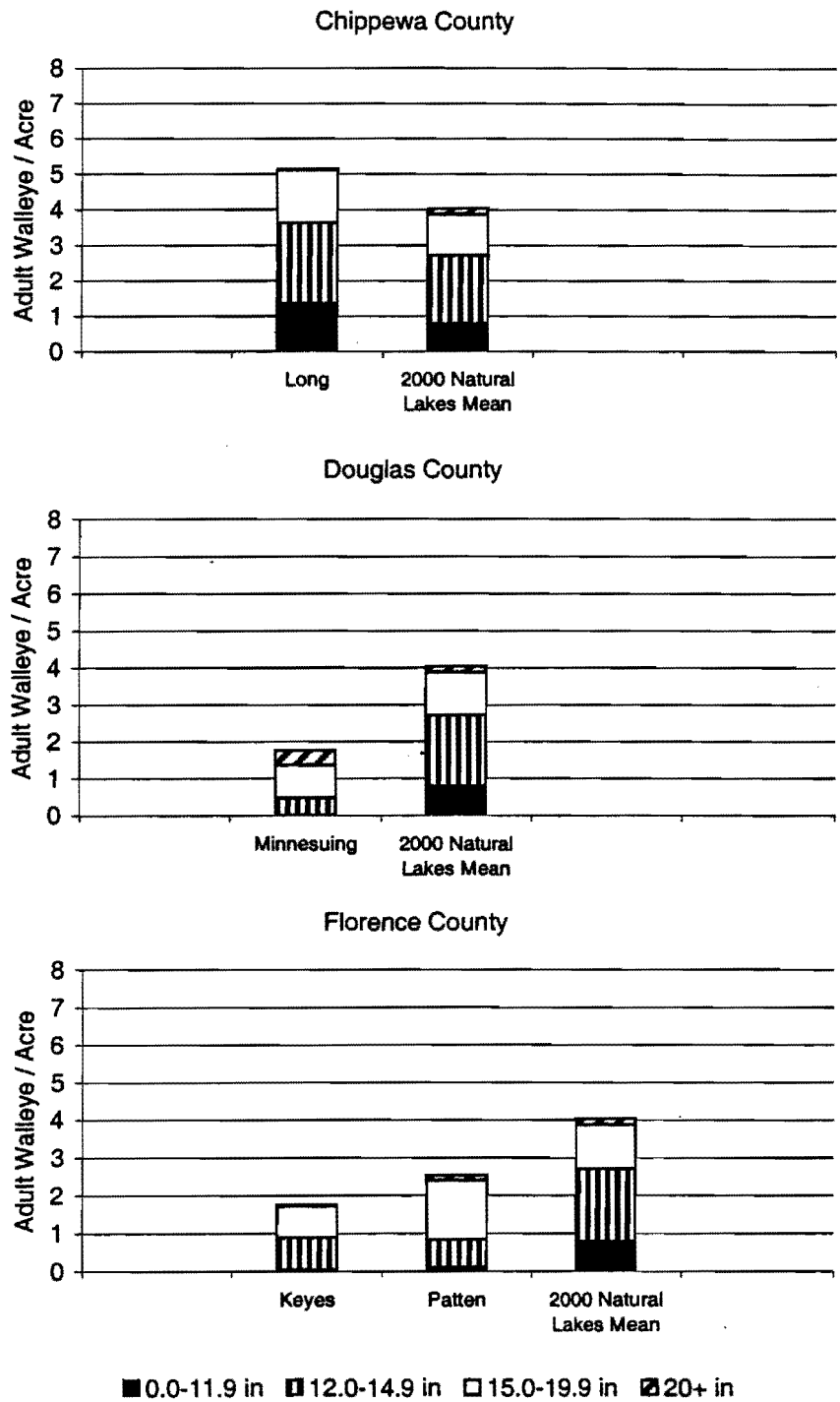
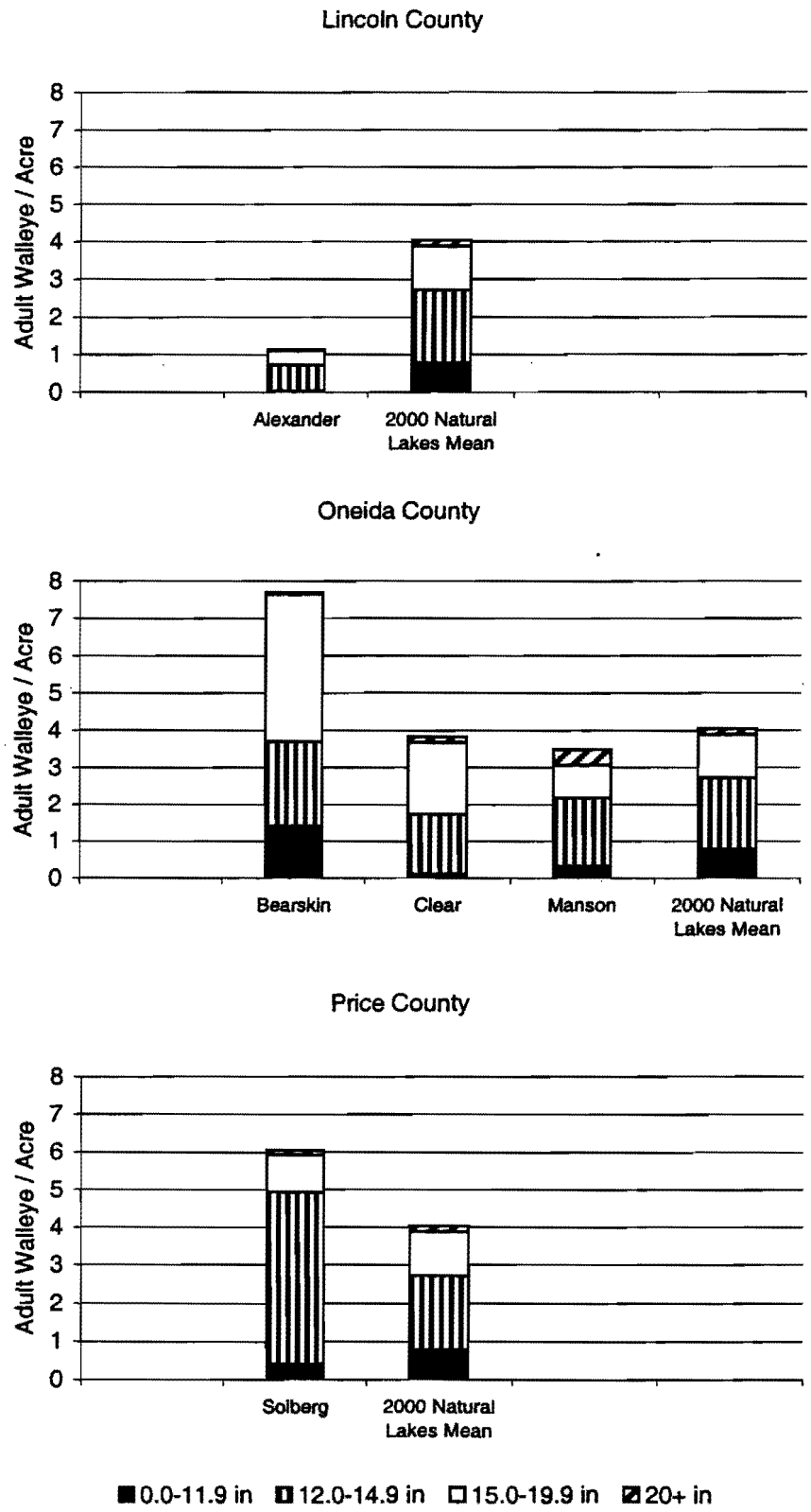



Figure 1. Adult walleye density estimates by length-class and statewide average for lakes classified as naturally reproducing (NR).

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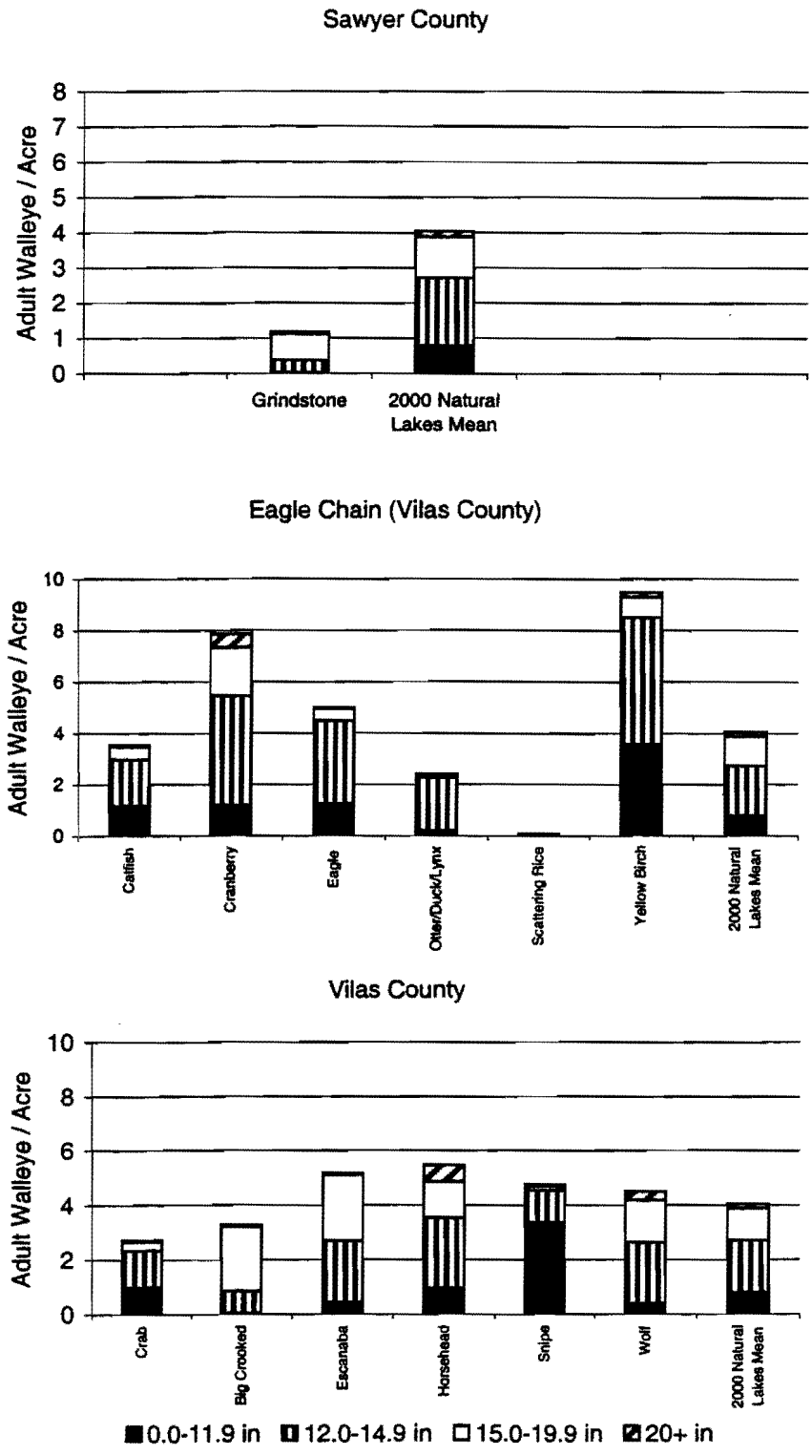


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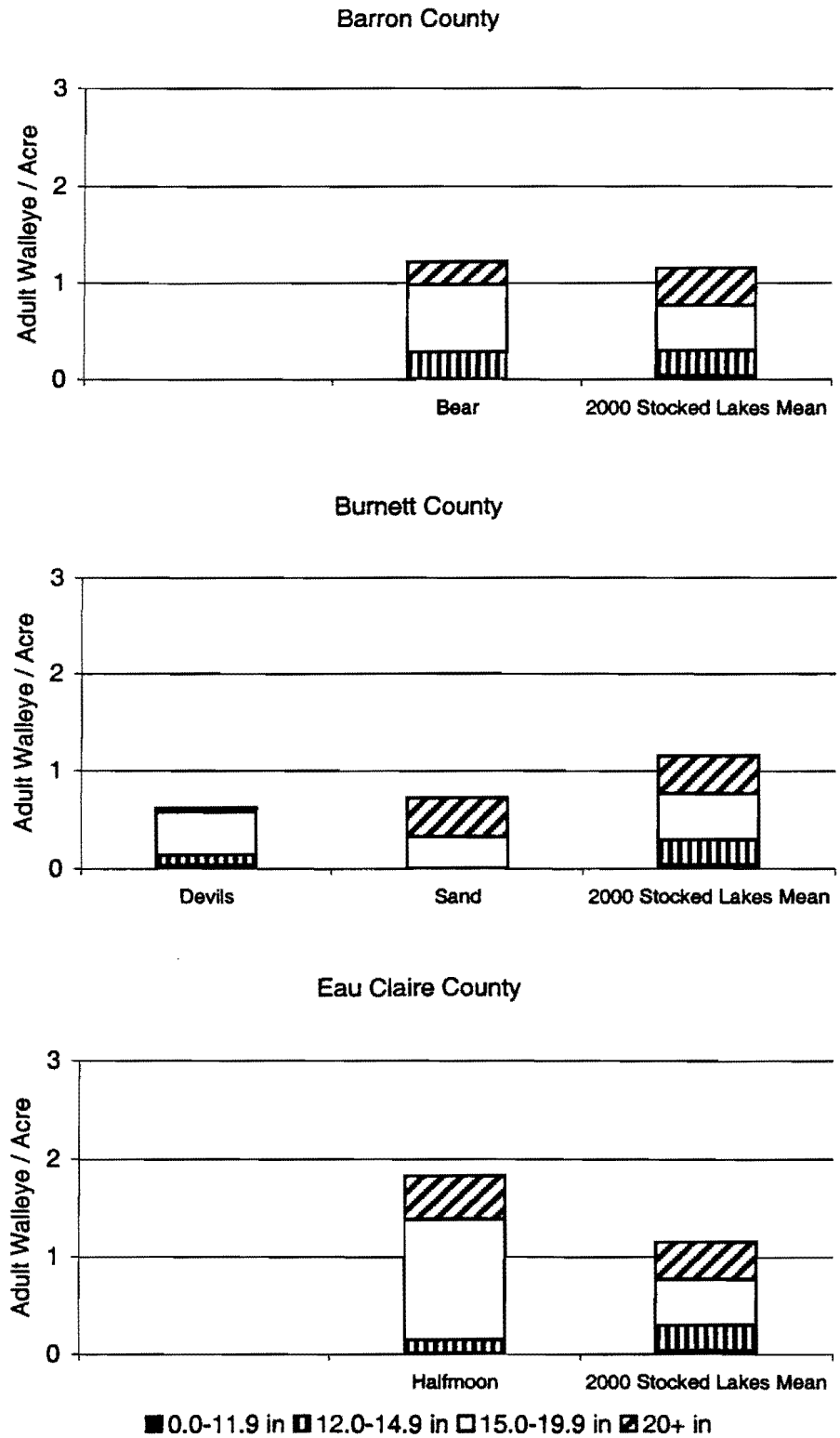


Figure 2. Adult walleye density estimates by length-class and statewide average for lakes classified as stocked (ST).

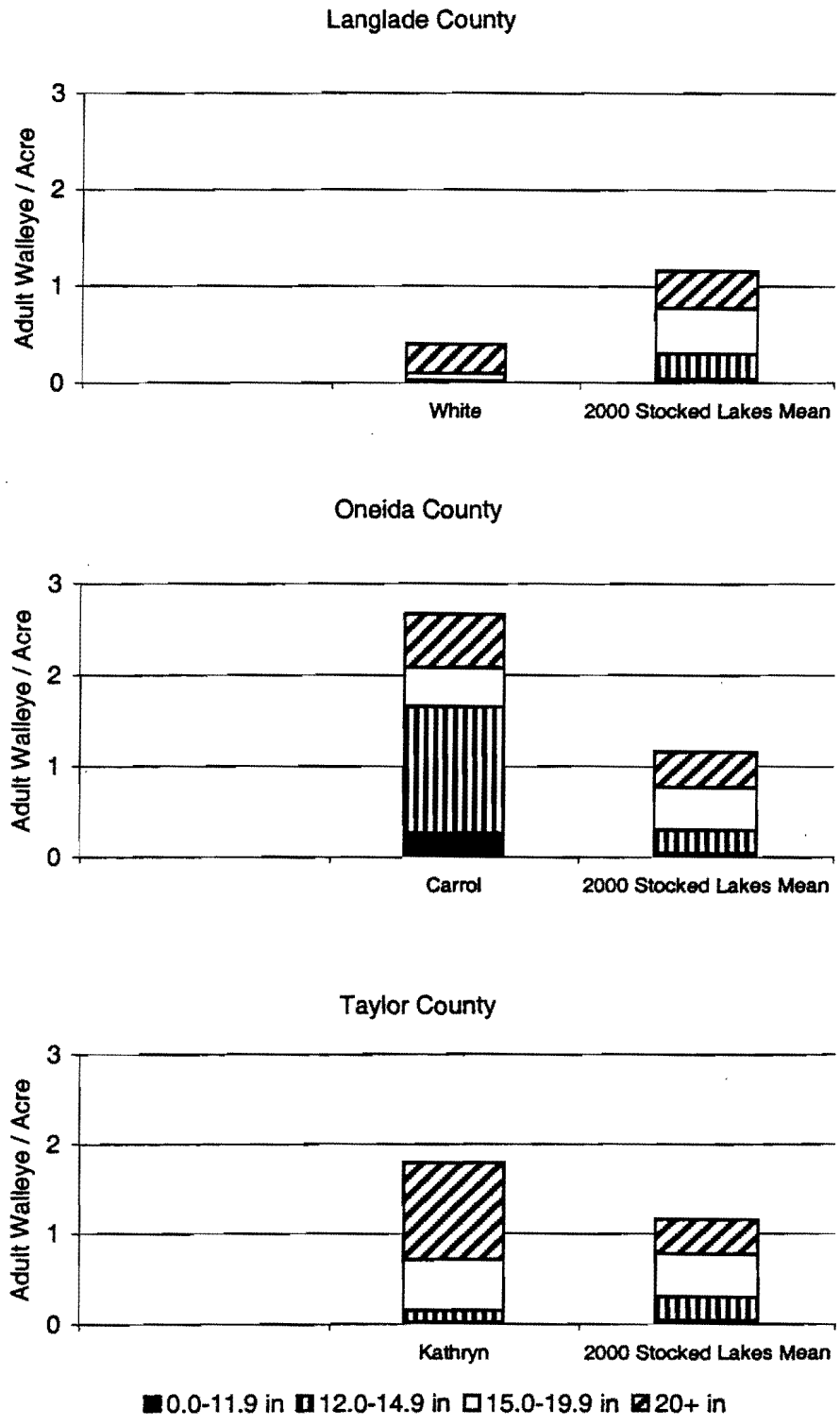


Figure 2. Continued.

Table 2. Lakes with adult walleye population estimates (PE) calculated in 2000 and at least one historical WDNR adult walleye PE. Lakes are separated by the recruitment type (natural or stocked) in 2000.

| County | Lake | Acres | Year | Adult PE | Density |
|---|---|---|---|---|---|
| | | ***Natural*** | | | |
| Chippewa | Long | 1,052 | 2000 | 5,397 | 5.13 |
| | | | 1995 | 6,541 | 6.22 |
| Douglas | Minnesuing | 432 | 2000 | 762 | 1.76 |
| | | | 1995 | 614 | 1.42 |
| Florence | Keyes | 202 | 2000 | 355 | 1.76 |
| | | | 1997 | 196 | 0.97 |
| Florence | Patten | 255 | 2000 | 649 | 2.55 |
| | | | 1993 | 3,351 | 13.14 |
| Oneida | Bearskin | 400 | 2000 | 3,076 | 7.69 |
| | | | 1996 | 3,172 | 7.93 |
| | | | 1990 | 2,696 | 6.74 |
| | Clear | 846 | 2000 | 3,241 | 3.83 |
| | | | 1996 | 3,093 | 3.66 |
| | | | 1990 | 1,970 | 2.33 |
| | | | 1988 | 3,242 | 3.83 |
| Price | Solberg | 859 | 2000 | 5,197 | 6.05 |
| | | | 1994 | 4,554 | 5.30 |
| Sawyer | Grindstone | 3,111 | 2000 | 3,682 | 1.18 |
| | | | 1994 | 3,847 | 1.24 |
| | | | 1987 | 9,032 | 2.90 |
| | | | 1986 | 11,365 | 3.65 |
| Vilas | Crab | 949 | 2000 | 2,599 | 2.74 |
| | | | 1993 | 1,825 | 1.92 |
| | Snipe | 239 | 2000 | 1,141 | 4.77 |
| | | | 1995 | 389 | 1.63 |
| | Catfish | 1,012 | 2000 | 3,600 | 3.56 |
| | (Eagle Chain) | | 1993 | 2,977 | 2.94 |
| | Cranberry | 956 | 2000 | 7,524 | 7.87 |
| | (Eagle Chain) | | 1993 | 2,969 | 3.11 |
| | Eagle | 572 | 2000 | 2,855 | 4.99 |
| | (Eagle Chain) | | 1993 | 2,259 | 3.95 |
| | Scattering Rice | 267 | 2000 | 18 | 0.07 |
| | (Eagle Chain) | | 1993 | 114 | 0.43 |
| | Yellow Birch | 202 | 2000 | 1,918 | 9.50 |
| | (Eagle Chain) | | 1993 | 1,278 | 6.33 |
| | Otter/Duck/Lynx | 369 | 2000 | 891 | 2.41 |
| | (Eagle Chain) | | 1993 | 233 | 0.63 |
| | | ***Stocked*** | | | |
| Barron | Bear | 1,358 | 2000 | 1,655 | 1.22 |
| | | | 1996 | 2,082 | 1.53 |
| | | | 1985 | 1,223 | 0.90 |
| Burnett | Devils | 1,001 | 2000 | 622 | 0.62 |
| | | | 1995 | 943 | 0.94 |
| Burnett | Sand | 962 | 2000 | 697 | 0.72 |
| | | | 1988 | 768 | 0.80 |

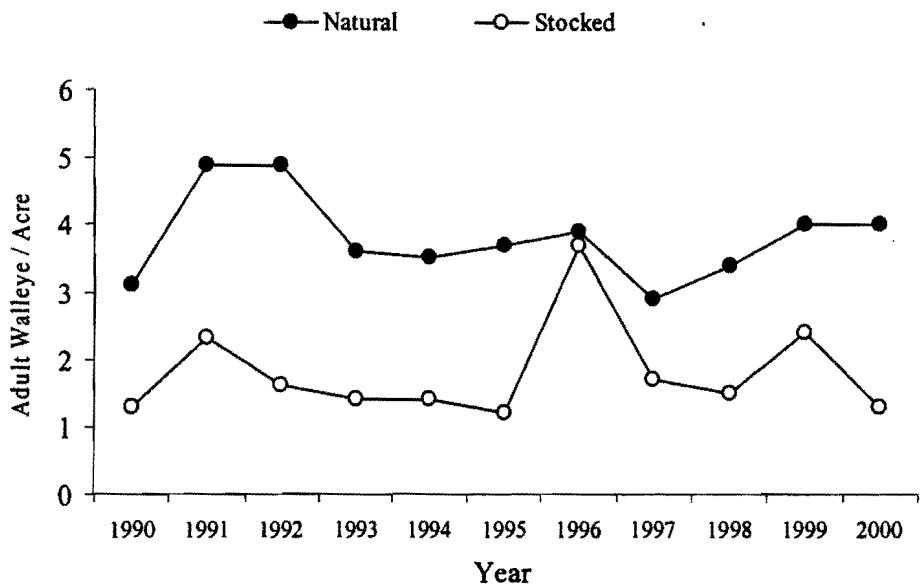


Figure 3. Mean adult walleye density for Wisconsin's ceded territory 1990-2000.

Lake (Oneida Co.) adult walleye density was approximately average that of NR lakes in 2000, similar to 1988 and 1996, but than higher the density observed in 1990. Long Lake (Chippewa Co.) had a higher than average adult walleye density in 2000, although it was slightly lower than 1995. Patten Lake (Florence Co.) had a substantially lower adult walleye densities in 2000 compared to 1993. Grindstone Lake (Sawyer Co.) density has declined steadily since 1986, and has generally been lower than average for NR lakes. Solberg Lake (Price Co.) adult walleye density remained higher than average, slightly greater than 1994. Crab and Snipe Lakes (Vilas Co.) had higher adult densities in 2000 than previously estimated in 1993 and 1995 respectively. Lakes in the Eagle Chain (Vilas Co.) had higher adult walleye densities in 2000 compared to 1993, with the exception of Scattering Rice Lake, which had very low densities both years (Table 2).

*Total walleye abundance.*— Total walleye densities varied widely in 2000 (Table 1). Mean total walleye density ranged from 0.3 to 37.8 per acre with a mean of 8.6 and median of 7.8. Total walleye densities were generally higher in NR lakes compared to ST lakes. Total walleye density in

NR lakes ranged from 1.2 to 37.8 per acre around a mean of 11.5 and a median of 9.4 per acre. In ST lakes, total walleye density ranged from 0.6 to 8.5 per acre with a mean of 2.5 and a median of 1.6. Lakes classified as "other" had the lowest total walleye densities (mean = median = 0.5 per acre; range = 0.3-0.7 per acre).

## OTHER POPULATION ESTIMATES

### INTRODUCTION

The Treaty Fishery Assessment Team also conducted population estimates for bass (*Micropterus spp.*) and muskellunge (*Esox Masquinongy*) in 2000. During 2000, 16 bass and 4 muskellunge population estimates were conducted.

### METHODS – Bass

Largemouth (*Micropterus salmoides*) and smallmouth (*Micropterus dolomieu*) bass encountered during fyke netting and subsequent electrofishing runs (adult and total walleye) were marked. Bass ≥ 12 in were given the same primary (adult) fin-clip given to walleye for that lake. Bass ≥ 8 in and < 12 in were given the secondary (juvenile) fin-clip for the lake. Recaptures were made during electrofishing runs made during mid-late May. The entire shoreline of the lake (including islands) was electrofished. Recapture efforts for bass population estimates were part of lakes designated as comprehensive survey lakes. In these lakes, fyke nets were set for just after ice-out in the spring. If muskellunge were present in the lake, fyke nets were set again after the first electrofishing recapture run. Four electrofishing surveys were conducted. The first electrofishing run was conducted within a week of pulling the early fyke nets. The second run was conducted approximately two weeks after the first electrofishing run. Third and fourth electrofishing runs were conducted at approximately weekly intervals thereafter. Bass populations were estimated after both the third and fourth runs.

Population estimates were calculated using the Chapman modification of the Petersen estimator:

$$N = \frac{(M+1)(C+1)}{(R+1)}$$

where N is the estimated population size, M is the total number of marked fish in the lake, C is the number of fish captured during the recapture run, and R is the number of marked fish recaptured. Population size is estimated for three length classes, 8.0-13.9 in, 14.0-17.9 in, and 18+ in, and summed for a total bass estimate. Largemouth and smallmouth bass populations were estimated separately.

METHODS – Muskellunge

Muskellunge population estimates were conducted over a two-year period, with marking in year-1 and recapture in year-2. In year-1, muskellunge were marked during fyke netting and electrofishing efforts throughout the sampling season. All muskellunge 20 in and larger were given the adult clip for that lake (the same adult clip given to walleye and bass). Unknown sex fish <20 in were given a top-caudal (CT) fin-clip. In year-2, muskellunge were recaptured using fyke nets set after the first electrofishing runs are completed, which coincides with the muskellunge spawning season.

Adult muskellunge populations were estimated by:

$$N = \frac{M(C+1)}{(R+1)}$$

where N is the estimated adult population size, M is the total number of 30 in and longer muskellunge marked in the lake in year-1, C is the number of muskellunge 32 in and longer captured during the recapture netting in year-2, and R is the number of marked fish recaptured (Margenau and AveLallemant 2000).

RESULTS – Bass

There were 16 bass population estimates from 14 lakes in the Ceded Territory during 2000, 6 of which were smallmouth bass and 10 were largemouth bass. Four lakes had both largemouth and smallmouth bass population estimates conducted (Table 3). Smallmouth bass population densities ranged from 0.3 – 3.3 fish per acre. Largemouth bass density ranged from 0.1 – 13.3 fish per acre.

Table 3. Bass population estimates from the Ceded Territory 2000.

**SMALLMOUTH BASS**

| LAKE | COUNTY | AREA (ACRES) | POPULATION SIZE | DENSITY (PE/ACRE) |
|---|---|---|---|---|
| Long | Chippewa | 1,052 | 2,296 | 2.2 |
| Minnesuing | Douglas | 432 | 140 | 0.3 |
| Keyes | Florence | 202 | 444 | 2.2 |
| Bearskin | Oneida | 400 | 661 | 1.6 |
| Clear | Oneida | 846 | 2,789 | 3.3 |
| Snipe | Vilas | 239 | 183 | 0.8 |

**LARGEMOUTH BASS**

| LAKE | COUNTY | AREA (ACRES) | POPULATION SIZE | DENSITY (PE/ACRE) |
|---|---|---|---|---|
| Bear | Barron | 1,358 | 2,032 | 1.5 |
| Devils | Burnett | 1,001 | 4,234 | 4.2 |
| Long | Chippewa | 1,052 | 64 | 0.1 |
| Minnesuing | Douglas | 432 | 301 | 0.7 |
| Keyes | Florence | 202 | 337 | 1.7 |
| Mueller | Langlade | 88 | 1,168 | 13.3 |
| Burrows | Oneida | 156 | 78 | 0.5 |
| Carrol | Oneida | 335 | 1,562 | 4.7 |
| Clear | Oneida | 846 | 513 | 0.6 |
| Madeline | Oneida | 159 | 1,598 | 10.1 |

RESULTS – Muskellunge

Four adult muskellunge population estimates completed during 2000. Adult density ranged from 0.17 – 0.35 muskellunge 30 in and larger per acre (Table 4).

Table 4. Muskellunge population estimates in the Ceded Territory completed in 2000.

| LAKE | COUNTY | AREA (ACRES) | POPULATION SIZE (≥30 in) | DENSITY (PE/ACRE) |
|---|---|---|---|---|
| Riley | Forest | 213 | 70 | 0.33 |
| Roberts | Forest | 414 | 145 | 0.35 |
| Wabikon | Forest | 594 | 127 | 0.21 |
| Big Carr | Oneida | 213 | 36 | 0.17 |

## YOUNG OF THE YEAR SURVEYS

### INTRODUCTION

Young of the year (YOY) surveys provide an index of the abundance and survival of the current year class of walleyes from hatching or stocking to their first fall. Young age classes form the basis of future adult populations. Therefore, YOY surveys provide fisheries managers with insight into potential adult population changes in the near future. Early indication of these potential changes allows fisheries managers to develop management strategies to accommodate expected changes in adult populations. Although YOY relative abundance gives some indication of possible future adult abundance, they do not necessarily correspond directly, as survival to adulthood can be variable (Hansen et al. 1998).

### METHODS

Young of the year (YOY) surveys were completed on 130 lakes by the WDNR in 2000. Of the 130 lakes sampled, 57 were classified as naturally reproducing (NR), 46 as stocked (ST) and 27 as "other". Electrofishing for YOY walleyes was done during early fall, generally when the water temperature had fallen below 70° F. The entire shoreline of a lake was electrofished and all walleyes were examined and measured. Serns (1982) established a relationship between the number of YOY walleyes collected per mile of shoreline electrofished and the density of YOY walleyes/acre. This in

turn can be used to estimate YOY walleye abundance. This relationship between the number of YOY walleyes caught per mile and the density of YOY walleye is:

$$Density = 0.234 * Catch\ per\ mile$$

where density is estimated as number of YOY walleyes per acre. Abundance is then estimated by multiplying the estimated density by the number of acres in a given lake.

We used two-sample t-tests to test the assumption that mean YOY walleye / mile in 2000 was the same as the 1990-1999 mean ($\alpha = 0.05$).

## RESULTS

Water temperatures during 2000 YOY walleye surveys raged from 47 - 70°F with a mean of 60°F. Walleye YOY per mile in 2000 ranged from 0.0 to 139.1 with a mean of 11.6 and median of 1.6. Lakes sustained primarily by natural reproduction (NR) on average had higher walleye YOY per mile (mean = 21.6, median = 9.9; range = 0.0 – 139.1) than lakes sustained by stocking (mean = 3.2, median = 0.5, range = 0.0 – 28.7) or lakes classified as "other" (mean = 0.1, median = 0.0, range = 0.0 – 1.2; Table 5; Figure 4).

Table 5. Walleye young of the year per mile for three categories of lakes in Wisconsin's ceded territory.

| | Natural | | Stocked | | Other | |
|---|---|---|---|---|---|---|
| | Mean | Median | Mean | Median | Mean | Median |
| **2000 YOY Walleye / Mile** | 21.6 | 9.9 | 3.2 | 0.5 | 0.1 | 0.0 |
| **1990-99 YOY Walleye / Mile** | 33.1 | 13.8 | 8.2 | 1.3 | | |

The 2000 mean YOY walleye per mile was significantly lower than the 1990-99 mean YOY walleye per mile for both NR lakes ($t = -2.57$, df = 83, $P = 0.01$), and ST lakes ($t = -3.12$, df = 187, $P < 0.01$). In 2000, 11% of NR lakes (9 of 53), and 56% of ST lakes (22 of 39) had YOY walleye indices lower than 1 per mile.

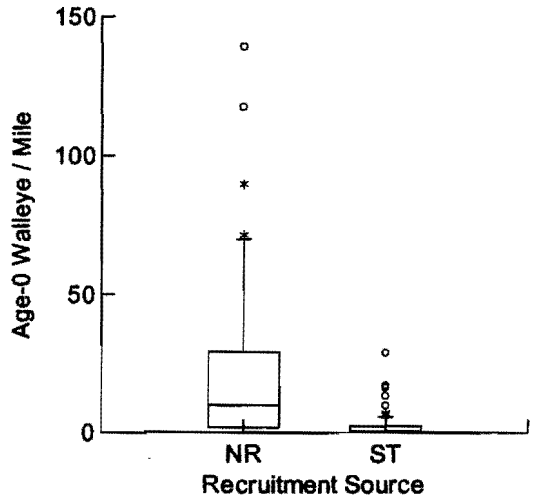


Figure 4. Box and whisker plot showing the distribution of walleye young-of-the-year per mile for lakes sustained by natural reproduction and stocking in Wisconsin's ceded territory 2000.

The percentage of lakes with greater than 25 YOY walleye per mile and greater than 100 YOY walleye per mile are used to indicate strong annual year classes in the ceded territory. These values are also less affected by large values for individual lakes. In 2000, the percentage of NR lakes with YOY indices > 25 per mile was lower (26%) than the 1990-99 mean (37%). The percentage of NR lakes with YOY walleye indices > 100 per mile were also lower in 2000 (3%) than the 1990-99 mean (6%). There was a similar pattern seen in ST lakes in 2000. The percentage of ST lakes > 25 YOY walleye per mile was lower (3%) than the 1990-99 mean (8%). There were no ST lakes with YOY walleye indices > 100 per mile in 2000 (Figure 5).

Sern's indices for NR lakes ranged from 0.0 – 32.5 YOY walleyes per acre with a mean of 4.5 and median of 1.5. In ST lakes, Sern's indices ranged from 0.0 – 6.7 YOY walleye per acre with a mean of 0.6 and median of less than 0.1. Lakes classified as "other" had even lower Sern's indices, ranging from 0.0 –0.3, with a mean and median less than 0.1 YOY walleyes per acre (Tables 6 and 7).

Sporadic recruitment is common for walleye populations both within and among individual lakes. It is common to have almost complete lack of recruitment in 25% or more of lakes with natural

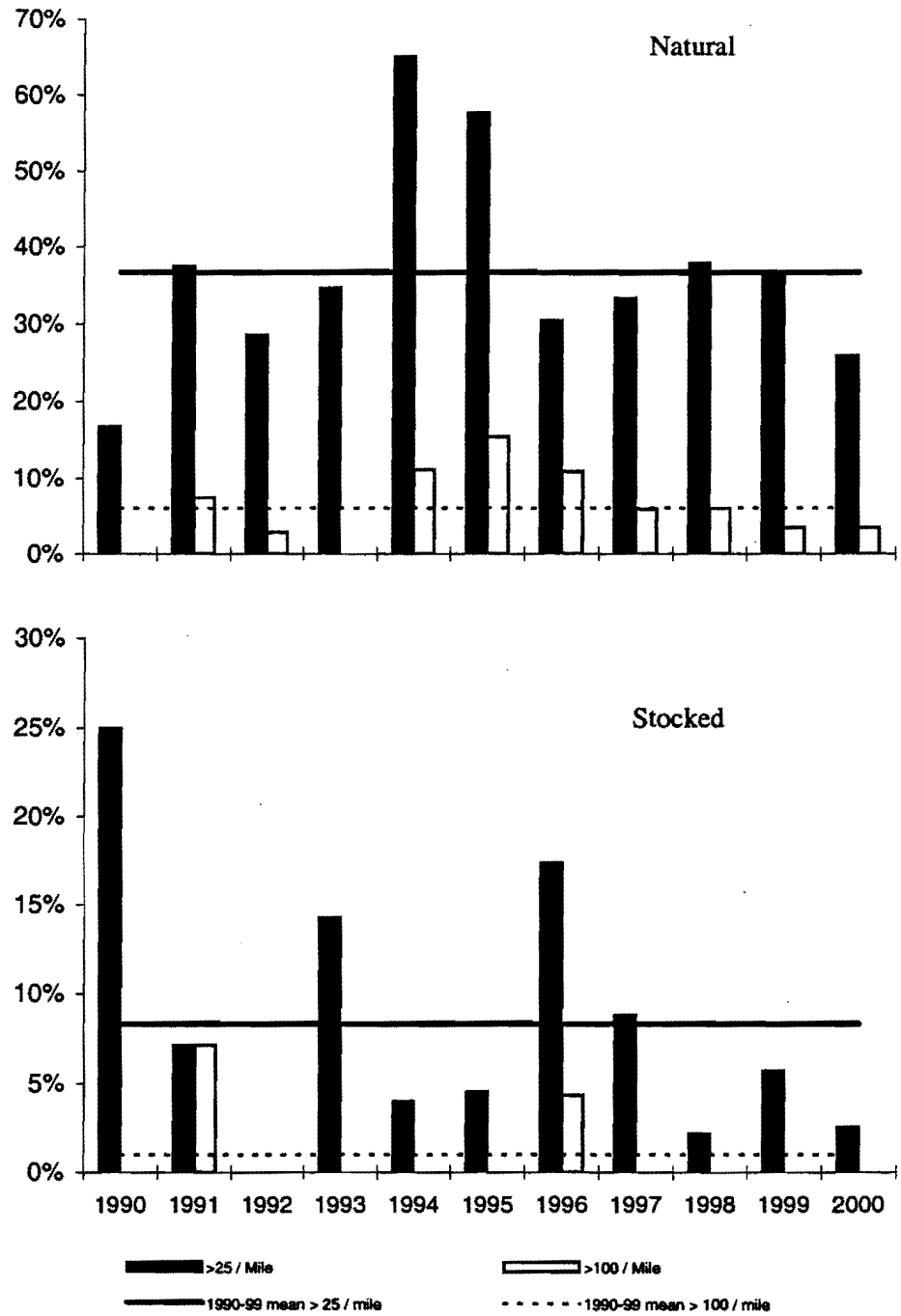


Figure 5. Percentages of lakes with high young-of-the-year walleye indices. The top panel has lakes sustained primarily by natural reproduction and the bottom panel has lakes sustained primarily primarily by stocking.

Table 6. Age-0 walleye per mile and Sern's index for surveyed lakes with natural reproduction.

| Lake | County | Acres | Total Shoreline (mi) | Shoreline Shocked (mi) | Age-0 Walleye (#/mi) | Sern's Index (YOY/acre) |
|---|---|---|---|---|---|---|
| Bear | Ashland | 204 | 6.0 | 2.8 | 2.9 | 0.7 |
| Gordan | Ashland | 142 | 4.3 | 1.7 | 2.4 | 0.6 |
| Silver | Barron | 337 | 4.4 | 4.4 | 2.0 | 0.5 |
| Hart | Bayfield | 259 | 3.5 | 3.5 | 7.7 | 1.8 |
| Twin Bear | Bayfield | 172 | 3.9 | 3.9 | 39.5 | 9.2 |
| Long | Chippewa | 1,052 | 14.0 | 14.0 | 71.4 | 16.7 |
| Bond | Douglas | 293 | 3.8 | 3.8 | 23.2 | 5.4 |
| Minnesuing | Douglas | 432 | 6.9 | 6.9 | 0.1 | 0.0 |
| Whitefish | Douglas | 832 | 6.9 | 6.9 | 17.0 | 4.0 |
| Tainter | Dunn | 1,752 | 25.7 | 3.0 | 33.7 | 7.9 |
| Keyes | Florence | 202 | 3.2 | 3.2 | 0.3 | 0.1 |
| Patten | Florence | 255 | 4.0 | 4.0 | 5.5 | 1.3 |
| Roberts | Forest | 414 | 4.5 | 4.5 | 7.3 | 1.7 |
| Gile Flowage | Iron | 3,384 | 27.2 | 10.1 | 20.6 | 4.8 |
| Trude | Iron | 792 | 15.1 | 3.9 | 89.7 | 21.0 |
| Turtle Flambeau | Iron | 13,122 | 206.3 | 7.8 | 69.9 | 16.4 |
| Alexander | Lincoln | 677 | 16.1 | 16.1 | 1.2 | 0.3 |
| Seven Island | Lincoln | 132 | 4 | 4 | 0.0 | 0.0 |
| Bearskin | Oneida | 400 | 5.6 | 5.6 | 60.2 | 14.1 |
| Clear | Oneida | 846 | 13.8 | 13.8 | 5.6 | 1.3 |
| Emma | Oneida | 223 | 4.1 | 4.1 | 0.0 | 0.0 |
| Manson | Oneida | 234 | 3.6 | 3.6 | 1.9 | 0.5 |
| Moen | Oneida | 460 | 3.9 | 3.9 | 1.3 | 0.3 |
| North Two | Oneida | 146 | 3.3 | 3.3 | 0.0 | 0.0 |
| Pipe | Polk | 342 | 6.9 | 6.9 | 1.0 | 0.2 |
| Big Dardis | Price | 144 | 2.8 | 2.6 | 0.0 | 0.0 |
| Butternut | Price | 1,006 | 11.2 | 4 | 40.0 | 9.4 |
| Duroy | Price | 379 | 10.1 | 4 | 30.3 | 7.1 |
| Round | Price | 726 | 5.1 | 3.7 | 29.2 | 6.8 |
| Solberg | Price | 859 | 12.4 | 12.4 | 18.5 | 4.3 |
| Chain | Rusk | 468 | 7.9 | 4.7 | 9.8 | 2.3 |
| Island | Rusk | 526 | 5.8 | 4.2 | 1.9 | 0.4 |
| Pulaski | Rusk | 126 | 2.5 | 2.5 | 3.6 | 0.8 |
| Chetac | Sawyer | 1,920 | 17.5 | 4 | 5.3 | 1.2 |
| Chippewa | Sawyer | 15,300 | 232.9 | 5.6 | 24.6 | 5.8 |
| Grindstone | Sawyer | 3,111 | 10.5 | 10.5 | 117.3 | 27.5 |
| Hayward | Sawyer | 247 | 8.6 | 7 | 2.9 | 0.7 |
| Hayward | Sawyer | 247 | 8.6 | 5.4 | 3.3 | 0.8 |
| Sand | Sawyer | 928 | 5.1 | 5.1 | 0.0 | 0.0 |
| Cedar | St. Croix | 1,100 | 6.3 | 4.3 | 139.1 | 32.5 |
| Rib | Taylor | 320 | 3.3 | 3.3 | 11.5 | 2.7 |
| Big Crooked | Vilas | 682 | 5.0 | 5.0 | 10.0 | 2.3 |
| Crab | Vilas | 949 | 15.8 | 15.8 | 1.3 | 0.3 |
| Duck | Vilas | 108 | 1.7 | 1.7 | 15.5 | 3.6 |
| Eagle | Vilas | 572 | 4.8 | 4.8 | 26.3 | 6.1 |
| Escanaba | Vilas | 293 | 4.4 | 4.4 | 11.4 | 2.7 |
| Horsehead | Vilas | 234 | 4.1 | 4.1 | 13.4 | 3.1 |
| Hunter | Vilas | 184 | 3.2 | 3.2 | 20.3 | 4.8 |
| Lynx | Vilas | 22 | 0.8 | 0.8 | 0.0 | 0.0 |
| Otter | Vilas | 196 | 4.0 | 4.0 | 0.0 | 0.0 |
| Razorback | Vilas | 362 | 7.3 | 7.3 | 56.9 | 13.3 |
| Scattering Rice | Vilas | 267 | 3.4 | 3.4 | 1.2 | 0.3 |
| Snipe | Vilas | 239 | 2.7 | 2.7 | 1.5 | 0.3 |
| Wolf | Vilas | 393 | 4.4 | 4.4 | 0.5 | 0.1 |
| Yellow Birch | Vilas | 202 | 3.7 | 3.7 | 30.8 | 7.2 |
| Long | Washburn | 3,290 | 38 | 38 | 0.0 | 0.0 |
| Minong Fl. | Washburn | 1,564 | 24.8 | 1.9 | 31.1 | 7.3 |
| Nancy | Washburn | 772 | 10.9 | 3 | 1.7 | 0.4 |

Table 7. Age-0 walleye per mile and Sern's index for surveyed lakes sustained by stocking and whether each lake was stocked (Y = yes, N = no, B = before sampling, A = After sampling).

| Lake | County | Acres | Total Shoreline (mi) | Shoreline Shocked (mi) | Age-0 Walleye (#/mi) | Sern's Index (YOY/acre) | Stocked in 2000 |
|---|---|---|---|---|---|---|---|
| English | Ashland | 244 | 4.1 | 3.8 | 16.1 | 3.8 | B |
| Bear | Barron | 1,358 | 14.9 | 12.9 | 0.0 | 0.0 | A |
| Chetek | Barron | 770 | 7.7 | 4.0 | 1.3 | 0.3 | B |
| Lower Vermillion | Barron | 208 | 3.0 | 3.0 | 0.0 | 0.0 | N |
| Sand | Barron | 322 | 6.3 | 6.3 | 1.7 | 0.4 | N |
| Staples | Barron | 305 | 3.5 | 3.5 | 0.0 | 0.0 | N |
| Atkins | Bayfield | 176 | 2.3 | 2.3 | 28.7 | 6.7 | B |
| Crystal | Bayfield | 111 | 2.5 | 2.5 | 4.4 | 1.0 | N |
| Crystal | Bayfield | 111 | 2.5 | 2.5 | 5.6 | 1.3 | N |
| Diamond | Bayfield | 341 | 5.0 | 5.0 | 0.8 | 0.2 | B |
| Long | Bayfield | 263 | 6.8 | 6.8 | 0.0 | 0.0 | B |
| Big McKenzie | Burnett | 1,185 | 7.1 | 7.1 | 1.1 | 0.3 | B |
| Devils | Burnett | 1,001 | 5.2 | 5.2 | 0.2 | 0.0 | B |
| Sand | Burnett | 962 | 8.3 | 8.3 | 2.5 | 0.6 | B,A |
| Red | Douglas | 258 | 3.5 | 3.5 | 6.3 | 1.5 | B |
| Lucerne | Forest | 1,004 | 10.5 | 10.5 | 0.1 | 0.0 | Y |
| Trump | Forest | 172 | 2.8 | 2.8 | 0.4 | 0.1 | N |
| Fisher | Iron | 410 | 10.9 | 1.8 | 0.0 | 0.0 | N |
| Grand Portage | Iron | 144 | 3.1 | 3.1 | 0.0 | 0.0 | N |
| Mercer | Iron | 184 | 4.2 | 1.8 | 0.0 | 0.0 | N |
| Lawrence | Langlade | 54 | 1.8 | 1.8 | 0.0 | 0.0 | N |
| Mueller | Langlade | 88 | 2.8 | 2.8 | 0.0 | 0.0 | N |
| Rose | Langlade | 112 | 7.3 | 7.3 | 1.5 | 0.4 | N |
| White | Langlade | 166 | 3.1 | 3.1 | 0.0 | 0.0 | Y |
| Mayflower | Marathon | 98 | 2.7 | 2.7 | 0.0 | 0.0 | Y |
| Bear | Oneida | 312 | 4.3 | 4.3 | 0.0 | 0.0 | Y |
| Carrol | Oneida | 352 | 6.1 | 6.1 | 0.0 | 0.0 | Y |
| Julia | Oneida | 257 | 4.2 | 4.2 | 1.9 | 0.4 | Y |
| Pickerel | Oneida | 736 | 13.0 | 13.0 | 1.5 | 0.4 | N |
| Shishebogoma | Oneida | 716 | 10.2 | 10.2 | 0.3 | 0.1 | N |
| Thompson | Oneida | 382 | 6.7 | 6.7 | 2.1 | 0.5 | Y |
| Big Butternut | Polk | 378 | 3.4 | 3.4 | 0.0 | 0.0 | N |
| Half Moon | Polk | 579 | 7.1 | 7.1 | 0.0 | 0.0 | N |
| Magnor | Polk | 231 | 2.6 | 2.2 | 0.9 | 0.2 | B |
| Sand | Polk | 187 | 2.6 | 2.6 | 0.0 | 0.0 | N |
| Amacoy | Rusk | 278 | 3.7 | 3.7 | 0.0 | 0.0 | N |
| Burns | Sawyer | 37 | 1.2 | 1.2 | 0.0 | 0.0 | N |
| Black Oak | Vilas | 584 | 7.4 | 7.4 | 16.9 | 4.0 | N |
| Boot | Vilas | 284 | 3.1 | 3.1 | 0.0 | 0.0 | N |
| Brandy | Vilas | 110 | 2.0 | 2.0 | 0.5 | 0.1 | N |
| Little St. Germain | Vilas | 980 | 14.7 | 14.7 | 0.0 | 0.0 | Y |
| Muskellunge | Vilas | 272 | 3.6 | 3.6 | 13.1 | 3.1 | Y |
| Big Bass | Washburn | 203 | 2.4 | 2.4 | 0.0 | 0.0 | B |
| Gilmore | Washburn | 389 | 7.6 | 4.9 | 9.6 | 2.2 | B |
| Matthews | Washburn | 263 | 2.6 | 2.6 | 0.4 | 0.1 | B |
| Spring | Washburn | 211 | 2.5 | 2.0 | 0.0 | 0.0 | N |
| Stone | Washburn | 523 | 4.0 | 4.9 | 6.9 | 1.6 | B |

reproduction. Even higher percentages are common in lakes with populations sustained by stocking. Generally, successful recruitment occurs in a given lake every 3-4 years. This type of sporadic recruitment appears to reduce competition between year classes of walleye (Li et al. 1996). Therefore, lack of recruitment in a given lake for one or more years is natural and expected. It is also appears that there may be annual effects on walleye recruitment as well (Figure 5). For example, 1994 and 1995 had the highest percentages of YOY indices >25 and >100 per mile. One might expect annual percentages to be similar across years if there was no year effect. Overall, 2000 was a slightly below average for walleye YOY survival.

## CREEL SURVEYS

### INTRODUCTION

Creel surveys provide vital information related to the use of fisheries by anglers, including information on angling effort, catch, harvest, and exploitation rates on surveyed waters. Further, estimates on surveyed waters can be used to estimate effort, catch and harvest at a larger scale (i.e. ceded territory). Creel surveys are generally conducted on the same lakes in which walleye population estimates were conducted. Marking of fish during population estimates and subsequent creel surveys allows for the estimation of walleye exploitation rates.

### METHODS

Creel surveys were conducted on 21 lakes in which walleye population estimates were made during spring 2000. Wisconsin creel surveys use a random stratified roving access design (Beard et al. 1997; Rasmussen et al. 1998). The surveys were stratified by month and day-type (weekend / holiday or weekday), and creel clerks conducted their interviews at random within these strata. Surveys were conducted on all weekends and holidays, and a randomly chosen two or three weekdays. Only completed-trip interview information was used in the analysis. Clerks recorded

effort, catch, harvest, and targeted species from anglers completing their fishing trip. Clerks also measured harvested fish and examined them for fin-clips, recording any seen.

Creel surveys began 06-May-2000 and generally continued through 01-March-2001. The month of November was excluded due to poor ice conditions and low angler effort. There were several exceptions to the 06-May – 01-March timeline. Bearskin, Clear, and Manson Lakes (Oneida Co.) and Crab Lake (Vilas Co.) were sampled from 06-May to 28-February. The creel survey on Patten Lake (Florence Co.) did not begin until 02-June due to lack of personnel. Duck, Lynx, Otter, and Yellow Birch Lakes (Eagle Chain, Vilas Co.) had no winter creel, thus were conducted from 06-May through 31-October. Information from interviews was then expanded over the appropriate stratum to provide an estimate of total effort, catch, and harvest of each species in each lake for the year. Species included walleye, muskellunge, northern pike (*Esox lucius*), largemouth (*Micropterus salmoides*) and smallmouth (*Micropterus dolomieu*) bass.

Angler exploitation rates for adult walleye were calculated by dividing the estimated number of marked adult walleye harvested by the total number of adult walleye present in the lake (R/M; Ricker 1975). Although anglers are able to harvest immature walleye in some waters, adult walleye exploitation rates were estimated to allow comparison with tribal exploitation rates and to be added to tribal exploitation for estimation of total adult walleye exploitation in those waters where both angling and spearing were conducted.

Tribal exploitation rates were calculated in lakes where adult population estimates were conducted. Tribal exploitation was calculated as the total number of adult walleyes harvested divided by the adult population estimate (C/N; Ricker 1975). Total adult walleye exploitation rate was calculated by summing angling and tribal exploitation.

RESULTS

Creel data were summarized for all lakes, lakes less than 500 acres, and lakes 500 acres and larger. In addition, walleye creel data were grouped based on length regulation and population recruitment source.

Catch and harvest (hours/fish) rates were calculated for all gamefish species. Number of hours required to catch and harvest fish gives an indication of success of an average angler and provides an index of relative abundance of that species. Specific catch and harvest rates were calculated using only fishing effort targeted at given species. General catch and harvest rates were calculated using total angler effort, regardless of species.

The mean total angler effort per acre in 2000 was significantly lower in lakes 500 acres and larger (25.7 hours/acre) than in lakes less than 500 acres (46.4 hours/acre; $t = 1.78$; $df = 19$; $P = 0.04$).

Walleye

Creel surveys were conducted on 21 lakes in the ceded territory during 2000. Sixteen of these lakes had an "exempt" length limit classification, indicating that there was no minimum length regulation for walleye. Of the 16 exempt lakes, 2 had no length restrictions, 4 had a regulation allowing 1 fish over 14 in to be harvested, and 10 had a slot limit restriction where walleye between 14 and 18 in could not be harvested and only 1 walleye larger than 18 in could be retained. The remaining 6 lakes had a 15 in minimum length restriction. Eleven of the lakes creeled were larger than 500 acres and 10 were smaller than 500 acres. Walleye populations were maintained primarily by natural reproduction in 18 of the lakes, while 3 were maintained primarily through stocking (Table 8).

Walleye directed angler effort averaged 13.09 hours per acre in 2000. Walleye directed angler effort was higher in exempt lakes (14.61 hours/acre) than in lakes with a 15 in minimum length restriction (8.20 hours/acre), however the difference was not significant ($t = 1.39$; $df = 19$; $P = 0.18$). Walleye anglers spent more time fishing in lakes smaller than 500 acres (15.78 hours/acre) compared

Table 8. 2000 creel survey data for Wisconsin's ceded territory. Specific and general catch and harvest rates are measured in the number of hours per fish caught or harvested. Exempt waters ar those with regulations other than 15" minimum length

| | | N | Lake Acres | Adult PE / Acre | Angler Catch/Acre | Angler Harvest/Acre | Specific Catch Rate | Specific Harvest Rate | Mean Length | General Catch Rate | General Harvest Rate | Directed Effort/Acre | Total Effort/Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | All lakes | 21 | 716 | 3.57 | 3.19 | 1.19 | 4.1 | 12.4 | 14.4 | 10.0 | 28.7 | 13.09 | 35.58 |
| Means | Exempt | 16 | 664 | 3.99 | 3.84 | 1.47 | 3.7 | 10.2 | 13.2 | 8.5 | 23.1 | 14.61 | 38.22 |
| by regulation type | 15" size limit | 5 | 881 | 2.23 | 1.09 | 0.27 | 6.4 | 43.2 | 18.2 | 22.7 | 126.9 | 8.20 | 27.11 |
| and lake size | Exempt <500 acres | 9 | 235 | 3.59 | 4.54 | 1.84 | 3.5 | 8.7 | 12.9 | 8.6 | 20.8 | 17.20 | 50.12 |
| | Exempt >500 acres | 7 | 1,216 | 4.50 | 2.95 | 1.00 | 3.9 | 13.1 | 13.5 | 8.4 | 26.9 | 11.28 | 22.92 |
| | 15" <500 acres | 1 | 239 | 4.77 | 1.44 | 0.01 | 2.1 | 322.6 | 15.2 | 8.8 | 1428.6 | 2.97 | 12.83 |
| | 15" >500 acres | 4 | 1,042 | 1.60 | 1.00 | 0.33 | 13.6 | 35.5 | 19.0 | 37.6 | 103.4 | 9.51 | 30.68 |
| 2000 | Natural | 18 | 651 | 4.02 | 3.65 | 1.36 | 3.6 | 11.2 | 13.5 | 8.8 | 25.3 | 14.37 | 37.17 |
| Means by | Stocked | 3 | 1,107 | 0.86 | 0.42 | 0.17 | 17.4 | 39.6 | 19.5 | 66.2 | 150.0 | 5.40 | 26.01 |
| recruitment type | Natural 15" | 2 | 543 | 4.30 | 2.09 | 0.42 | 3.3 | 50.0 | 16.2 | 11.4 | 103.1 | 12.40 | 28.77 |
| and regulation type | Natural Exempt | 16 | 664 | 3.99 | 3.84 | 1.47 | 3.7 | 10.2 | 13.2 | 8.5 | 23.1 | 14.61 | 38.22 |
| | Stocked 15" | 3 | 1,107 | 0.86 | 0.42 | 0.17 | 17.4 | 39.6 | 19.5 | 66.2 | 150.0 | 5.40 | 26.01 |
| | Stocked Exempt | 0 | - | - | - | - | - | - | - | - | - | - | - |
| 1990-1999 | All lakes | 253 | 1,173 | 3.45 | 3.50 | 0.81 | 4.0 | 16.7 | 16.2 | 8.3 | 33.3 | 12.77 | 33.52 |
| Means | Exempt | 96 | 1,384 | 3.50 | 3.45 | 1.35 | 3.7 | 10.0 | 13.8 | 7.7 | 20.0 | 14.16 | 32.48 |
| by regulation type | 15" size limit | 157 | 1,045 | 3.41 | 3.53 | 0.47 | 4.3 | 25.0 | 17.7 | 8.3 | 50.0 | 11.91 | 34.16 |
| and lake size | Exempt <500 acres | 35 | 260 | 3.04 | 2.98 | 1.13 | 4.5 | 12.5 | 13.9 | 10.0 | 33.3 | 17.15 | 43.59 |
| | Exempt >500 acres | 61 | 2,028 | 3.76 | 3.72 | 1.48 | 3.4 | 8.3 | 13.8 | 6.7 | 16.7 | 12.45 | 26.10 |
| | 15" <500 acres | 62 | 301 | 3.62 | 3.97 | 0.47 | 4.0 | 33.3 | 17.6 | 8.3 | 50.0 | 12.59 | 37.14 |
| | 15" >500 acres | 95 | 1,530 | 3.28 | 3.23 | 0.47 | 4.5 | 25.0 | 17.7 | 8.3 | 50.0 | 11.46 | 32.19 |
| 1990-1999 | Natural | 198 | 1,302 | 3.83 | 4.05 | 0.94 | 3.6 | 14.3 | 15.6 | 7.1 | 25.0 | 13.93 | 33.09 |
| Means by | Stocked | 49 | 774 | 2.02 | 1.30 | 0.29 | 8.3 | 33.3 | 18.5 | 50.0 | 100.0 | 8.53 | 35.76 |
| recruitment type | Natural 15" | 104 | 1,206 | 4.10 | 4.54 | 0.54 | 3.4 | 25.0 | 17.2 | 6.7 | 50.0 | 13.57 | 33.38 |
| and regulation type | Natural Exempt | 94 | 1,409 | 3.53 | 3.52 | 1.38 | 3.7 | 10.0 | 13.8 | 7.1 | 20.0 | 14.31 | 32.76 |
| | Stocked 15" | 48 | 785 | 2.03 | 1.31 | 0.30 | 9.1 | 33.3 | 18.6 | 20.0 | 100.0 | 8.62 | 36.17 |
| | Stocked Exempt | 2 | 218 | 2.11 | 0.36 | 0.15 | 12.5 | 33.3 | 16.0 | 50.0 | 100.0 | 7.29 | 19.26 |

to lakes larger than 500 acres (10.64 hours/acre), but the difference was not significant ($t = 1.29$; $df = 19$; $P = 0.21$). Walleye anglers spent over 1.5 times the effort in lakes sustained by natural reproduction (14.37 hours/acre) compared to stocked lakes (5.40 hours/acre), however the difference was not significant ($t = 1.61$; $df = 19$; $P = 0.12$). It took anglers targeting walleyes less time to catch a walleye in exempt lakes (3.7 hours/walleye) than in lakes with a 15 in minimum length restriction (6.4 hours/walleye), however the difference was not significant ($t = 1.52$; $df = 19$; $P = 0.14$). Mean specific catch rates for walleyes in 2000 were not significantly different than the 1990-99 mean for either 15 in minimum length lakes ($t = 0.67$; $df = 157$; $P = 0.50$) or exempt lakes ($t = 0.11$; $df = 109$; $P = 0.91$). It took walleye anglers on average significantly less time to harvest a walleye in exempt lakes (10.2 hours/walleye) compared to 15 in minimum length lakes (43.2 hours/walleye; $t = 3.71$ $df = 19$; $P < 0.01$). This is likely due to the fact that there are generally higher numbers of younger (smaller) fish in a population and in lakes exempt from minimum length limits these smaller fish can be harvested. This is further evidenced by the smaller average length of harvested walleye in exempt lakes (13.2 in) compared to lakes with a 15 in minimum length restriction (18.2 in; Table 8). Specific harvest rate of walleyes in 2000 in lakes larger than 500 acres with a 15 in minimum length restriction was similar to the 1990-1999 mean ($t = 0.96$; $df = 95$; $P = 0.34$). The same was true for exempt lakes smaller than 500 acres ($t = 1.96$; $df = 41$; $P = 0.06$), and larger than 500 acres ($t = 1.74$; $df = 66$; $P = 0.09$).

Exploitation rates were estimated in 21 lakes during 2000 (Table 9). Total adult walleye exploitation ranged from 0.0% to 29.0%. Angler exploitation of adult walleyes ranged from 0.0% to 24.1%. Angler exploitation of walleyes 14 in or longer ranged from 0.0% to 24.7%. Angler exploitation of adult walleyes 20 in and longer ranged from 0.0% to 81.5%. Tribal exploitation of adult walleyes ranged from 0.0% to 13.7%. Total adult walleye exploitation, angler adult walleye exploitation, and angler exploitation of walleye ≥ 14 in were slightly lower in 2000 compared to the 1993-1999 means, however none of these differences were significant. Angler exploitation of walleye ≥ 20 in and tribal exploitation rates were slightly higher in 2000 compared to the 1993-1999

Table 9. 2000 adult walleye exploitation rates and 1993-1999 mean exploitation rates. Tribal harvest Data used to calculate tribal exploitation provided by the Great Lakes Indian Fish and Wildlife Commission (Ngu 1994, Ngu 1995, Ngu 1996, Krueger 1997, Krueger 1998, Krueger 1999, Krueger 2000, Unpublished data 2001).

| Lake | County | Acres | Total Angler Exploitation of Adult Walleye | Angler Exploitation ≥14 in | Angler Exploitation ≥20 in | Tribal Exploitation of Adult Walleye | Total Exploitation of Adult Walleye |
|---|---|---|---|---|---|---|---|
| Bear | Barron | 1,358 | 13.7% | 14.7% | 10.4% | 4.4% | 18.0% |
| Devils | Burnett | 1,001 | 2.3% | 2.8% | 16.2% | 9.3% | 11.6% |
| Sand | Burnett | 962 | 11.0% | 11.0% | 23.4% | 8.0% | 19.1% |
| Long | Chippewa | 1,052 | 6.3% | 5.6% | 81.5% | 4.5% | 10.8% |
| Minnesuing | Douglas | 432 | 22.9% | 21.0% | 24.3% | 0.0% | 22.9% |
| Solberg | Price | 859 | 14.6% | 16.0% | 0.0% | 3.3% | 17.9% |
| Grindstone | Sawyer | 3,111 | 0.9% | 1.1% | 22.9% | 8.3% | 9.2% |
| Patten | Florence | 255 | 5.6% | 7.1% | 0.0% | 13.7% | 19.3% |
| Bearskin | Oneida | 400 | 24.1% | 24.7% | 29.8% | 4.9% | 29.0% |
| Clear | Oneida | 846 | 9.1% | 12.2% | 24.3% | 5.6% | 14.7% |
| Manson | Oneida | 236 | 8.9% | 7.0% | 0.0% | 6.6% | 15.4% |
| Crab | Vilas | 949 | 2.2% | 0.0% | 0.0% | 8.0% | 10.2% |
| Snipe | Vilas | 239 | 0.0% | | | 4.4% | 4.4% |
| Catfish | Vilas | 1,012 | 2.9% | 0.0% | 0.0% | 9.1% | 12.0% |
| Cranberry | Vilas | 956 | 1.3% | 0.0% | 0.0% | 2.8% | 4.0% |
| Duck*+ | Vilas | 108 | 0.0% | | | 0.0% | 0.0% |
| Lynx*+ | Vilas | 22 | 0.0% | | | 0.0% | 0.0% |
| Otter*+ | Vilas | 196 | 0.0% | | | 0.0% | 0.0% |
| Eagle | Vilas | 572 | 0.7% | 0.0% | 0.0% | 4.0% | 4.8% |
| Scattering Rice | Vilas | 267 | 0.0% | | | 0.0% | 0.0% |
| Yellow Birch | Vilas | 202 | 6.0% | 0.0% | 0.0% | 0.0% | 6.0% |
| 2000 Mean Values | | | 7.4% | 7.7% | 14.6% | 5.4% | 12.7% |
| 1993-1999 Mean Values | | | 8.4% | 11.4% | 11.4% | 4.5% | 13.0% |

* PE calculated for Duck, Lynx, and Otter combined.

means, but were not significant. Adult exploitation rates from 1990-1992 were excluded because in most lakes, both juvenile and adult walleyes were given the same fin clip (Table 9). The 2000 adult walleye exploitation rates were similar to the 1993-1999 mean exploitation rates and no individual lakes had an exploitation rate higher than 35%. These data indicate that overexploitation in the lakes sampled in 2000 did not occur.

Muskellunge

Creel surveys were conducted on 16 lakes classified as muskellunge waters in 2000. Although one muskellunge was reported caught in Sand Lake, Burnett County, and four muskellunge were reported caught in Patten Lake, Florence County, they were not classified as muskellunge waters and were therefore not included in summary statistics. Eight of the 16 muskellunge lakes sampled were larger than 500 acres and 8 were less than 500 acres in size (Table 10).

Table 10. 2000 and 1990-1999 mean muskellunge creel survey data. Specific and general catch and harvest rates are shown in number of hours per fish caught or harvested.

| | | | N | Lake Acres | Angler Catch /Acre | Angler Harvest /Acre | Specific Catch Rate | Specific Harvest Rate | Mean Length | General Catch Rate | General Harvest Rate | Directed Effort /Acre | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | | All lakes | 16 | 689 | 0.76 | 0.015 | 23.4 | 958.1 | 37.3 | 43.5 | 2,162.2 | 15.0 | 38.5 |
| | Means | < 500 acres | 8 | 209 | 1.03 | 0.024 | 26.2 | 661.2 | 35.7 | 40.7 | 1,403.5 | 22.1 | 51.4 |
| | | ≥ 500 acres | 8 | 1,170 | 0.49 | 0.006 | 21.2 | 1,739.1 | 38.9 | 46.9 | 4,705.9 | 7.8 | 25.6 |
| 1990-99 | | All lakes | 213 | 1,204 | 0.47 | 0.023 | 27.4 | 488.2 | 38.0 | 65.9 | 1337.5 | 10.2 | 34.7 |
| | Means | < 500 acres | 80 | 281 | 0.62 | 0.030 | 24.1 | 453.5 | 37.1 | 56.3 | 1159.4 | 12.1 | 42.7 |
| | | ≥ 500 acres | 133 | 1,759 | 0.39 | 0.020 | 29.9 | 511.5 | 38.3 | 73.5 | 1474.9 | 9.1 | 29.9 |

In 2000, catch / acre was significantly higher in lakes smaller than 500 acres (1.0 muskellunge/acre) compared to lakes 500 acres and larger (0.5 muskellunge/acre; $t = 2.2$, $df = 14$, $P = 0.04$). Harvest/acre was also higher in lakes smaller than 500 acres, however the difference was not significant ($t = 0.9$, $df = 14$, $P = 0.37$). There were no significant differences in specific catch rates, general catch rates, specific harvest rates, or general harvest rates of muskellunge between lakes smaller than 500 acres compared to lakes 500 acres and larger. Directed effort per acre was on average nearly three times higher in lakes smaller than 500 acres (22 hours/acre) compared to lakes 500 acres or larger (8 hours/acre), however the difference was not significant ($t = 1.95$, $df = 14$, $P = 0.07$).

Specific catch rate in 2000 (1 muskellunge caught for every 23.4 hours fished) for muskellunge was near the 1990-1999 average of 1 fish every 27.4 hours ($t = 0.8$, $df = 223$, $P = 0.40$). Muskellunge anglers spent nearly twice the hours fishing before harvesting a muskellunge in 2000

(958 hours) compared to the 1990-1999 mean (488 hours), however the difference was not significant ($t = 0.92$, $df = 223$, $P = 0.36$). Simonson and Hewett (1999) noted a similar pattern of lower muskellunge harvest due to voluntary catch and release and more restrictive regulations since the 1970s.

## Northern Pike

Creel surveys were conducted on 21 lakes classified as northern pike waters in 2000. Ten of the lakes surveyed were smaller than 500 acres and 11 were 500 acres or larger (Table 11). In 2000, there were no significant difference in catch/acre, harvest/acre, specific catch rate, or specific

Table 11. 2000 and 1990-1999 mean northern pike creel survey data. Specific and general catch and harvest rates are shown in number of hours per fish caught or harvested.

| | | | N | Lake Acres | Angler Catch /Acre | Angler Harvest /Acre | Specific Catch Rate | Specific Harvest Rate | Mean Length | General Catch Rate | General Harvest Rate | Directed Effort /Acre | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | | All lakes | 21 | 716 | 1.49 | 0.27 | 8.0 | 24.5 | 22.6 | 16.5 | 85.6 | 2.8 | 35.6 |
| | Means | < 500 acres | 10 | 236 | 1.56 | 0.29 | 9.5 | 22.2 | 23.3 | 16.3 | 75.2 | 2.9 | 46.4 |
| | | ≥ 500 acres | 11 | 1,153 | 1.43 | 0.26 | 7.0 | 27.1 | 22.1 | 16.7 | 97.9 | 2.6 | 25.7 |
| 1990-99 | | All lakes | 228 | 1,191 | 2.16 | 0.43 | 5.4 | 19.0 | 22.3 | 14.5 | 66.6 | 8.2 | 34.8 |
| | Means | < 500 acres | 87 | 285 | 2.53 | 0.47 | 5.1 | 17.1 | 22.0 | 13.2 | 53.5 | 7.5 | 43.4 |
| | | ≥ 500 acres | 141 | 1,750 | 1.93 | 0.40 | 5.6 | 20.4 | 22.4 | 15.5 | 78.5 | 8.7 | 29.4 |

harvest rate in lakes smaller than 500 acres compared to lakes 500 acres and larger. Directed angling effort was also similar in lakes smaller than 500 acres and lakes 500 acres and larger. 2000 mean values were similar to 1990-1999 means, with the exception of directed effort per acre.

## Smallmouth Bass

Creel surveys were conducted on 20 lakes classified as smallmouth bass waters in 2000. Ten of the lakes were smaller than 500 acres and 10 were 500 acres or larger (Table 12). Angler catch and harvest per acre were similar in lakes smaller than 500 acres and lakes 500 acres and larger. Specific

catch rates were also similar in lakes smaller and larger than 500 acres. Anglers spent over 3 times the hours (172) to harvest a smallmouth bass in lakes 500 acres and larger, compared to lakes

Table 12. 2000 and 1990-1999 mean smallmouth bass creel survey data. Specific and general catch and harvest rates are shown in number of hours per fish caught or harvested.

| | | | N | Lake Acres | Angler Catch /Acre | Angler Harvest /Acre | Specific Catch Rate | Specific Harvest Rate | Mean Length | General Catch Rate | General Harvest Rate | Directed Effort /Acre | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | | All lakes | 20 | 733 | 2.39 | 0.05 | 3.9 | 64.1 | 16.5 | 11.6 | 384.6 | 4.0 | 35.7 |
| | Means | < 500 acres | 10 | 236 | 2.24 | 0.05 | 3.9 | 39.4 | 18.6 | 15.1 | 362.3 | 3.8 | 46.4 |
| | | ≥ 500 acres | 10 | 1,168 | 2.73 | 0.04 | 3.9 | 172.4 | 16.4 | 9.4 | 409.8 | 4.2 | 25.0 |
| 1990-99 | | All lakes | 220 | 1,257 | 1.16 | 0.10 | 3.5 | 30.2 | 14.8 | 18.0 | 204.8 | 3.9 | 33.8 |
| | Means | < 500 acres | 76 | 292 | 1.40 | 0.12 | 5.2 | 41.6 | 14.9 | 16.4 | 199.1 | 3.7 | 42.6 |
| | | ≥ 500 acres | 146 | 1,766 | 1.03 | 0.09 | 3.0 | 26.5 | 14.7 | 19.0 | 208.0 | 4.1 | 29.1 |

smaller than 500 acres (39 hours). Catch per acre was generally higher in 2000 compared to the 1990-1999 average, but harvest per acre was lower. None of the observed differences were significantly different.

## Largemouth Bass

Creel surveys were conducted on 20 lakes classified as largemouth bass waters in 2000. Nine of the lakes sampled were smaller than 500 acres and 11 were 500 acres or larger (Table 13). There were relatively large differences in parameters of catch and harvest between lakes smaller than 500 acres and lakes 500 acres and larger (Table 13). In 2000, anglers were more successful catching and harvesting largemouth bass in lakes larger than 500 acres. However none of the observed differences were statistically significant.

## Catch and Harvest Rates

Comparing catch and harvest rates among species can provide insight into the catch-and-release component of the fishery, as well as the relative difficulty of capturing a given fish species. In 2000, muskellunge were the most difficult fish to catch, with an average of over 23 hours to catch a

Table 13. 2000 and 1990-1999 mean largemouth bass creel survey data. Specific and general catch and harvest rates are shown in number of hours per fish caught or harvested.

| | | | N | Lake Acres | Angler Catch /Acre | Angler Harvest /Acre | Specific Catch Rate | Specific Harvest Rate | Mean Length | General Catch Rate | General Harvest Rate | Directed Effort /Acre | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | | All lakes | 20 | 740 | 2.14 | 0.09 | 3.8 | 73.8 | 15.9 | 12.3 | 297.2 | 2.8 | 36.7 |
| | Means | < 500 acres | 9 | 235 | 0.55 | 0.03 | 10.8 | 195.2 | 18.1 | 49.5 | 1,139.2 | 3.0 | 50.1 |
| | | ≥ 500 acres | 11 | 1,153 | 3.44 | 0.13 | 2.5 | 48.9 | 15.8 | 7.6 | 185.2 | 2.7 | 25.7 |
| 1990-99 | | All lakes | 248 | 1,106 | 1.59 | 0.12 | 5.6 | 44.0 | 14.5 | 21.7 | 227.9 | 4.4 | 34.7 |
| | Means | < 500 acres | 98 | 284 | 1.67 | 0.14 | 6.4 | 53.3 | 14.4 | 22.4 | 248.5 | 4.5 | 41.4 |
| | | ≥ 500 acres | 150 | 1,842 | 1.53 | 0.11 | 5.2 | 39.4 | 14.5 | 21.3 | 216.1 | 4.4 | 30.2 |

fish, which is nearly three times longer than the next highest catch rate (8 hours /northern pike caught). Walleye, smallmouth bass, and largemouth bass had similar catch rates (Figure 6). Harvest rate patterns were slightly different. The amount of time spent to harvest a muskellunge was nearly 12 times longer (958 hours/muskellunge harvested) than the next highest catch rate (74 hours/ largemouth bass harvested). Smallmouth bass harvest rate was similar to largemouth bass. Northern pike and walleye were the lowest in terms of hours /harvest (Figure 6). The ratio of harvest to catch provides an index of catch and release (Figure 7). Walleye harvest/catch (0.35) was nearly double the next highest ratio (0.18) for northern pike. Largemouth bass were harvested at a much lower rate than walleye and northern pike (0.04). Smallmouth bass and muskellunge were harvested at the lowest rate (0.02). The high ratio of harvest to catch for walleye is not a surprise because of their value as food.

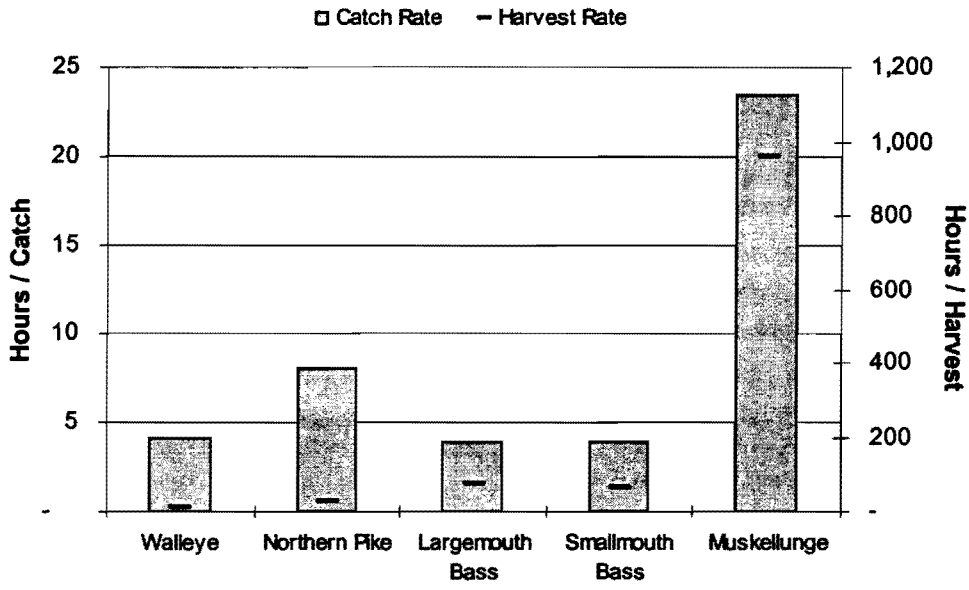


Figure 6. Catch rates (hours / catch) and harvest rates (hours / harvest) for anglers tagreting 5 fish species in the Ceded Territory during 2000 – 2001 angling season.

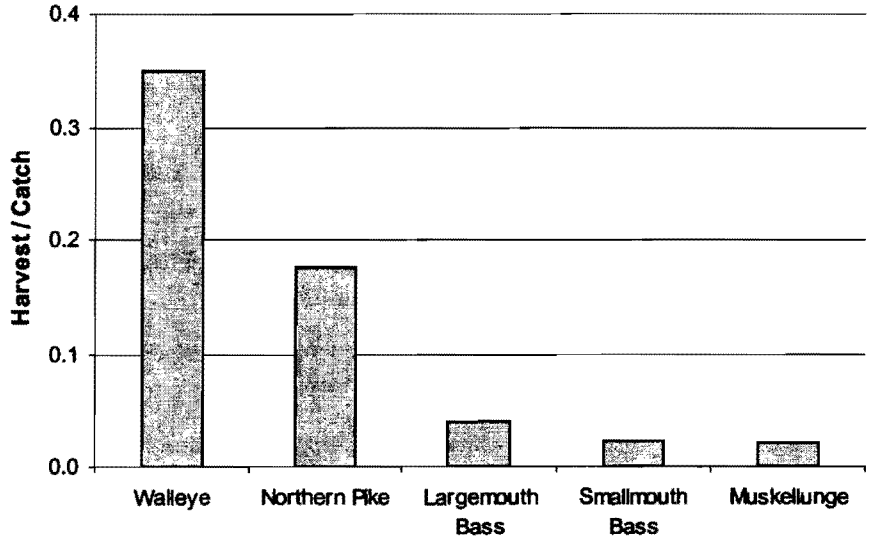


Figure 7. Ratio of fish harvested to fish caught by anglers during the 2000 – 2001 angling season for 5 fish species in the Ceded Territory.

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Appendix 1. 2000 walleye creel data. Catch and harvest rates are measured as fish per hour. Length is measured in inches. Effort is measured in hours

| Lake Name | County Name | MWB CODE | 2000 Walleye Code | Bag Limit | Size Limit | Lake Acres | Adult PE | Adult PE/Acre | Angler Catch | Angler Catch /Acre | Angler Harvest | Angler Harvest/ Acre | Specific Catch Rate | Specific Harvest Rate | Number of fish Measured | Mean Length | General Catch Rate | General Harvest Rate | Angler Directed Effort | Directed Effort /Acre | Angler Total Effort | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bear | Barron | 2105100 | C-ST | 3 | 15 | 1,358 | 1,655 | 1.22 | 966 | 0.71 | 384 | 0.28 | 0.086 | 0.033 | 42 | 16.0 | 0.023 | 0.009 | 8,987 | 6.6 | 42,971 | 31.6 |
| Devils | Burnett | 2461100 | C-ST | 3 | 15 | 1,001 | 631 | 0.63 | 428 | 0.43 | 132 | 0.13 | 0.063 | 0.021 | 46 | 20.1 | 0.013 | 0.004 | 5,924 | 5.9 | 32,803 | 32.8 |
| Sand | Burnett | 2495100 | ST | 3 | 15 | 962 | 697 | 0.72 | 119 | 0.12 | 87 | 0.09 | 0.024 | 0.022 | 18 | 20.5 | 0.010 | 0.007 | 3,536 | 3.7 | 13,089 | 13.6 |
| Long | Chippewa | 2351400 | NR | 2 | slot | 1,052 | 5397 | 5.13 | 6,796 | 6.46 | 1,323 | 1.26 | 0.439 | 0.087 | 302 | 13.3 | 0.255 | 0.050 | 15,042 | 14.3 | 26,639 | 25.3 |
| Minnesuing | Douglas | 2866200 | C-NR | 2/3* | none | 432 | 762 | 1.76 | 675 | 1.56 | 384 | 0.89 | 0.263 | 0.155 | 105 | 16.2 | 0.061 | 0.035 | 2,081 | 4.8 | 11,499 | 26.6 |
| Patten | Florence | 653700 | NR | 2 | 1 > 14 | 255 | 649 | 2.55 | 431 | 1.69 | 332 | 1.30 | 0.093 | 0.071 | 71 | 14.5 | 0.064 | 0.050 | 4,655 | 18.3 | 6,714 | 26.3 |
| Bearskin | Oneida | 1523600 | NR | 3 | 1 > 14 | 400 | 3,076 | 7.69 | 4,750 | 11.88 | 1,804 | 4.51 | 0.582 | 0.223 | 271 | 13.8 | 0.270 | 0.103 | 7,976 | 19.9 | 17,590 | 44.0 |
| Clear | Oneida | 977500 | NR | 3 | 15 | 846 | 3,241 | 3.83 | 2,312 | 2.73 | 705 | 0.83 | 0.121 | 0.037 | 57 | 17.3 | 0.061 | 0.019 | 18,465 | 21.8 | 37,822 | 44.7 |
| Manson | Oneida | 1517200 | C-NR | 3 | 1 > 14 | 236 | 823 | 3.49 | 870 | 3.69 | 196 | 0.83 | 0.260 | 0.056 | 34 | 12.9 | 0.077 | 0.017 | 3,162 | 13.4 | 11,410 | 48.3 |
| Solberg | Price | 2242500 | NR | 2/3* | none | 859 | 5,197 | 6.05 | 5,494 | 6.40 | 3,152 | 3.67 | 0.224 | 0.128 | 371 | 13.7 | 0.165 | 0.095 | 24,453 | 28.5 | 33,230 | 38.7 |
| Grindstone | Sawyer | 2391200 | C-NR | 3 | slot | 3,111 | 3,682 | 1.18 | 1,497 | 0.48 | 549 | 0.18 | 0.121 | 0.044 | 149 | 16.5 | 0.064 | 0.023 | 12,332 | 4.0 | 23,444 | 7.5 |
| Catfish | Vilas | 1603700 | NR | 3 | slot | 1,012 | 3,600 | 3.56 | 2,555 | 2.52 | 677 | 0.67 | 0.273 | 0.072 | 58 | 12.4 | 0.099 | 0.026 | 9,184 | 9.1 | 25,983 | 25.7 |
| Cranberry | Vilas | 1603800 | NR | 3 | slot | 956 | 7,524 | 7.87 | 1,223 | 1.28 | 325 | 0.34 | 0.104 | 0.028 | 21 | 13.1 | 0.047 | 0.013 | 11,746 | 12.3 | 25,807 | 27.0 |
| Duck | Vilas | 1599900 | NR | 3 | slot | 108 | 261 | 2.42 | 488 | 4.52 | 164 | 1.52 | 0.198 | 0.067 | 4 | 11.7 | 0.079 | 0.027 | 2,462 | 22.8 | 6,182 | 57.2 |
| Eagle | Vilas | 1600200 | NR | 3 | slot | 572 | 2,855 | 4.99 | 1,175 | 2.05 | 247 | 0.43 | 0.282 | 0.060 | 36 | 12.6 | 0.089 | 0.019 | 3,959 | 6.9 | 13,297 | 23.2 |
| Lynx | Vilas | 1600000 | NR | 3 | slot | 22 | 53 | 2.41 | 83 | 3.77 | 54 | 2.45 | 0.078 | 0.064 | 1 | 10.2 | 0.070 | 0.046 | 843 | 38.3 | 3,184 | 144.7 |
| Otter | Vilas | 1600100 | NR | 3 | slot | 196 | 473 | 2.41 | 1,005 | 5.13 | 285 | 1.45 | 0.391 | 0.108 | 32 | 12.2 | 0.170 | 0.048 | 2,515 | 12.8 | 6,372 | 32.5 |
| Scattering Rice | Vilas | 1600600 | NR | 3 | slot | 267 | 18 | 0.07 | 987 | 3.70 | 397 | 1.49 | 0.369 | 0.152 | 32 | 13.2 | 0.121 | 0.049 | 2,607 | 9.8 | 9,070 | 34.0 |
| Yellow Birch | Vilas | 1599600 | NR | 3 | slot | 202 | 1,918 | 9.50 | 1,001 | 4.96 | 428 | 2.12 | 0.326 | 0.144 | 33 | 11.5 | 0.140 | 0.060 | 2,972 | 14.7 | 7,546 | 37.4 |
| Crab | Vilas | 2953500 | NR | 2 | 1 > 14 | 949 | 2,599 | 2.74 | 1,359 | 1.43 | 427 | 0.45 | 0.359 | 0.113 | 66 | 13.1 | 0.110 | 0.035 | 3,779 | 4.0 | 12,342 | 13.0 |
| Snipe | Vilas | 1018500 | NR | 3 | 15 | 239 | 1,141 | 4.77 | 345 | 1.44 | 2 | 0.01 | 0.487 | 0.003 | 1 | 15.2 | 0.114 | 0.001 | 709 | 3.0 | 3,067 | 12.8 |

Slot regulation indicates walleye between 14 and 18 inches must be released; only one fish over 18 inches may be kep
All lakes without a 15-inch size limit are included in the summary for exempt waters
* Bag Limit of 2 from 05/06/00-05/25/00, and 3 from 05/26/00 to 03/01/01

Appendix 2 2000 muskellunge creel data. Catch and harvest rates are measured as fish per hour. Length is measured in inches. Effort is measured in hours.

| Lake Name | County Name | MWB CODE | 2000 Musky Code | Musky Size Limit | Lake Acres | Angler Catch | Angler Catch /Acre | Angler Harvest | Angler Harvest/ Acre | Specific Catch Rate | Specific Harvest Rate | Number of fish Measured | Mean Length | General Catch Rate | General Harvest Rate | Angler Directed Effort | Directed Effort /Acre | Angler Total Effort | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bear* | Barron | 2105100 | NONE | 34 | 1,358 | | | | | | | | | | | | | | |
| Devils* | Burnett | 2461100 | NONE | 34 | 1,001 | | | | | | | | | | | | | | |
| Sand* | Burnett | 2495100 | NONE | 34 | 962 | 7 | 0.01 | 0 | 0.00 | | | | | 0.0049 | | 0 | 0.0 | 13,089 | 13.6 |
| Long | Chippewa | 2351400 | ST | 34 | 1,052 | 71 | 0.07 | 4 | 0.00 | 0.0138 | 0.0014 | | | 0.0029 | 0.0002 | 3,072 | 2.9 | 26,639 | 25.3 |
| Minnesuing* | Douglas | 2866200 | NONE | 34 | 432 | | | | | | | | | | | | | | 0.0 |
| Patten* | Florence | 653700 | NONE | 34 | 255 | 19 | 0.07 | 0 | 0.00 | 0.0000 | 0.0000 | | | 0.0299 | 0.0000 | 0 | 0.0 | 6,714 | 26.3 |
| Bearskin | Oneida | 1523600 | ST | 34 | 400 | 385 | 0.96 | 16 | 0.04 | 0.0469 | 0.0040 | 2 | 37.2 | 0.0235 | 0.0010 | 3,991 | 10.0 | 17,590 | 44.0 |
| Clear | Oneida | 977500 | NR | 45 | 846 | 236 | 0.28 | 0 | 0.00 | 0.0418 | 0.0000 | | | 0.0073 | 0.0000 | 5,656 | 6.7 | 37,822 | 44.7 |
| Manson | Oneida | 1517200 | ST | 34 | 236 | 97 | 0.41 | 0 | 0.00 | 0.0160 | 0.0000 | | | 0.0090 | 0.0000 | 1,989 | 8.4 | 11,410 | 48.3 |
| Solberg | Price | 2242500 | C- | 34 | 859 | 445 | 0.52 | 22 | 0.03 | 0.0533 | 0.0018 | 2 | 39.3 | 0.0143 | 0.0007 | 7,192 | 8.4 | 33,230 | 38.7 |
| Grindstone | Sawyer | 2391200 | ST | 50 | 3,111 | 189 | 0.06 | 0 | 0.00 | 0.0371 | 0.0000 | | | 0.0138 | 0.0000 | 1,356 | 0.4 | 23,444 | 7.5 |
| Catfish | Vilas | 1603700 | C- | 34 | 1,012 | 1,001 | 0.99 | 20 | 0.02 | 0.0648 | 0.0014 | 2 | 38.4 | 0.0389 | 0.0008 | 14,712 | 14.5 | 25,983 | 25.7 |
| Crab | Vilas | 2953500 | C- | 40 | 949 | 284 | 0.30 | 0 | 0.00 | 0.0325 | 0.0000 | | | 0.0230 | 0.0000 | 7,336 | 7.7 | 12,342 | 13.0 |
| Cranberry | Vilas | 1603800 | C- | 34 | 956 | 778 | 0.81 | 0 | 0.00 | 0.0706 | 0.0000 | | | 0.0302 | 0.0000 | 9,096 | 9.5 | 25,807 | 27.0 |
| Duck | Vilas | 1599900 | C- | 34 | 108 | 126 | 1.17 | 0 | 0.00 | 0.0373 | 0.0000 | | | 0.0219 | 0.0000 | 2,949 | 27.3 | 6,182 | 57.2 |
| Eagle | Vilas | 1600200 | C- | 34 | 572 | 500 | 0.87 | 0 | 0.00 | 0.0636 | 0.0000 | | | 0.0403 | 0.0000 | 7,182 | 12.6 | 13,297 | 23.2 |
| Lynx | Vilas | 1600000 | C- | 34 | 22 | 44 | 2.00 | 0 | 0.00 | 0.0273 | 0.0000 | | | 0.0242 | 0.0000 | 1,523 | 69.2 | 3,184 | 144.7 |
| Otter | Vilas | 1600100 | C- | 34 | 196 | 130 | 0.66 | 0 | 0.00 | 0.0371 | 0.0000 | | | 0.0204 | 0.0000 | 3,132 | 16.0 | 6,372 | 32.5 |
| Scattering Rice | Vilas | 1600600 | C- | 34 | 267 | 330 | 1.24 | 41 | 0.15 | 0.0541 | 0.0081 | 2 | 34.3 | 0.0373 | 0.0047 | 5,103 | 19.1 | 9,070 | 34.0 |
| Snipe | Vilas | 1018500 | NR | 34 | 239 | 57 | 0.24 | 0 | 0.00 | 0.0227 | 0.0000 | | | 0.0188 | 0.0000 | 2,074 | 8.7 | 3,067 | 12.8 |
| Yellow Birch | Vilas | 1599600 | C- | 34 | 202 | 314 | 1.55 | 0 | 0.00 | 0.0645 | 0.0000 | | | 0.0416 | 0.0000 | 3,620 | 17.9 | 7,546 | 37.4 |

* Bear (Barron Co.), Devils (Burnett Co.), Sand (Burnett Co.), Minnesuing (Douglas Co.), and Patten (Florence Co.) are not designated muskellunge waters

Appendix 3 2000 northern pike creel data. Catch and harvest rates are measured as fish per hour. Length is measured in inches. Effort is measured in hours.

| Lake Name | County Name | MWB CODE | Lake Acres | Angler Catch | Angler Catch /Acre | Angler Harvest | Angler Harvest/ Acre | Specific Catch Rate | Specific Harvest Rate | Number of fish Measured | Mean Length | General Catch Rate | General Harvest Rate | Angler Directed Effort | Directed Effort /Acre | Angler Total Effort | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bear | Barron | 2E+06 | 1,358 | 10,248 | 7.55 | 1,836 | 1.35 | 0.456 | 0.126 | 179 | 20.0 | 0.239 | 0.043 | 12,658 | 9.3 | 42,971 | 31.6 |
| Devils | Burnett | 2E+06 | 1,001 | 615 | 0.61 | 43 | 0.04 | 0.129 | 0.008 | 11 | 20.9 | 0.019 | 0.001 | 1,962 | 2.0 | 32,803 | 32.8 |
| Sand | Burnett | 2E+06 | 962 | 2,492 | 2.59 | 371 | 0.39 | 0.362 | 0.069 | 79 | 21.1 | 0.194 | 0.029 | 3,304 | 3.4 | 13,089 | 13.6 |
| Long | Chippewa | 2E+06 | 1,052 | 371 | 0.35 | 29 | 0.03 | 0.077 | 0.005 | 9 | 25.5 | 0.014 | 0.001 | 1,430 | 1.4 | 26,639 | 25.3 |
| Minnesuing | Douglas | 3E+06 | 432 | 2,883 | 6.67 | 393 | 0.91 | 0.402 | 0.084 | 134 | 21.3 | 0.251 | 0.034 | 3,728 | 8.6 | 11,499 | 26.6 |
| Patten | Florence | 653700 | 255 | 619 | 2.43 | 168 | 0.66 | 0.201 | 0.119 | 56 | 20.8 | 0.094 | 0.026 | 992 | 3.9 | 6,714 | 26.3 |
| Bearskin | Oneida | 2E+06 | 400 | 240 | 0.60 | 25 | 0.06 | 0.125 | 0.000 | 10 | 24.5 | 0.016 | 0.002 | 393 | 1.0 | 17,590 | 44.0 |
| Clear | Oneida | 977500 | 846 | 0 | 0.00 | 0 | 0.00 | 0.000 | 0.000 | | | 0.000 | 0.000 | 223 | 0.3 | 37,822 | 44.7 |
| Manson | Oneida | 2E+06 | 236 | 217 | 0.92 | 4 | 0.02 | 0.038 | 0.000 | 3 | 26.7 | 0.019 | 0.000 | 526 | 2.2 | 11,410 | 48.3 |
| Solberg | Price | 2E+06 | 859 | 1,826 | 2.13 | 515 | 0.60 | 0.140 | 0.049 | 124 | 20.7 | 0.055 | 0.016 | 7,747 | 9.0 | 33,230 | 38.7 |
| Grindstone | Sawyer | 2E+06 | 3,111 | 307 | 0.10 | 72 | 0.02 | 0.037 | 0.015 | 42 | 25.5 | 0.014 | 0.003 | 1,356 | 0.4 | 23,444 | 7.5 |
| Catfish | Vilas | 2E+06 | 1,012 | 777 | 0.77 | 117 | 0.12 | 0.119 | 0.044 | 9 | 23.3 | 0.030 | 0.005 | 1,000 | 1.0 | 25,983 | 25.7 |
| Crab | Vilas | 3E+06 | 949 | 223 | 0.23 | 14 | 0.01 | 0.035 | 0.035 | 2 | 21.0 | 0.023 | 0.001 | 403 | 0.4 | 12,342 | 13.0 |
| Cranberry | Vilas | 2E+06 | 956 | 451 | 0.47 | 18 | 0.02 | 0.000 | 0.000 | 2 | 21.6 | 0.022 | 0.001 | 154 | 0.2 | 25,807 | 27.0 |
| Duck | Vilas | 2E+06 | 108 | 134 | 1.24 | 96 | 0.89 | 0.223 | 0.179 | 2 | 24.5 | 0.055 | 0.039 | 372 | 3.4 | 6,182 | 57.2 |
| Eagle | Vilas | 2E+06 | 572 | 539 | 0.94 | 147 | 0.26 | 0.227 | 0.055 | 20 | 21.5 | 0.047 | 0.013 | 849 | 1.5 | 13,297 | 23.2 |
| Lynx | Vilas | 2E+06 | 22 | 48 | 2.18 | 0 | 0.00 | 0.000 | 0.000 | | | 0.065 | 0.000 | 183 | 8.3 | 3,184 | 144.7 |
| Otter | Vilas | 2E+06 | 196 | 78 | 0.40 | 35 | 0.18 | 0.000 | 0.000 | | | 0.048 | 0.022 | 49 | 0.3 | 6,372 | 32.5 |
| Scattering Rice | Vilas | 2E+06 | 267 | 150 | 0.56 | 21 | 0.08 | 0.000 | 0.000 | 2 | 26.3 | 0.034 | 0.005 | 120 | 0.4 | 9,070 | 34.0 |
| Snipe | Vilas | 1E+06 | 239 | 5 | 0.02 | 0 | 0.00 | 0.000 | 0.000 | | | 0.011 | 0.000 | 24 | 0.1 | 3,067 | 12.8 |
| Yellow Birch | Vilas | 2E+06 | 202 | 123 | 0.61 | 29 | 0.14 | 0.070 | 0.070 | 1 | 18.8 | 0.023 | 0.005 | 210 | 1.0 | 7,546 | 37.4 |

Appendix 4 2000 largemouth bass creel data. Catch and harvest rates are measured as fish per hour. Length is measured in inches. Effort is measured in hours

| Lake Name | County Name | MWB CODE | Lake Acres | Angler Catch | Angler Catch /Acre | Angler Harvest | Angler Harvest/ Acre | Specific Catch Rate | Specific Harvest Rate | Number of fish Measured | Mean Length | General Catch Rate | General Harvest Rate | Angler Directed Effort | Directed Effort /Acre | Angler Total Effort | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bear | Barron | 2105100 | 1,358 | 3,965 | 2.92 | 370 | 0.272 | 0.3022 | 0.0336 | 35 | 14.86 | 0.0925 | 0.0086 | 8,088 | 5.96 | 42,971 | 31.64 |
| Devils | Burnett | 2461100 | 1,001 | 20,337 | 20.32 | 485 | 0.485 | 2.4694 | 0.0448 | 101 | 14.80 | 0.6200 | 0.0148 | 3,598 | 3.59 | 32,803 | 32.77 |
| Sand | Burnett | 2495100 | 962 | 6,482 | 6.74 | 337 | 0.350 | 0.9155 | 0.0449 | 53 | 15.30 | 0.5164 | 0.0268 | 4,729 | 4.92 | 13,089 | 13.61 |
| Long | Chippewa | 2351400 | 1,052 | 97 | 0.09 | 4 | 0.004 | 0.0551 | 0.0034 | 1 | 18.00 | 0.0048 | 0.0002 | 1,208 | 1.15 | 26,639 | 25.32 |
| Minnesuing | Douglas | 2866200 | 432 | 388 | 0.90 | 25 | 0.058 | 0.2253 | 0.0064 | 10 | 16.20 | 0.0353 | 0.0023 | 706 | 1.63 | 11,499 | 26.62 |
| Patten | Florence | 653700 | 255 | 187 | 0.73 | 0 | 0.000 | 0.1504 | 0.0000 | | | 0.0348 | 0.0000 | 173 | 0.68 | 6,714 | 26.33 |
| Bearskin | Oneida | 1523600 | 400 | 36 | 0.09 | 0 | 0.000 | 0.0438 | 0.0000 | | | 0.0032 | 0.0000 | 481 | 1.20 | 17,590 | 43.98 |
| Clear | Oneida | 977500 | 846 | 6,417 | 7.59 | 291 | 0.344 | 0.4466 | 0.0323 | 14 | 14.88 | 0.1891 | 0.0086 | 9,011 | 10.65 | 37,822 | 44.71 |
| Manson | Oneida | 1517200 | 236 | 443 | 1.88 | 22 | 0.093 | 0.1686 | 0.0149 | 4 | 17.03 | 0.0435 | 0.0022 | 1,489 | 6.31 | 11,410 | 48.35 |
| Solberg | Price | 2242500 | 859 | 168 | 0.20 | 12 | 0.014 | 0.0546 | 0.0660 | 2 | 17.25 | 0.0057 | 0.0004 | 1,327 | 1.54 | 33,230 | 38.68 |
| Grindstone | Sawyer | 2391200 | 3,111 | 92 | 0.03 | 0 | 0.000 | 0.0333 | 0.0000 | | | 0.0058 | 0.0000 | 664 | 0.21 | 23,444 | 7.54 |
| Catfish | Vilas | 1603700 | 1,012 | 0 | 0.00 | 0 | 0.000 | 0.0000 | 0.0000 | | | 0.0000 | 0.0000 | 223 | 0.22 | 25,983 | 25.67 |
| Crab | Vilas | 2953500 | 949 | 13 | 0.01 | 0 | 0.000 | 0.1034 | 0.0000 | | | 0.0059 | 0.0000 | 70 | 0.07 | 12,342 | 13.01 |
| Cranberry | Vilas | 1603800 | 956 | 0 | 0.00 | 0 | 0.000 | 0.0000 | 0.0000 | | | 0.0000 | 0.0000 | 506 | 0.53 | 25,807 | 26.99 |
| Duck | Vilas | 1599900 | 108 | 0 | 0.00 | 0 | 0.000 | 0.0000 | 0.0000 | | | 0.0000 | 0.0000 | 591 | 5.47 | 6,182 | 57.24 |
| Eagle | Vilas | 1600200 | 572 | 0 | 0.00 | 0 | 0.000 | 0.0000 | 0.0000 | | | 0.0000 | 0.0000 | 420 | 0.73 | 13,297 | 23.25 |
| Lynx | Vilas | 1600000 | 22 | 25 | 1.14 | 0 | 0.000 | 0.1985 | 0.0000 | | | 0.0541 | 0.0000 | 125 | 5.68 | 3,184 | 144.73 |
| Otter | Vilas | 1600100 | 196 | 12 | 0.06 | 0 | 0.000 | 0.0253 | 0.0000 | | | 0.0040 | 0.0000 | 462 | 2.36 | 6,372 | 32.51 |
| Scattering Rice | Vilas | 1600600 | 267 | 0 | 0.00 | 0 | 0.000 | 0.0000 | 0.0000 | | | 0.0000 | 0.0000 | 6 | 0.02 | 9,070 | 33.97 |
| Snipe* | Vilas | 1018500 | 239 | | | | | | | | | | | | | 3,067 | 12.83 |
| Yellow Birch | Vilas | 1599600 | 202 | 33 | 0.16 | 17 | 0.084 | 0.0248 | 0.0248 | 1 | 15.10 | 0.0068 | 0.0034 | 671 | 3.32 | 7,546 | 37.36 |

*Snipe Lake, Vilas Co. is not designated a LMB lake

Appendix 5 2000 smallmouth bass creel data. Catch and harvest rates are measured as fish per hour. Length is measured in inches. Effort is measured in hours.

| Lake Name | County Name | MWB CODE | Lake Acres | Angler Catch | Angler Catch /Acre | Angler Harvest | Angler Harvest/ Acre | Specific Catch Rate | Specific Harvest Rate | Number of fish Measured | Mean Length | General Catch Rate | General Harvest Rate | Angler Directed Effort | Directed Effort /Acre | Angler Total Effort | Total Effort /Acre |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bear | Barron | 2105100 | 1,358 | 711 | 0.52 | 124 | 0.09 | 0.053 | 0.006 | 8 | 16.1 | 0.021 | 0.004 | 5,144 | 3.8 | 42,971 | 31.6 |
| Devils* | Burnett | 2461100 | 1,001 | | | | | | | | | | | | | 32,803 | 32.8 |
| Sand | Burnett | 2495100 | 962 | 43 | 0.04 | 0 | 0.00 | 0.000 | 0.000 | | | 0.014 | 0.000 | 0 | 0.0 | 13,089 | 13.6 |
| Long | Chippewa | 2351400 | 1,052 | 5,569 | 5.29 | 50 | 0.05 | 0.419 | 0.003 | 9 | 18.3 | 0.228 | 0.002 | 12,198 | 11.6 | 26,639 | 25.3 |
| Minnesuing | Douglas | 2866200 | 432 | 327 | 0.76 | 39 | 0.09 | 0.222 | 0.060 | 9 | 16.0 | 0.042 | 0.005 | 452 | 1.0 | 11,499 | 26.6 |
| Patten | Florence | 653700 | 255 | 80 | 0.31 | 11 | 0.04 | 0.343 | 0.171 | 2 | 14.9 | 0.023 | 0.003 | 32 | 0.1 | 6,714 | 26.3 |
| Bearskin | Oneida | 1523600 | 400 | 2,709 | 6.77 | 24 | 0.06 | 0.582 | 0.009 | 2 | 19.1 | 0.164 | 0.009 | 2,795 | 7.0 | 17,590 | 44.0 |
| Clear | Oneida | 977500 | 846 | 13,904 | 16.43 | 133 | 0.16 | 0.720 | 0.008 | 8 | 14.5 | 0.378 | 0.004 | 15,140 | 17.9 | 37,822 | 44.7 |
| Manson | Oneida | 1517200 | 236 | 2,506 | 10.62 | 41 | 0.17 | 0.664 | 0.006 | 5 | 16.8 | 0.237 | 0.004 | 2,506 | 10.6 | 11,410 | 48.3 |
| Solberg | Price | 2242500 | 859 | 36 | 0.04 | 0 | 0.00 | 0.038 | 0.000 | | | 0.003 | 0.000 | 460 | 0.5 | 33,230 | 38.7 |
| Grindstone | Sawyer | 2391200 | 3,111 | 2,793 | 0.90 | 219 | 0.07 | 0.318 | 0.027 | 30 | 15.7 | 0.145 | 0.011 | 5,864 | 1.9 | 23,444 | 7.5 |
| Catfish | Vilas | 1603700 | 1,012 | 268 | 0.26 | 17 | 0.02 | 0.016 | 0.005 | 2 | 18.8 | 0.011 | 0.001 | 429 | 0.4 | 25,983 | 25.7 |
| Crab | Vilas | 2953500 | 949 | 2,816 | 2.97 | 28 | 0.03 | 0.804 | 0.010 | 4 | 16.5 | 0.228 | 0.002 | 2,848 | 3.0 | 12,342 | 13.0 |
| Cranberry | Vilas | 1603800 | 956 | 562 | 0.59 | 18 | 0.02 | 0.146 | 0.000 | 1 | 15.5 | 0.024 | 0.001 | 1,326 | 1.4 | 25,807 | 27.0 |
| Duck | Vilas | 1599900 | 108 | 60 | 0.56 | 0 | 0.00 | 0.000 | 0.000 | | | 0.013 | 0.000 | 619 | 5.7 | 6,182 | 57.2 |
| Eagle | Vilas | 1600200 | 572 | 117 | 0.20 | 0 | 0.00 | 0.045 | 0.000 | | | 0.013 | 0.000 | 705 | 1.2 | 13,297 | 23.2 |
| Lynx | Vilas | 1600000 | 22 | 3 | 0.14 | 0 | 0.00 | 0.000 | 0.000 | | | 0.006 | 0.000 | 96 | 4.4 | 3,184 | 144.7 |
| Otter | Vilas | 1600100 | 196 | 124 | 0.63 | 21 | 0.11 | 0.149 | 0.000 | 1 | 15.2 | 0.035 | 0.006 | 689 | 3.5 | 6,372 | 32.5 |
| Scattering Rice | Vilas | 1600600 | 267 | 195 | 0.73 | 0 | 0.00 | 0.093 | 0.000 | | | 0.058 | 0.000 | 247 | 0.9 | 9,070 | 34.0 |
| Snipe | Vilas | 1018500 | 239 | 89 | 0.37 | 0 | 0.00 | 0.449 | 0.000 | | | 0.034 | 0.000 | 102 | 0.4 | 3,067 | 12.8 |
| Yellow Birch | Vilas | 1599600 | 202 | 312 | 1.54 | 7 | 0.03 | 0.061 | 0.008 | 1 | 18.0 | 0.050 | 0.001 | 820 | 4.1 | 7,546 | 37.4 |

*Devils Lake, Burnett Co. is not designated a SMB water