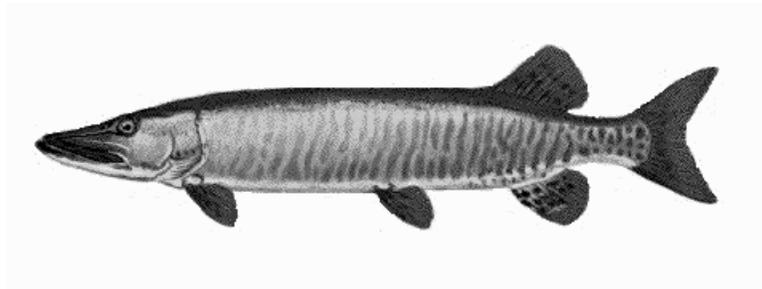


Wisconsin Department of Natural Resources

2004-2005 Ceded Territory

Fishery Assessment Report



**Scott P. Hansen**

Administrative Report # 62

Treaty Fisheries Assessment Unit  
Bureau of Fisheries Management  
Madison, Wisconsin  
April, 2008



Walleye illustration Virgil Beck



## TABLE OF CONTENTS

Table of contents			i
List of tables			ii
List of figures			ii
Introduction			1
Walleye population estimates			
	Methods		7
	Results		
		Adult walleye abundance	10
		Adult walleye size structure	15
		Total walleye abundance	17
Other population estimates			
	Methods		
		Bass	19
		Muskellunge	19
	Results		
		Bass	20
		Muskellunge	23
Young-of-the-year surveys			
	Introduction		24
	Methods		24
	Results		25
Creel surveys			
	Introduction		29
	Methods		29
	Results		
		Total Effort	31
		Walleye	
		Catch and effort	32
		Exploitation	34
		Muskellunge	35
		Northern pike	37
		Smallmouth bass	37
		Largemouth bass	39
References			41
Appendices			
	A1	Reduced daily bag limits for walleye angling	43
	A2	Walleye recruitment code descriptions	43
	B	WDNR lake sampling rotation	44
	C	Walleye population estimates	50
	D	Muskellunge population estimates	51
	E	Young-of-the-year walleye survey summary	52
	F	Creel survey summary	
		Walleye	64
		Muskellunge	65
		Northern pike	66
		Smallmouth bass	67
		Largemouth bass	68
	G	Walleye exploitation rates	69

## LIST OF TABLES

Lakes surveyed by WDNR sampling crews in spring 2004	8
Summary of walleye population estimates calculated by WDNR in 33 lakes in the Wisconsin portion of the Ceded Territory in 2004	11
Current and historic walleye population estimates by model and percent changes by year.	14
Proportional stock density and relative stock density – 18 values for walleyes for some population estimates conducted in 2004 and prior years, where available.	15
Bass population estimates for lakes sampled in the Wisconsin Ceded Territory in spring 2004	21
Adult muskellunge population estimates completed in 2004 in the Wisconsin Ceded Territory	23
Young-of-the-year indices in lakes categorized as being sustained primarily by stocking (ST or C-ST), separated by whether or not the lake was stocked in 2004	27
Lakes stocked with oxytetracycline (OTC) marked fish sampled in 2004	28
2004 adult walleye exploitation rates and 1995-2003 mean exploitation rates	34
Muskellunge catch and effort rates in the Wisconsin Ceded Territory, 1990-2004, by musky lake classification	35
Creel statistics for anglers targeting northern pike in 14 surveyed lakes in the Wisconsin Ceded Territory in 2004	37
Mean values calculated from 2004 and 1994-2003 smallmouth bass creel survey data	39
Mean estimates calculated from 2003 and 1994-2002 largemouth bass creel survey data	40

## LIST OF FIGURES

The Wisconsin Ceded Territory	1
Regression model for lakes in 2004 sustained primarily by natural reproduction (lakes <2000 acres)	4
Regression model for lakes in 2004 sustained primarily by stocking (lakes <2000 acres)	4
Regression model for lakes in 2004 with remnant walleye populations (lakes <2000 acres)	5
Regression model for in 2004 muskellunge populations (lakes <2000 acres)	6
Adult walleye population estimates for lakes sampled by WDNR in spring 2004, separated by primary walleye recruitment source for the population	12
Mean (+/- SEM) adult walleye population estimates in lakes with populations sustained primarily by natural reproduction, 1990-2004	13
Mean (+/- SEM) adult walleye population estimates in lakes with populations sustained primarily by stocking, 1990-2004	13

Size composition of adult walleye populations in lakes sampled in the eastern portion of the Wisconsin Ceded Territory in spring 2004	16
Size composition of adult walleye populations in lakes sampled in the western portion of the Wisconsin Ceded Territory in spring 2004	16
Mean (+/- SEM) total walleye population estimates in lakes with populations sustained primarily by natural reproduction, 1990-2004	17
Mean (+/- SEM) total walleye population estimates in lakes with populations sustained primarily by stocking, 1990-2004	18
Smallmouth bass population densities (fish $\geq$ 8.0 in) by size range for lakes sampled in the Wisconsin Ceded Territory in spring 2004	22
Largemouth bass population densities (fish $\geq$ 8.0 in) by size range for lakes sampled in the Wisconsin Ceded Territory in spring 2004	22
Mean number of young-of-the-year walleye caught per mile of shoreline electrofished in Wisconsin Ceded Territory walleye lakes during fall, 1990-2004	26
Total angler effort per acre in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1990-2004	31
Directed angler effort per acre for walleye in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1990 - 2004	32
Specific catch rate and harvest rates for walleye in surveyed lakes in the Wisconsin Ceded Territory, 1990-2004	33
Directed angler effort per lake surface acre for muskellunge in selected lakes in the Wisconsin Ceded Territory, 1990-2004	36
Specific catch rate for muskellunge in selected lakes in the Wisconsin Ceded Territory, 1990-2004	36
Directed angler effort per lake surface acre and specific catch rate for smallmouth bass in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1994-2004	38
Directed angler effort per lake surface acre and specific catch rate for largemouth bass in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1994-2003	40

This page intentionally blank

## INTRODUCTION

In 1983, the United States Court of Appeals for the Seventh Circuit affirmed the rights of six Wisconsin Chippewa Bands (Bad River, Lac Courte Oreilles, Lac du Flambeau, Sokaogon, Red Cliff, and St. Croix) to fish off-reservation waters in the Ceded Territory (Figure 1) of Wisconsin using traditional methods (e.g. spearing and netting) as determined by Treaties of 1837 and 1842 between the Bands and the United States government. Since then, the Wisconsin Department of Natural Resources (WDNR) has worked to integrate tribal harvest opportunities with sport fisheries in the Ceded Territory. In addition, WDNR works with the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) to establish safe harvest quotas for walleye and *Sander vitreus* and muskellunge *Esox masquinongy* in the Ceded Territory and to monitor the shared fisheries.

To facilitate and manage shared tribal and recreational angler harvest, an intensive data collection and analysis effort began in 1987, and developed into the current program in 1990. This effort has evolved 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 information essential to protecting Ceded Territory fish populations from over-exploitation by the combined tribal and recreational fisheries.

Walleye and muskellunge are tremendously popular with Wisconsin anglers and are important economically. Chippewa tribal members rely on these fisheries for preservation of their cultural heritage and as a food source. The majority of tribal harvest occurs during spring while walleye and muskellunge are congregated in shallow water to spawn and are readily taken by spear. A smaller number are harvested throughout the remainder of



**Figure 1:** The Wisconsin Ceded Territory (shaded).

the year with a variety of capture methods including spearing, gill netting, fyke netting, set-lining, 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 of these fisheries, and could result in long lasting and potentially irreversible damage.

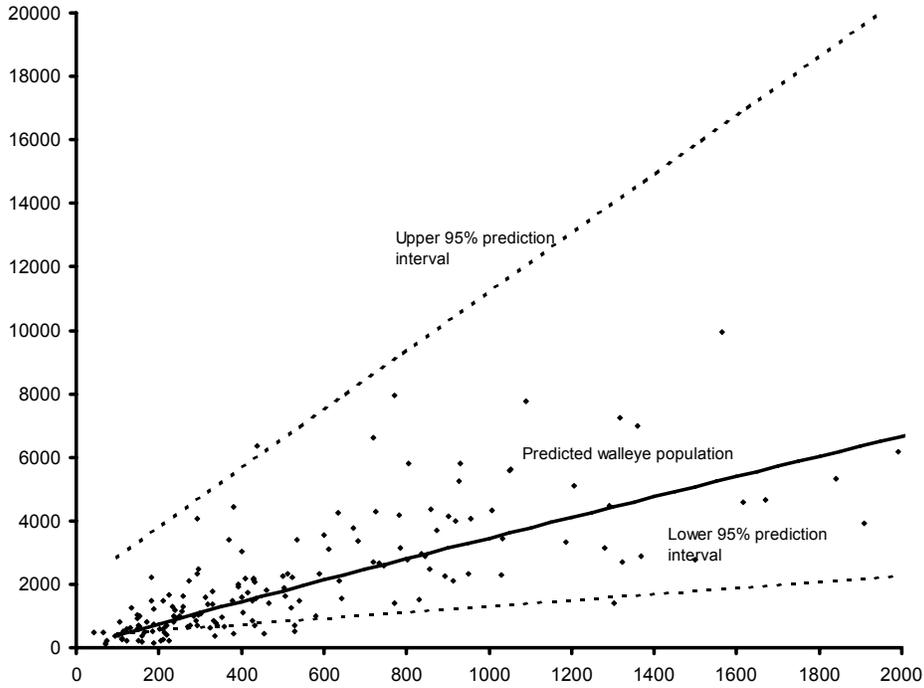
WDNR evaluates walleye populations using three primary methods: spring adult and total population estimates, fall age-0 relative abundance estimates, and creel surveys of angler catch and harvest. GLIFWC and the United States Fish and Wildlife Service conduct spring adult population estimates and fall age-0 surveys on additional lakes each year. GLIFWC censuses tribal harvest of all species in open-water, and conducts periodic creel surveys to monitor harvest of muskellunge through the ice. These methods provide information on the current harvestable population, an indication of the future harvestable population, and the degree of exploitation in the walleye fishery. WDNR also conducts muskellunge and black bass *Micropterus* spp. population estimates each year, but does not quantify muskellunge or black bass recruitment.

Population estimates are critical to the management of Ceded Territory fisheries. Fish populations in general and walleye populations in particular are extremely variable and can change dramatically from year to year. Precise population estimates allow biologists to calculate the number of fish that may safely be harvested from a population based on knowledge of the fishery and the biology of the species in question. This allows utilization of the resource while minimizing the potential of jeopardizing future abundance or presence of a species. However, the 921 walleye lakes and 633 muskellunge lakes in the Wisconsin Ceded Territory for 2004 make it logistically impossible to obtain precise population estimates from all lakes in the Ceded Territory in one year. Therefore, WDNR selects 15-20 lakes each year for adult walleye population estimates and nine-month creel surveys, using a stratified random sampling method. The data collected are incorporated into a database that can be used to examine temporal, within- and between-region trends in walleye populations and angler effort. A continuing randomized survey of lakes provides information on trends in these populations.

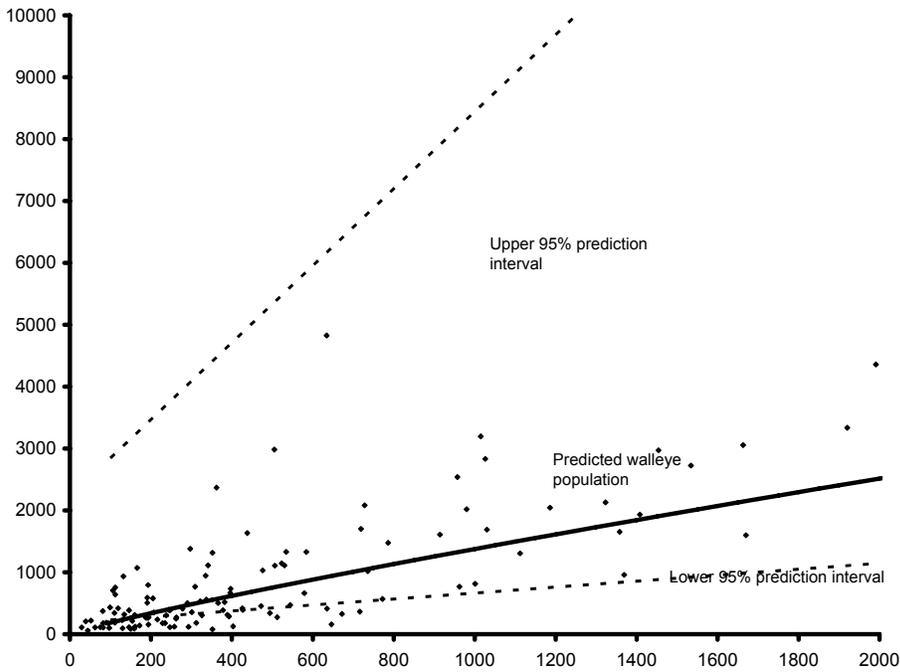
The Wisconsin joint fishery is managed by calculating total allowable catch for walleye and muskellunge on a lake-by-lake basis. "Safe harvest" is set at a level such that the risk of exceeding 35%

exploitation for walleye and 27% for muskellunge is less than 1-in-40 (Hansen, 1989; Hansen et al. 1991). A sliding bag limit system is employed to manage angler harvest. Daily angler bag limits are reduced based on the level of spring tribal harvest (Appendix A1). This risk-management system differs from a quota system, which would potentially close fisheries once a harvest cap was reached.

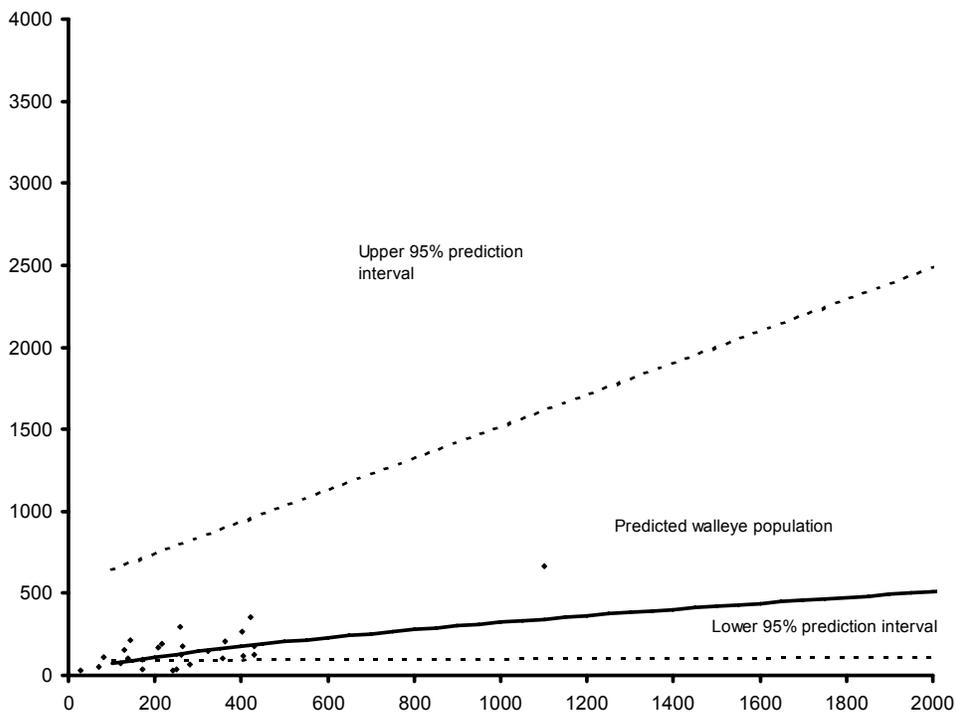
Safe harvest levels are set on all Ceded Territory walleye and muskellunge lakes using the most accurate population estimates available. The most reliable estimates are clearly taken from mark-recapture estimates performed in the same year for which safe harvest is calculated. However, because the temporal overlap of the spearing season and spring population estimate sampling make this logistically impossible, these population estimates are used to estimate abundance for the following two years. In addition, given the year-to-year variability associated with fish populations, safety factors are incorporated to account for the largest potential decrease between years (Hansen et al. 1991). Population estimates older than two years are not considered to accurately represent a lake's current population and are not directly used to set safe harvest. In this case, an estimate is calculated from a regression model based on lake acreage as a predictor of population abundance (Hansen 1989). Each year, new population estimates are incorporated into the regression model, but no estimates are removed. Lakes with multiple population estimates are averaged before being entered into the regression model. Three regression models (Figures 2-4) are used depending on the primary source of walleye recruitment in the lake (Nate et al. 2000). Separate models are used 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 intermittent natural reproduction (REM) (US Department of the Interior 1991; Appendix A2). These models are used to set safe harvest yearly for the majority of the walleye lakes in the Ceded Territory.



**Figure 2:** Regression model used to set 2004 safe harvest levels for lakes sustained primarily by natural reproduction (lakes <2000 acres).

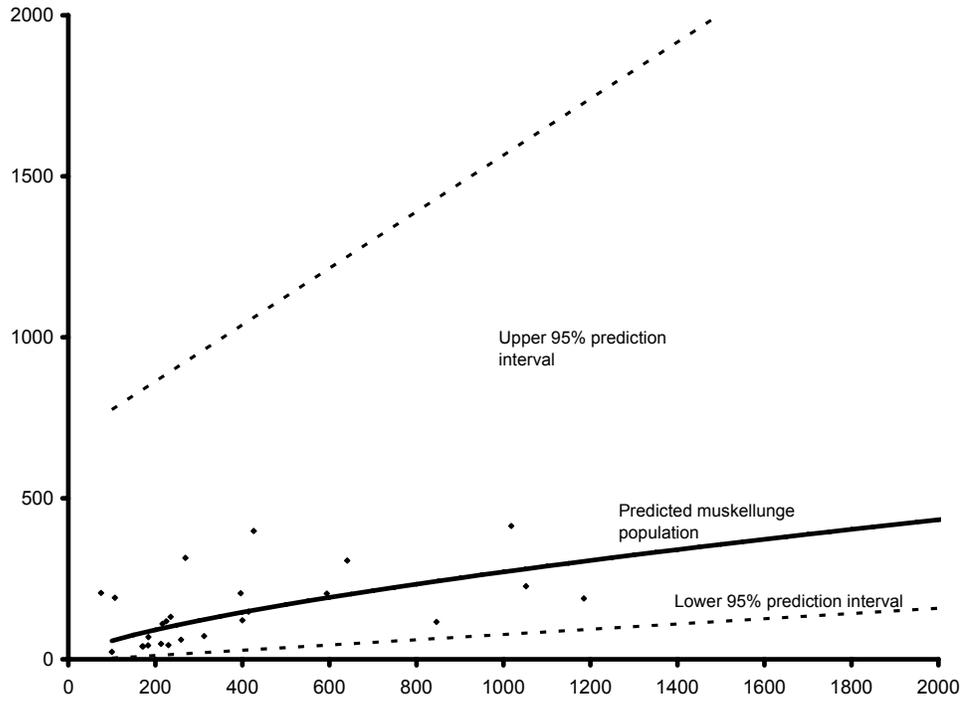


**Figure 3:** Regression model used to set 2004 safe harvest levels for lakes sustained primarily by stocking (lakes <2000 acres).



**Figure 4:** Regression model used to set 2004 safe harvest levels for lakes with remnant walleye populations (lakes <2000 acres).

A similar method is employed to set safe harvest for muskellunge. Muskellunge population estimates were conducted over a two-year period, with marking in year-1 and recapture in year-2. Because muskellunge mark-recapture surveys are conducted over a two year period, a population estimate for a given lake is employed to directly set safe harvest only once. In the absence of a recent population estimate, a regression model is used to make an estimate of muskellunge abundance. As with walleye, population predictions in this model are based on lake acreage, but a single model is used for all muskellunge waters in the Ceded Territory (Figure 5).



**Figure 5:** Regression model used to set 2004 safe harvest levels for muskellunge populations (lakes <2000 acres). A sub-sample of muskellunge population estimate data points were used here for illustrative clarity.

## WALLEYE POPULATION ESTIMATES

### Methods

The lakes sampled by the WDNR in 2004-05 were chosen using a stratified random design. Lakes in the Ceded Territory were stratified by size, historic level of tribal harvest, and primary walleye recruitment source (Appendix B). In addition, one large lake or lake chain was chosen to be surveyed each year. The calculation of population estimates on these lakes allowed WDNR to update the population status of each lake. In 2004, adult walleye populations were estimated in 33 lakes, ranging in size from 109 to 3,816 acres. This was the first year that the entire Manitowish chain of lakes was surveyed. These 33 lakes comprised a range of walleye recruitment categorizations and angler regulations (Table 1).

Walleyes were captured for marking in the spring shortly after ice out with fyke nets. Each fish was measured (total length; inches and tenths) and fin-clipped. Adult (mature) walleyes were defined as all fish for which sex could be determined and all fish 15" or longer. Adult walleyes were given a lake-specific mark. Walleyes of unknown sex less than 15" long were classified as juveniles (immature) and were marked with a different lake-specific fin clip. Marking effort was based on a goal for total marks of 10% of the anticipated spawning population estimate. Where no preliminary estimate is available, walleyes are marked at a target number of one adult per acre. Marking continued until the target number was reached or spent females began appearing in the fyke nets.

**Table 1:** Lakes surveyed by WDNR sampling crews in spring 2004. Each lake is designated with a unique Water Body Identification Code (WBIC). Size limits reflect 2004-2005 minimum and slot length harvest regulations for each lake. Recruitment codes NR and C-NR are in the natural recruitment model. Recruitment codes C-ST and ST are in the stocked model and 0-ST is in the remnant model (Appendix A-2).

<b>WBIC</b>	<b>County</b>	<b>Lake</b>	<b>Acres</b>	<b>Size Limit (in)</b>	<b>Recruitment code</b>
2079700	Barron	Lower Turtle	276	15	ST
2742500	Bayfield	Bony	191	no min, 1>14	C-NR
2742100	Bayfield	Middle Eau Claire	902	no min, 1>14	C-NR
2742700	Bayfield	Upper Eau Claire	996	15	C-NR
2678100	Burnett	Lipsett	393	15	ST
677400	Florence	Long	340	15	NONE
653700	Florence	Patten	255	no min, 1>14	NR
692400	Forest	Butternut	1292	no min, 14-18 slot, 1>18	C-NR
394400	Forest	Metonga	1991	15	C-ST
494200	Langlade	Rose	112	no min, 1>14	C-ST
979100	Lincoln	Crystal	109	15	0-ST
1555500	Lincoln	Muskellunge	167	15	ST
1537800	Oneida	Booth	207	15	ST
1598900	Oneida	Indian	397	15	NR
2490500	Polk	Pipe/North Pipe	342	15	C-NR
1515200	Price	North Spirit	213	no min, 14-18 slot, 1>18	0-ST
2401300	Sawyer	L Black	129	15	0-ST
2418600	Sawyer	Lost Land	1304	none	C-ST
2417000	Sawyer	Teal	1049	none	NR
2435000	Sawyer	Tiger Cat Flwg/ Burns/Placid	1015	15	0-ST
2615100	St. Croix	Cedar	1100	15	NR
2338800	Vilas	Big Crooked	682	none	NR
2339900	Vilas	Escanaba	293	28	NR
2329600	Vilas	Alder	274	no min, 1>14	C-NR
2329000	Vilas	Clear	555	no min, 1>14	C-NR
2334400	Vilas	Island	1023	no min, 1>14	C-NR
2329400	Vilas	Manitowish/Little Star	750	no min, 1>14	C-NR
2327500	Vilas	Rest	608	no min, 1>14	C-NR
2329300	Vilas	Spider/Stone/Fawn	485	no min, 1>14	C-NR
2329800	Vilas	Wild Rice	379	no min, 1>14	C-NR
2328700	Vilas	Papoose	428	15	C-NR
2331600	Vilas	Trout	3816	15	C-ST
2336100	Vilas	Wolf	393	15	NR

To estimate adult abundance, walleyes were recaptured with AC electrofishing gear 1-4 days after netting. The entire shoreline (including islands) was sampled to ensure equal vulnerability of marked and unmarked walleyes to capture. All walleyes in the recapture run were measured and examined for marks. For most lakes, all unmarked walleyes were marked with a fin clip so that total population abundance could be estimated. To estimate total walleye abundance, a second electrofishing recapture run was conducted 3-24 days after the first recapture run. Again the entire shoreline (including islands) of the lake was sampled. Population estimates were calculated with the Chapman modification of the Petersen Estimator using the equation:

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

where N was the population estimate, M was the total number of marked fish in the lake, C was the total number of fish captured in the recapture sample, and R was the total number of marked fish captured. The Chapman Modification method was 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 ( $\leq 11.9$  in, 12- 14.9 in, 15- 19.9 in, and  $\geq 20.0$  in) and summed to estimate adult and total abundance and variance for each lake (Appendix C). If spearing occurred after the start of the marking period, the number of marked walleyes speared was 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). If marked fish did not appear to be recorded consistently in the spear harvest, no spearing correction was made.

Fish size structure is often described using proportional stock density (PSD) and relative stock density (RSD) as reviewed by Anderson et al. (1996). Proportional stock density (PSD) is calculated as

$$PSD = \frac{\text{number of fish } \geq \text{minimum quality length}}{\text{number of fish } \geq \text{minimum stock length}} \times 100$$

whereas relative stock density (RSD) is calculated as

$$RSD = \frac{\text{number of fish } \geq \text{specified length}}{\text{number of fish } \geq \text{minimum stock length}} \times 100$$

Length-frequency data were analyzed to reflect the proportion of stock size fish that is made up by fish of quality length (PSD) and specific sizes desirable to anglers (RSD). Stock size for walleyes, those fish that are effectively sampled by traditional fisheries gear and the minimum size acceptable for recreational value, is typically 10 inches whereas minimum quality length is 15 inches. Relative stock densities are calculated using various lengths categories based on percentages of world record length.

Because the composition of fish present during spring sampling generally consists of adult fish, there is an inherent size structure bias making the 10 inch stock size inappropriate. Therefore, for the purpose of this report, stock length is set at 12 inches for PSD and RSD calculations. Quality length fish size of 15 inches was used for PSD calculations. For RSD we report specified lengths of 18 inches which fall into the “preferred” length category. Walleye length data were taken from WDNR statewide database and only data that were entered and proofed are reported here.

## **Results**

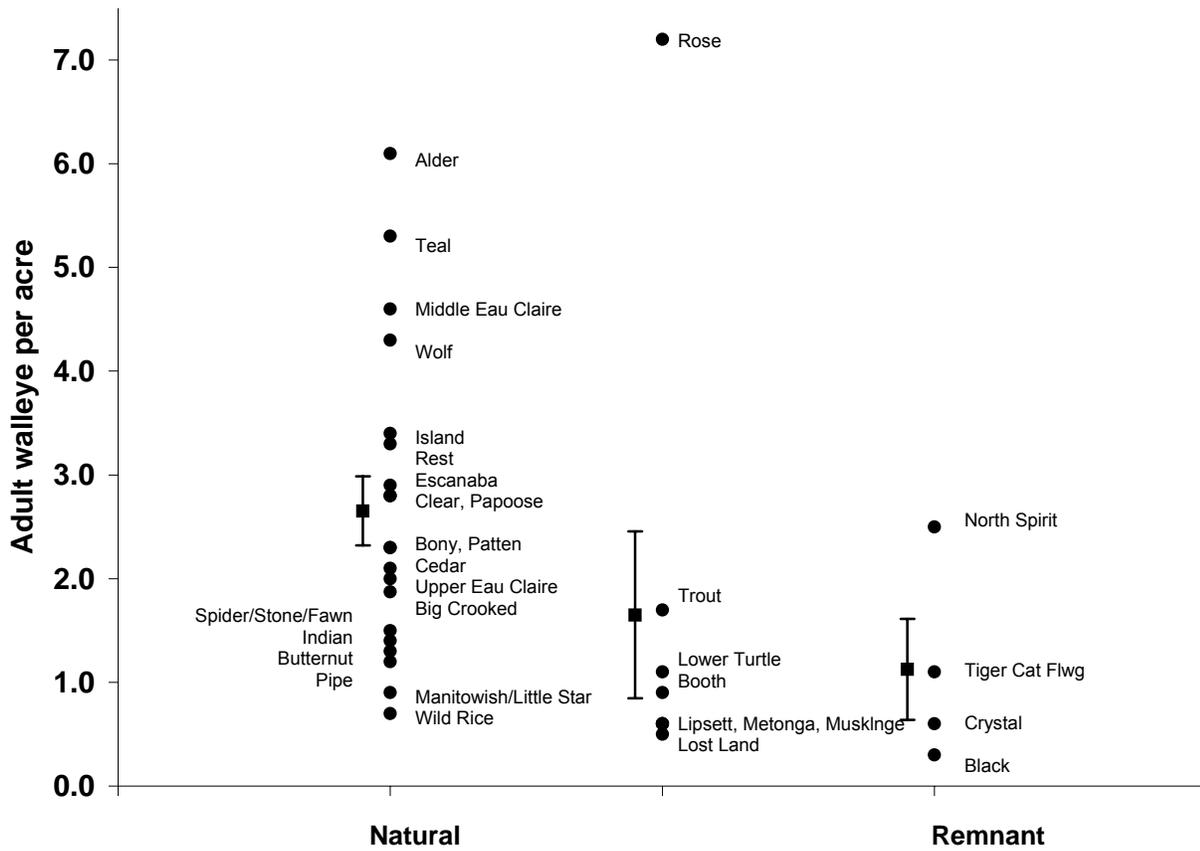
### **Adult walleye abundance**

Adult walleye minimum and maximum densities were <0.1 and 7.2 fish/acre, respectively, with a mean of 2.18 (Appendix C). Adult densities were generally greater in lakes classified as NR, compared to lakes classified as ST (Table 2, Figure 6). This has been the case historically (Hewett and Simonson 1998), however the differences were not significant in 2004 (t-test (equal variances)  $t = 1.39$ ,  $df = 26$ ,  $P = 0.18$ ). Lakes classified as “remnant”, which includes stocked waters where the population had not been established to a harvestable population, had average adult walleye densities slightly less than lakes in the stocked model in 2004. Lakes with “exempt” regulation classifications had slightly higher walleye densities than lakes with a 15” minimum size limit within the natural model however the differences were not significant. Across all Wisconsin Ceded Territory Lakes there have been no statistically detectable trends in adult walleye density in natural-( $F = 2.54$ ,  $df = 1,308$ ,  $P = 0.11$ ) or stocked-model ( $F = 0.16$ ,  $df = 1,116$ ,  $P = 0.69$ ) walleye waters since 1990 (Figures 7 and 8). Adult population estimates with a coefficient of variation greater than 40% were not included in these analyses because of restrictions that such estimates not used in setting safe harvest levels.

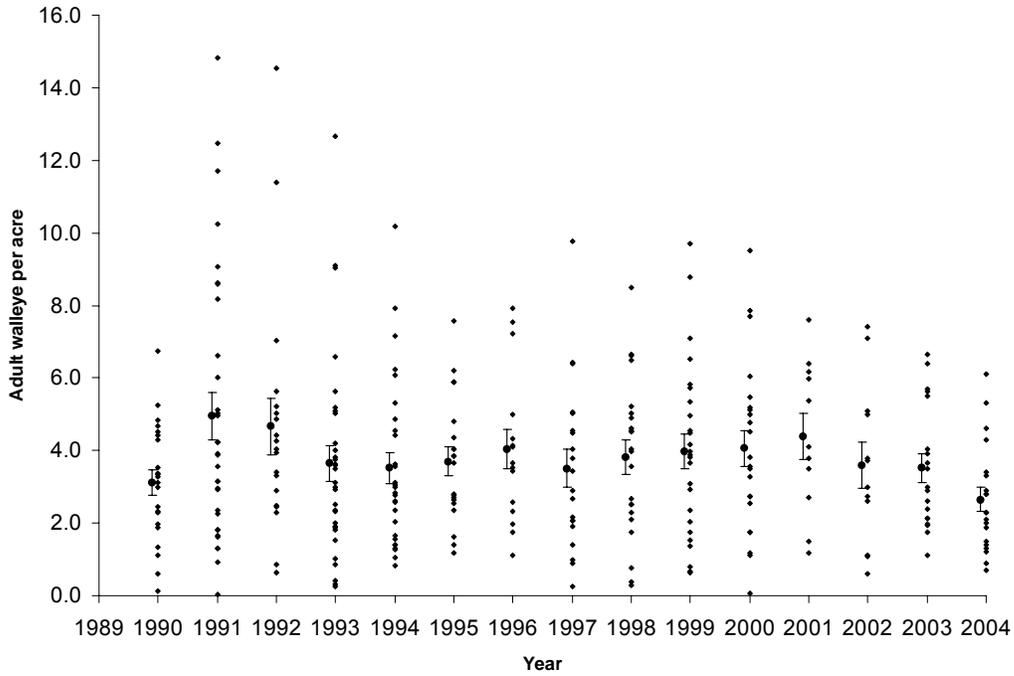
Excluding the three WDNR research lakes (Escanaba, Big Crooked, and Wolf, Vilas Co.), 22 lakes or chains sampled in 2004 had at least one historic WDNR adult walleye population estimate (Table 3). All six lakes sustained primarily by stocking suffered a reduction in population levels since their last population estimate. Of these six, Lower Turtle (Vilas Co) and Lost Land (Sawyer Co) were considered naturally reproducing lakes for previous population estimates. Of 16 lakes or chains surveyed in 2004 with historic population estimates in the natural recruitment model, five demonstrated increased populations since last being surveyed. Cedar Lake (St. Croix Co) had the greatest increase in population and at the time of its last population estimate (1994) was classified as a remnant lake. Ten lakes or chains that were classified as natural recruitment lakes (NR) at the time of the last population estimate have since been stocked to supplement natural reproduction (C-NR). However, the lakes of the Manitowish Chain make up seven of these ten. This chain-wide change in recruitment code was due to the stocking event that took place on Wild Rice Lake. Butternut Lake (Forest Co) has declined since the 1990s. Young walleye have been showing up in fall and spring surveys for this lake but apparently don't to make it to maturity (August, 2004 TWG meeting minutes).

**Table 2:** Summary of mean ( $\pm 1$  SE), minimum, and maximum walleye population estimates (PE) per acre in 33 lakes in the Wisconsin portion of the Ceded Territory in 2004. Adult PEs include all sexable fish and unknowns >15". Total PEs include all sampled walleyes. Summary statistics are grouped for comparisons by recruitment source and lake harvest length regulations. "Model" refers to the primary recruitment source in each lake. Lakes with no minimum size limit or a 1 fish >14" were classified as "exempt". Lakes with a 14-18" slot size limit were classified as "slot".

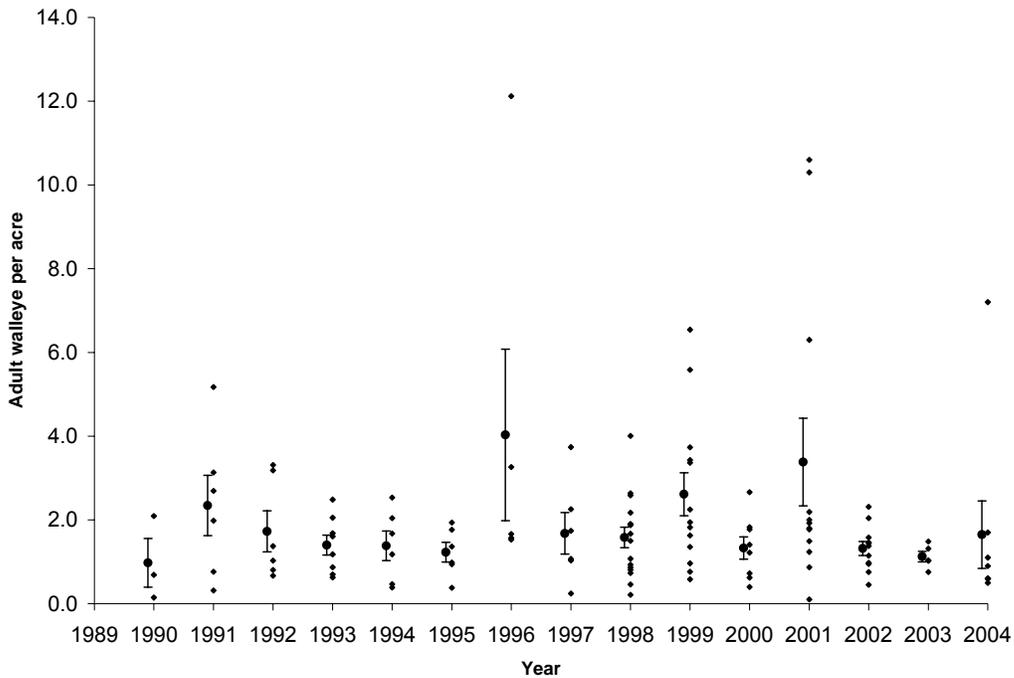
Model	Regulation	N	Adult PE/Acre			N	Total PE/Acre		
			Mean	Min	Max		Mean	Min	Max
Natural		20	2.6 (0.33)	0.7	6.1	17	8.9 (2.39)	0.9	39.7
Stocked		8	1.6 (0.80)	0.5	7.2	8	4.0 (0.22)	0.5	8.2
Remnant		4	1.1 (0.49)	0.3	2.5	3	0.9 (1.00)	0.6	1.3
None		1	<0.1			1	<0.1		
Natural	15" min.	6	2.3 (0.46)	1.2	4.3	5	4.6 (1.44)	0.9	8.3
	exempt	12	2.9 (0.49)	0.7	6.1	11	11.6 (3.41)	2.8	39.7
	slot	1	1.3	1.3	1.3	1	1.1	1.1	1.1
	28" min.	1	2.9	2.9	2.9				



**Figure 6:** Adult walleye population density estimates for lakes sampled by WDNR in spring 2004, separated by primary walleye recruitment source for the population. Solid squares represent mean ( $\pm$  SEM) adult walleye densities within each recruitment source. Solid circles represent lake-specific adult walleye densities with each lake name labeled.



**Figure 7.** Adult walleye population density estimates recorded in Wisconsin Ceded Territory Lakes with populations sustained primarily by natural reproduction, 1990 – 2004. Large circles represent yearly means ( $\pm$ SEM). Small circles represent individual lake density estimates.



**Figure 8.** Adult walleye population density estimates recorded in Wisconsin Ceded Territory Lakes with populations sustained primarily by stocking, 1990 – 2004. Large circles represent yearly means ( $\pm$ SEM). Small circles represent individual lake density estimates.

**Table 3.** Comparison of current and historic walleye population estimates and percent change by recruitment model for surveyed lakes.

County	Lake	Acres	Year	Recruitment Code	Adult PE	Density (adults/acre)	Percent Change
<b>Stocked</b>							
Barron	Lower Turtle	276	2004	ST	299	1.1	- 21
			1999	NR	379	1.4	
Burnett	Lipsett	393	2004	ST	245	0.6	- 42
			1997	C-ST	420	1.1	174
			1994	C-ST	153	0.4	
Forest	Metonga	1991	2004	C-ST	1199	0.6	- 66
			2001	C-ST	3518	1.8	- 29
			1992	C-	4987	2.5	
Oneida	Booth	207	2004	ST	193	0.9	- 13
			1998	C-ST	222	1.1	
Sawyer	Lost Land	1304	2004	C-ST	698	0.5	- 12
			1990	NR	792	0.6	
Vilas	Trout	3816	2004	C-ST	6520	1.7	- 16
			2001	C-ST	7785	2.0	- 20
			1994	C-ST	9673	2.5	
<b>Natural</b>							
Bayfield	Middle Eau Claire	902	2004	C-NR	4128	4.6	< 1
			1998	C-NR	4099	4.5	- 10
			1993	C-NR	4577	5.1	
Bayfield	Bony	191	2004	C-NR	432	2.3	- 12
			1998	C-ST	494	2.6	
Bayfield	Upper Eau Claire	996	2004	C-NR	2015	2.0	- 16
			1993	C-NR	2415	2.4	
Florence	Patten	255	2004	NR	584	2.3	- 10
			2000	NR	649	2.5	
Forest	Butternut	1292	2004	C-NR	1703	1.3	- 74
			1997	NR	6525	5.1	- 3
			1992	NR	6721	5.2	
Polk	Pipe*	342	2004	C-NR	421	1.2	- 33
			1995	NR	633	1.9	
Sawyer	Teal	1049	2004	NR	5521	5.3	19
			1990	NR	4645	4.4	
St. Croix	Cedar	1100	2004	NR	2261	2.1	252
			1994	NR-2	643	0.6	
Vilas	Rest	608	2004	C-NR	1994	3.3	7
			1999	NR	1867	3.1	- 24
			1993	NR	2450	4.0	
Vilas	Papoose	428	2004	C-NR	1187	2.8	45
			1997	NR	819	1.9	- 37
			1994	NR	1306	3.1	
Vilas	Clear	555	2004	C-NR	1576	2.8	- 2
			1999	NR	1616	2.9	- 19
			1993	NR	1987	3.6	
Vilas	Spider/Stone/Fawn	485	2004	C-NR	708	1.5	**
	Spider/Stone	411	1999	NR	713	1.7	
Vilas	Manitowish/Little	750	2004	C-NR	712	0.9	- 53
			1999	NR	1524	2.0	
Vilas	Alder	274	2004	C-NR	1664	6.1	- 37
			1999	NR	2662	9.7	
Vilas	Wild Rice	379	2004	C-NR	264	0.7	6
			1999	NR	250	0.7	
Vilas	Island	1023	2004	C-NR	3500	3.4	- 48
			1999	NR	6683	6.5	86
			1993	NR	3591	3.5	

\* Includes North Pipe

\*\* Not directly comparable due to different lake combination; for general reference only

## Adult walleye size structure

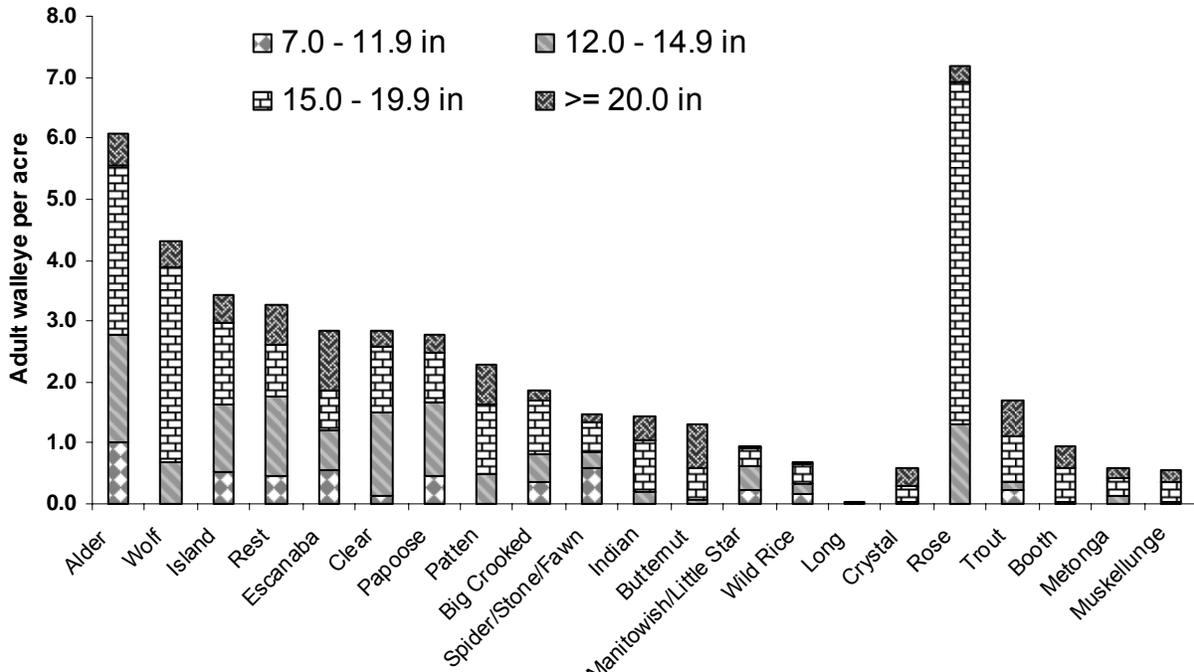
Adult walleye populations were estimated for each lake by length class (Figures 9 and 10). Data were available for calculation of PSD and RSD-18 for six stocked lakes, 19 natural lakes, and one remnant lake sampled in 2004 (Table 4). Historic PSD and RSD-18 were also calculated for these lakes where data were available. In 2004, average size structure was greater for stocked lakes than natural lakes with PSDs and RSDs of 76 and 43 for stocked lakes while PSDs and RSDs for natural lakes were 60 and 26, respectively.

**Table 4.** Proportional stock density and relative stock density - 18 values for walleyes for some population estimates were conducted in 2004 and prior years, where available.

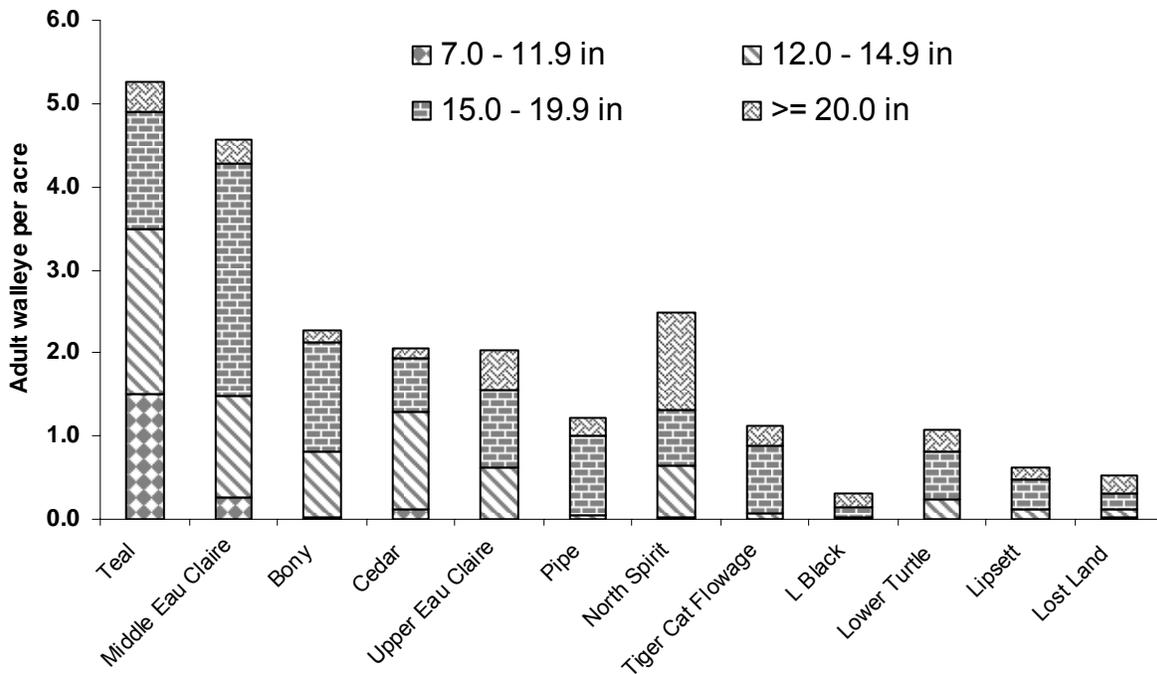
County	Lake	Acres	Year	Recruitment Code	Walleye Regulation	PSD	RSD-18
<b><i>Stocked</i></b>							
Barron	Lower Turtle	276	2004	ST	15	76	
Burnett	Lipsett	393	2004	ST	15	69	
Forest	Metonga	1991	2004	C-ST	15	77	
Oneida	Booth	207	2004	ST	15	97	
			1998	C-ST	15	88	
Sawyer	Lost Land	1304	2004	C-ST	none	54	
Vilas	Trout	3816	2004	C-ST	15	84	
<b><i>Natural</i></b>							
Bayfield	Middle Eau Claire	902	2004	C-NR	no min, 1>14	65	
Bayfield	Bony	191	2004	C-NR	no min, 1>14	66	
Bayfield	Upper Eau Claire	996	2004	C-NR	15	66	
	*		2002	C-NR	15	63	
Florence	Patten	255	2004	NR	no min, 1>14	77	
Forest	Butternut	1292	2004	C-NR	no min, 14-18 slot, 1>18	94	
Oneida	Indian	397	2004	NR	15	82	
Polk	Pipe	342	2004	C-NR	15	94	
Sawyer	Teal	1049	2004	NR	none	40	
St. Croix	Cedar	1100	2004	NR	15	27	
Vilas	Rest	608	2004	C-NR	no min, 1>14	41	
Vilas	Papoose	428	2004	C-NR	15	31	
			1997	NR	15	34	
Vilas	Clear	555	2004	C-NR	no min, 1>14	52	
Vilas	Spider	485	2004	C-NR	no min, 1>14	55	
	Stone		2004	C-NR	no min, 1>14	59	
	Fawn		2004	C-NR	no min, 1>14	70	
Vilas	Manitowish	750	2004	C-NR	no min, 1>14	57	
	Little Star		2004	C-NR	no min, 1>14	48	
Vilas	Alder	274	2004	C-NR	no min, 1>14	53	
Vilas	Wild Rice	379	2004	C-NR	no min, 1>14	53	
<b><i>REM</i></b>							
Sawyer	Tiger Cat Flowage		2004	0-ST	15	86	
	**		2000	0-ST	15	41	

\* Upper Eau Claire Lake in 2002 not surveyed for Ceded Territory spring population estimate information; data were from one day sampling effort

\*\* Tiger Cat Flowage in 2000 not surveyed for Ceded Territory spring population estimate information; data were from one day sampling effort



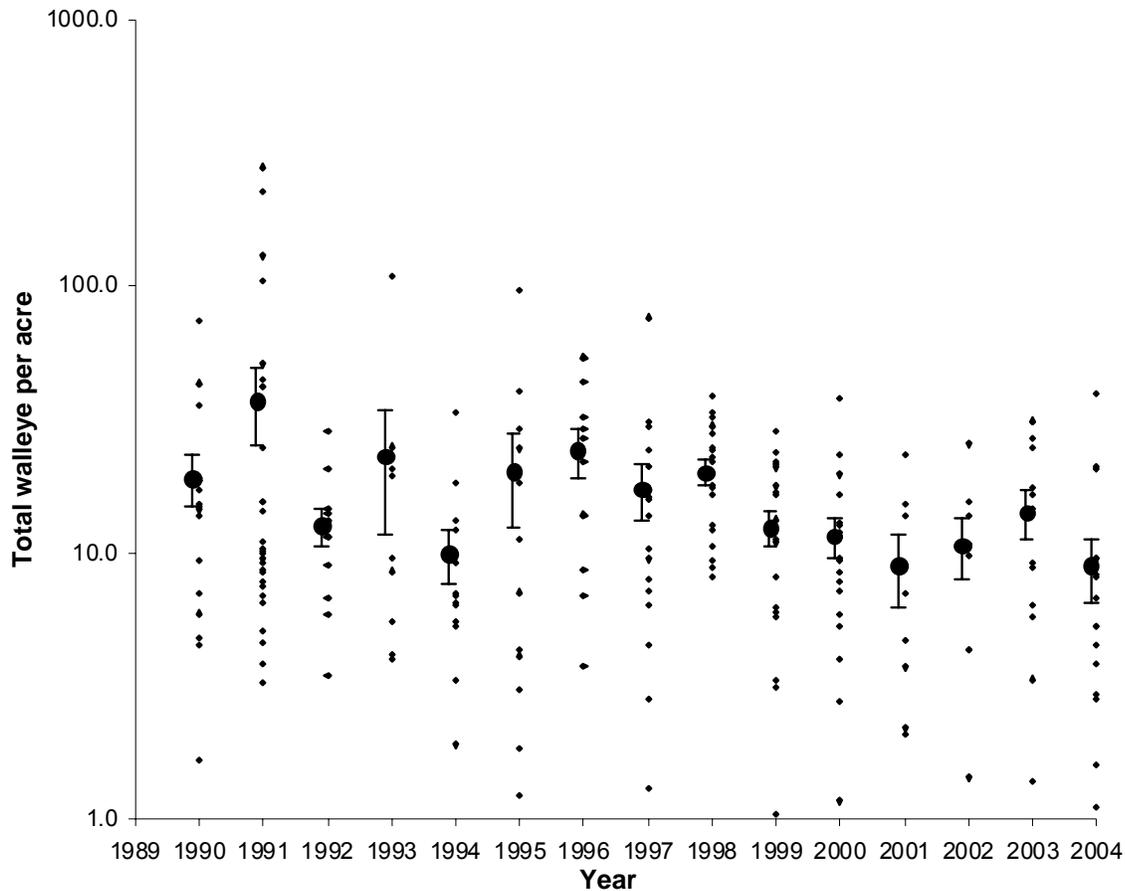
**Figure 9.** Size composition of adult walleye populations in lakes sampled in the eastern portion of the Wisconsin Ceded Territory in spring 2004.



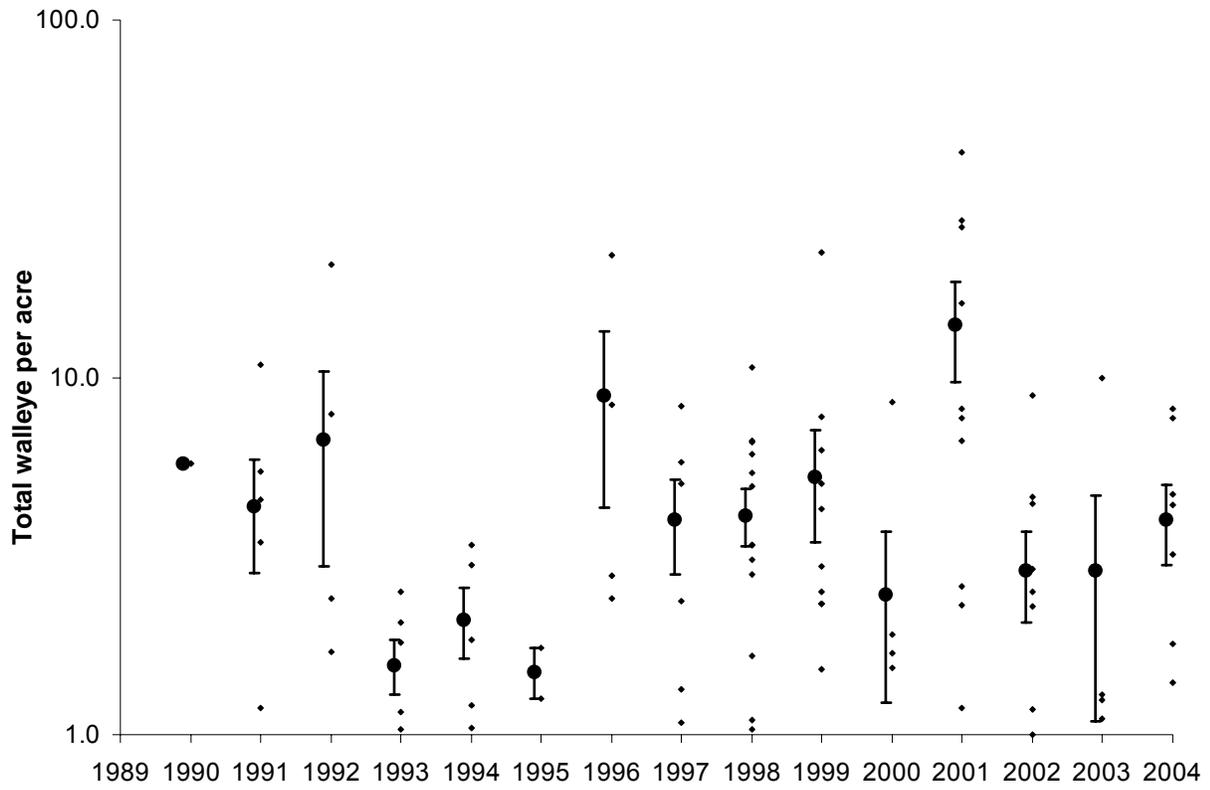
**Figure 10.** Size composition of adult walleye populations in lakes sampled in the western portion of the Wisconsin Ceded Territory in spring 2004.

### Total walleye abundance

Total walleye abundance was estimated in 29 lakes in the Wisconsin Ceded Territory in spring 2004 (Appendix C). Total walleye densities varied widely in 2004, and total population estimates are generally marked by wider variation than adult PEs within each estimate (Table 2). Mean total walleye density ranged from < 0.1 to 39.7 fish per acre with means of 8.9, 4.0, and 0.9 fish/acre in natural, stocked, and remnant populations, respectively. There was no statistical difference in total walleye density between natural and stocked model lakes in 2004 (t-test (unequal variances),  $t = 1.26$ ,  $df = 18.8$ ,  $P = 0.22$ ). Across all Wisconsin Ceded Territory Lakes, there have been no statistically detectable trends in total walleye abundance in natural- ( $F = 2.63$ ,  $df = 1,180$ ,  $P = 0.11$ ) or stocked-model lakes ( $F = 0.58$ ,  $df = 1, 83$ ,  $P = 0.45$ ) since 1990 (Figures 11 and 12). Adult population estimates with a coefficient of variation greater than 40% were not included in these analyses.



**Figure 11:** Total walleye population density estimates recorded in Wisconsin Ceded Territory Lakes with populations sustained primarily by natural reproduction, 1990-2004. Note log-scale on y-axis. Large circles represent yearly means ( $\pm$  SEM). Small circles represent individual lake density estimates.



**Figure 12:** Total walleye population density estimates recorded in Wisconsin Ceded Territory Lakes with populations sustained primarily by stocking, 1990-2004. Note log-scale on y-axis. Large circles represent yearly means ( $\pm$  SEM). Small circles represent individual lake density estimates.

## OTHER POPULATION ESTIMATES

### Methods

#### ***Largemouth and smallmouth bass***

Largemouth *Micropterus salmoides* and smallmouth *Micropterus dolomieu* bass encountered during fyke netting and subsequent electrofishing runs (adult and total walleye recapture runs) were marked by fin clips. Bass larger than 12.0" were given the same primary (adult) fin-clip as was given to walleye for the lake in which they were encountered. Bass 8.0-11.9" were given the secondary (juvenile) fin-clip for the lake. Recapture efforts for bass population estimates were made in lakes designated as "comprehensive survey" lakes. In these lakes, fyke nets were set just after ice-out in the spring and 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 between mid-late May and mid-June. The entire shoreline of the lake (including islands) was sampled. Bass populations were estimated after both the third and fourth runs. Population estimates were calculated using the Chapman modification of the Petersen estimator, as described in the methods section for walleye population estimates. Estimates were made for each species in three length classes: 8.0-13.9", 14.0-17.9", and 18.0" and larger. The recapture run yielding the lowest coefficient of variation is the population estimate reported.

#### ***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" and larger were given a primary fin clip (the same clip given to adult walleye and bass). Muskellunge less than 20" long were given an alternate fin-clip (generally top caudal). In year-2, muskellunge were recaptured using fyke nets in mid-May, to coincide with the muskellunge spawning season. Adult

muskellunge population estimates (considered all fish larger than the smallest sexable fish observed) were made by sex (male, female, unknown) and for the total population using Chapman-Petersen estimates with the following adjustment:

In the equation:

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

N is the estimated adult population size; M is the total number of muskellunge marked in the lake in year-1 equal to or larger in length than the smallest sexable fish; C is the number of muskellunge re-captured in year-2, excluding fish smaller than the minimum length counted in year-1 plus 2 inches; and R is the number of marked fish recaptured (Wisconsin Technical Working Group 1999; Margenau and AveLallemant 2000).

## **Results**

### ***Largemouth and smallmouth bass***

Population estimates were calculated for smallmouth bass in nine lakes and largemouth bass in 13 lakes in 2004 (Table 5). Smallmouth bass population density ranged from <0.1–3.8 fish per acre. Largemouth bass density ranged from 0.1–16.8 fish per acre. The size structure of both largemouth and smallmouth bass was dominated by 8.0-14” fish in both the eastern and western portions of the Ceded Territory (Figures 13 and 14). Few individuals of either species larger than 18” were measured during fyke netting or electrofishing, and the coefficients of variation for population estimates of these fish are typically larger than for smaller fish (Table 5).

**Table 5:** Bass population estimates for lakes sampled in the Wisconsin Ceded Territory in spring 2004.

### Smallmouth Bass

County	Lake	Acres	Angler Regulation (minimum, in)	Total PE	Recapture sample size	Total per acre	CV	8.0-13.9" per acre (CV)	14.0-17.9" per acre (CV)	18.0"+ per acre (CV)
Bayfield	Middle Eau Claire	902	14	272	16	0.3	0.33	0.2 (0.44 )	0.1 (0.58)	<0.1 (0.58)
Burnett	Upper Clam	1207	14	23	4	<0.1	0.55	<0.1 (0.63)	0.0 (na)	0.0 (na)
Polk	Pipe/North Pipe	342	14	1172	68	3.4	0.28	2.5 (0.33 )	0.8 (0.53)	<0.1 (0.58)
Forest	Butternut	1292	14	4882	165	3.8	0.38	1.4 ( 0.44)	2.2 (0.57)	0.1 (0.67)
Forest	Metonga	1991	14	1677	73	0.8	0.34	0.5 (0.43)	0.4 (0.55)	<0.1 (na)
Langlade	Rose	112	14	312	20	2.8	0.3	2.2 (0.35)	0.5 (0.58)	<0.1 (na)
Oneida	Indian	397	14	379	33	1	0.22	0.5 (0.32)	0.3 (0.30)	0.1 (0.50)
Vilas	Papoose	428	18	262	24	0.6	0.18	0.3 (0.29)	0.3 (0.24)	<0.1 (0.50)
Vilas	Trout	3816	18	853	56	0.2	0.61	<0.1 (0.36)	0.2 (0.70)	0.0 (0.50)

### Largemouth Bass

County	Lake	Acres	Angler Regulation (minimum)	Total PE	Recapture sample size	Total per acre	CV	8.0-13.9" per acre (CV)	14.0-17.9" per acre (CV)	18.0"+ per acre (CV)
Barron	Lower Turtle	276	14	902	80	3.3	0.22	2.4 (0.29)	0.8 (0.23)	0.1 (0.50)
Bayfield	Middle Eau Claire	902	14	113	13	0.1	0.36	<0.1 (0.61)	0.1 (0.49)	0.1 (0.63)
Burnett	Lipsett	393	14	3407	167	8.7	0.19	8.1 (0.20)	0.5 (0.52)	<0.1 (na)
Burnett	Upper Clam	1207	14	732	35	0.6	0.36	0.3 (0.66)	0.3 (0.41)	<0.1 (0.61)
Polk	Long	272	14	4582	217	16.8	0.15	13.9 (0.17)	2.7 (0.29)	0.2 (0.61)
Polk	Pipe/North Pipe	342	14	3056	231	8.9	0.16	7.8 (0.18)	1.2 (0.25)	0.0 (na)
Forest	Metonga	1991	14	127	18	0.1	0.36	<0.1 (0.67)	<0.1 (0.33)	<0.1 (na)
Langlade	Jack	86	14	985	67	11.5	0.27	11.2 (0.28)	0.2 (0.64)	<0.1 (na)
Langlade	Rose	112	14	222	60	2	0.14	0.4 (0.3)	1.6 (0.16)	<0.1 (na)
Lincoln	Crystal	109	14	583	75	5.3	0.21	4.4 (0.25)	0.8 (0.33)	0.1 (0.50)
Lincoln	Muskellunge	167	14	827	58	5	0.22	3.8 (0.24)	1.2 (0.49)	<0.1 (0.50)
Oneida	Booth	207	14	473	35	2.3	0.24	1.7 (0.30)	0.5 (0.35)	<0.1 (na)
Oneida	Indian	397	14	461	29	1.2	0.39	1.0 (0.46)	0.2 (0.29)	<0.1 (0.58)

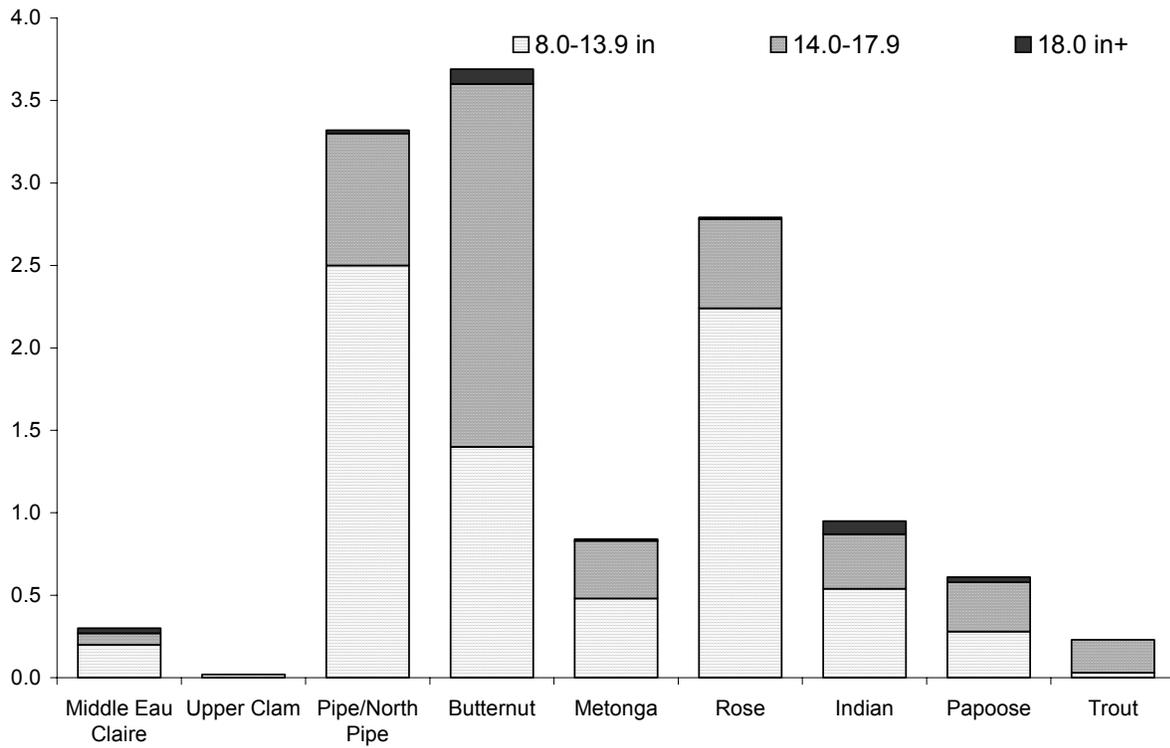


Figure 13. Smallmouth bass population densities (fish  $\geq 8.0$ " ) by size range for lakes sampled in the Wisconsin Ceded Territory in spring 2004.

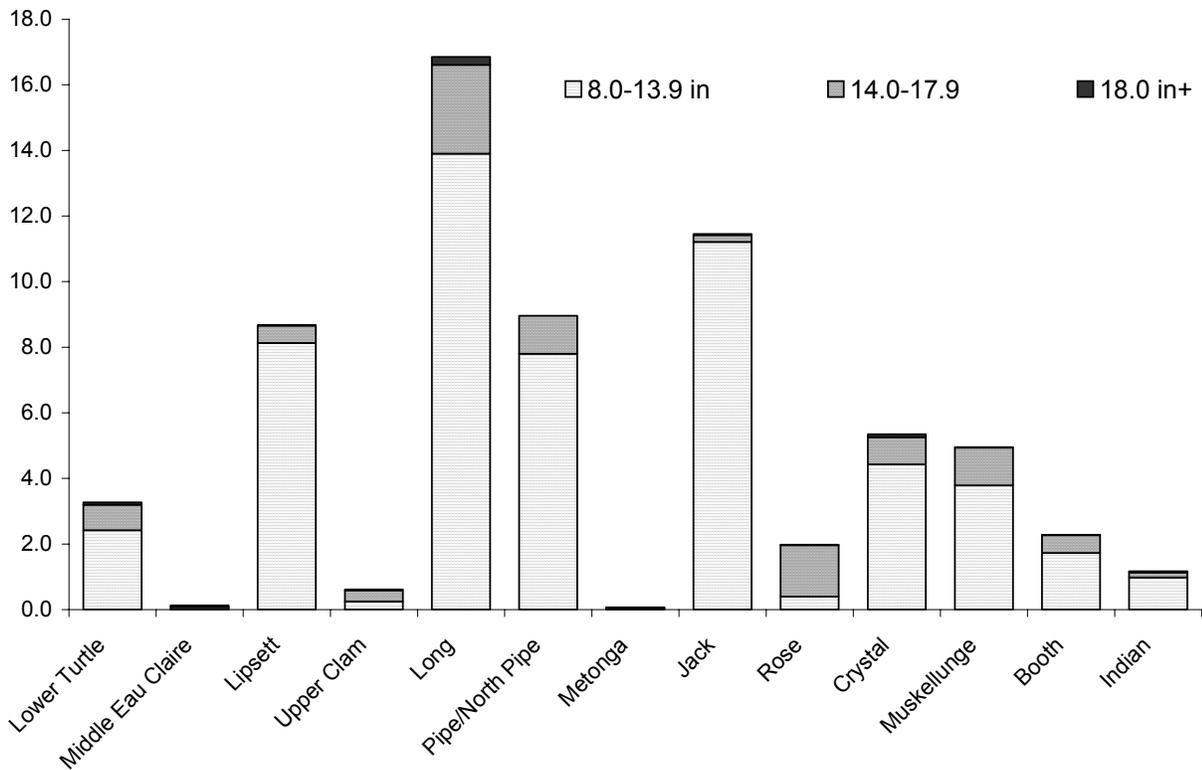


Figure 14. Largemouth bass population densities (fish  $\geq 8.0$ " ) by size range for lakes sampled in the Wisconsin Ceded Territory in spring 2004.

## **Muskellunge**

Muskellunge population and density estimates were completed in seven Ceded Territory lakes in spring 2004 (Table 6, Appendix D). Because of the two-year mark-recapture time span, population size is considered an estimate for 2003. Densities ranged between 0.08 adult fish/ acre and 0.70/ acre.

Coefficients of variation were in general greater for muskellunge population estimates than for walleye population estimates.

**Table 6:** Adult muskellunge population estimates completed in 2004 in the Wisconsin Ceded Territory. Regulations presented are for 2004.

County	Lake	Angler Regulation (minimum, in)	Acres	Minimum length in PE (inches)		Total PE	Total per acre	CV(%)
				Male	Female			
Iron	Wilson	40	162	25.5	31	114	0.70	0.18
Polk	Deer	34	807	31.5	32	400	0.50	0.10
Sawyer	Grindstone	50	3111	24	40	406	0.13	0.41
Lincoln	Alice	34	1369	27	32.5	368	0.27	0.22
Lincoln	Mohawksin	34	1910	25	32	568	0.30	0.36
Oneida	Bearskin	34	400	25.5	30	177	0.44	0.16
Oneida	Big Carr	34	213	33	39.5	17	.08	0.24
Vilas	Plum	34	1033	22	30	254	0.25	0.23
Vilas	Snipe	34	239	25.5	34	48	0.20	0.58
Vilas	Squaw	34	785	17	22.5	431	0.55	0.25

## 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. These 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 it does not necessarily correspond directly, as survival to adulthood varies (Hansen et al. 1998).

### Methods

WDNR completed 178 fall surveys in 2004 (Appendix E) in the Wisconsin Ceded Territory. Of the lakes sampled, 73 had walleye populations classified as sustained by naturally reproduction (recruitment codes NR, C-NR, or C-), 45 as sustained by stocking (ST or C-ST), 28 as remnant or newly established populations (REM, O-ST, NR-2) (Appendix A2). Seventeen lakes did not have an assigned walleye recruitment code (code column blank in Appendix E). Fifteen lakes were classified as having no known walleye population (NONE/0 in code column in Appendix E). Electrofishing for YOY walleyes was done after sunset in early autumn, generally when the water temperature had fallen below 70° F. In most cases, the entire shoreline of a lake was electrofished and all sub-adult walleyes were examined and measured. Two-sample t-tests were used to test the assumption that mean YOY walleye/mile in 2004 was the same as the 1990-2003 mean ( $\alpha = 0.05$ ) for each recruitment model.

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. Serns' relationship between the number of YOY walleyes caught per mile and the density of YOY walleye is:

$$\text{Density} = 0.234 * \text{Catch per mile}$$

where density is estimated as number of YOY walleyes per acre. Abundance is estimated by multiplying the estimated density by the number of acres in a given lake. The Sern's index was used to calculate gross estimated of fingerling survival to fall for stocked YOY:

$$\text{Survival} = (\text{Sern's index} * \text{lake acreage}) / \text{No. fish stocked}$$

Survival was calculated only for stocked and remnant lakes where little or no contribution is assumed to come from natural reproduction.

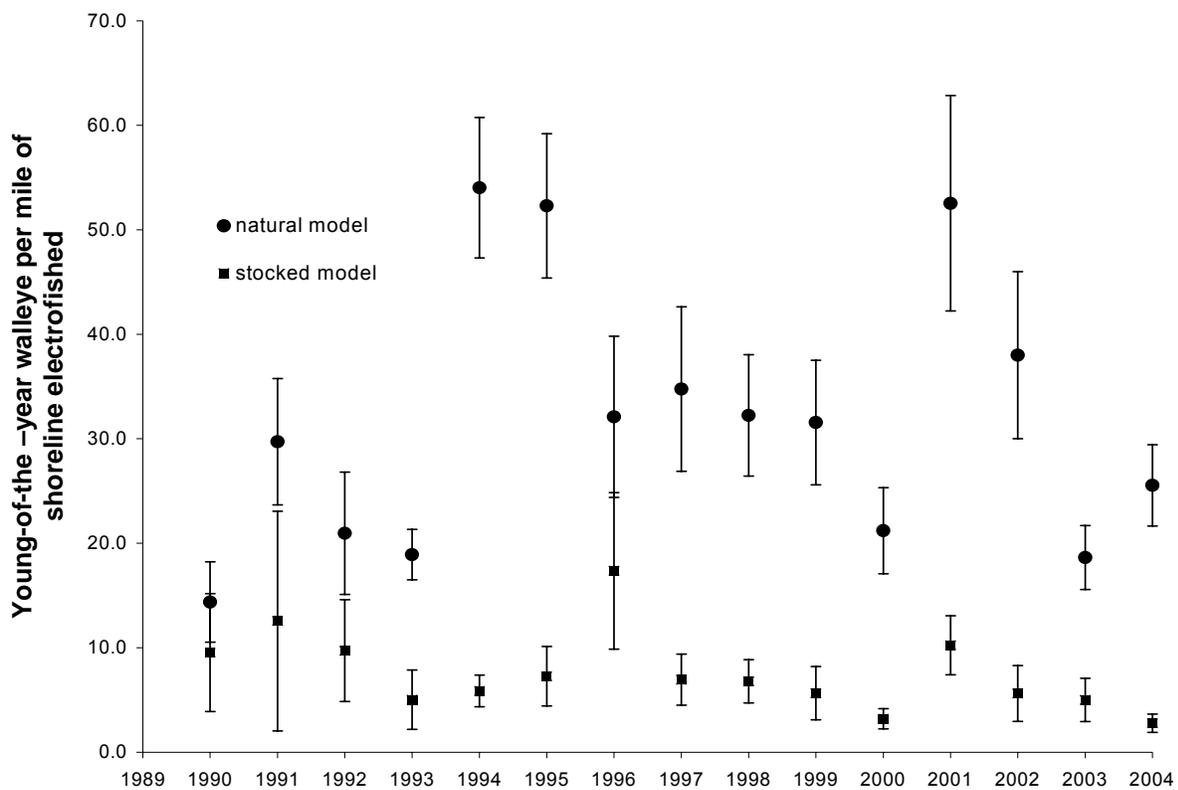
A portion of lakes are selected to receive fish with an internal oxytetracycline (OTC) mark to their otolith applied before stocking. A proportion of the YOY fish sampled from these lakes in the fall are sacrificed to assess the relevant contribution of stocking to the number of surviving YOY fish and in turn provide evidence of any contribution by natural reproduction.

## Results

Water temperatures during 2003 YOY walleye surveys ranged from 45 - 73° F with a median of 63.0° F and mean of 61.8° F. Young-of-year walleye lengths ranged from 2.7 to 8.4 inches for all lakes surveyed in 2004 (Appendix E). Lakes sustained primarily by natural reproduction (NR) on average had higher walleye YOY per mile (mean = 25.5, median = 11.3, range = 0.0–153.7) than lakes sustained by stocking (mean = 2.8, median = 0.0, range = 0.0–30.9; t-test (unequal variance)  $t = 5.72$ ,  $df = 78$ ,  $P < 0.01$ ; Figure 15). In 2004, mean YOY walleye/mile was greater than the 2003 mean for naturally-sustained populations but less than the 2003 mean for stocked populations. For the natural model, the 2004 mean YOY/mile (25.5) was lower than the overall 1990-2003 mean (33.7) where the difference demonstrated suggestive significance (t-test (unequal variances)  $t = -1.90$ ,  $df = 106$ ,  $P = 0.06$ ). For the stocked model, the 2004 mean YOY/mile (2.8) was significantly lower than the overall 1990-2003 mean (7.3) (t-test (unequal variances)  $t = -3.62$ ,  $df = 166$ ,  $P < 0.01$ ).

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 reproduction, and year class failures are even more common in lakes with populations maintained 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 not necessarily alarming. It also appears that there may be region-wide annual effects on walleye recruitment as well since mean recruitment varies dramatically from year to year when data from all lakes are combined (Figure 15); In the absence of an annual regional effect one might expect annual percentages to be similar across years. Overall, mean YOY per mile for stocked and natural lakes in 2004 was below average but within the range recorded in 14 years of comprehensive, region-wide data. However, the number of natural and stocked lakes surveyed in 2004 increased nearly 4-fold since 1990.



**Figure 15:** Mean number of young-of-the-year walleye caught per mile of shoreline electrofished in Wisconsin Ceded Territory walleye lakes during fall, 1990-2004. Error bars represent standard error of the mean.

The percentages of lakes with greater than 25 YOY walleye per mile and greater than 100 YOY walleye per mile are also used to indicate strong annual year classes in the Wisconsin Ceded Territory. These values are less affected by large values for individual lakes than are the mean or median number of YOY walleye caught per mile. In 2004, 23/72 NR lakes (32%) had YOY indices > 25 per mile, and five NR lakes (7%) had YOY walleye indices > 100 per mile (Appendix E). Overall, the proportion of lakes with YOY catch rates greater than 25 and 100 fish per mile in 2004 was greater than the mean proportion of lakes observed with the same catch rates between 1990-2003 (mean percentage > 25 YOY/mi = 23.0%; >100/mi = 4.1%).

In lakes categorized as being sustained primarily by stocking, the mean number of YOY walleye captured per mile in lakes that were stocked (6.0 YOY/ mile) with fry or small fingerlings was significantly greater than in lakes that were not stocked (0.6 YOY/ mile) in 2004 (t -test (unequal variances) t = -2.73, df = 17.8, P = 0.01). Lakes that were not stocked had YOY indices of 0 more frequently than lakes that were stocked, and were less likely to have a YOY index >10 fish per mile (Table 7). Only lakes stocked approximately two months prior to the fall survey are reported here.

**Table 7:** Young-of-the-year indices in lakes categorized as being sustained primarily by stocking (ST or C-ST), separated by whether or not the lake was stocked in 2004.

	<b>Stocked in 2004</b>	<b>Not Stocked in 2004</b>
<b>No. Lakes</b>	18	22
<b>Mean YOY walleye/ mile</b>	6.0	0.6
<b>Median</b>	1.8	0.0
<b>Variance</b>	68.0	1.8
<b>Lakes with 0 YOY/ mile</b>	6 (33%)	16 (73%)
<b>Lakes with &lt;5 YOY/ mile</b>	11 (61%)	22 (100%)
<b>Lakes with &lt;10 YOY/ mile</b>	13 (72%)	22 (100%)

Sern's indices for NR lakes ranged from 0.0–36.0 YOY walleye per acre with a mean of 6.6/acre and median of 0. In ST lakes, Sern's indices ranged from 0.0–3.6 YOY walleye per acre with a mean of 0.68 and median of 0. Mean small fingerling survival in stocked and remnant lakes was approximately 2% (n = 15, range 0.0% - 7.3%) (Appendix E).

Fall surveys were conducted on 18 lakes that were stocked with oxytetracycline marked walleyes in 2004 (Table 8). Most stocking events took place in the month of June. Sevenmile Lake in Oneida Co.

was sampled twice, with 100% of the fish sampled being OTC marked fish in each of the two surveys. In general, the percent of marked fish tends to align well with and support recruitment code designations for lakes monitored during 2004. However, since numbers of fish examined for OTC marks from any individual lake during any year is often limited, the percent contribution of marked fish observed during 2004 does not always appear to align completely with a designated recruitment code (e.g. Granite Lake in Barron County where all 9 fish sampled were non-OTC-marked despite a C-ST designation). It is important to note that OTC sampling itself is not indicative of recruitment code designations, and is not considered in the designation process unless a minimum of 30 individual fish are sampled from the water body in question.

**Table 8.** Lakes stocked with oxytetracycline (OTC) marked fish sampled in 2004, number of sampled fish where OTC marks were noted on the otolith, and percent contribution of stocked fish to the total sample. Recruitment codes C-ST, ST, and 0-ST are lakes in the stocked model. Recruitment code C-NR is in the natural model (Appendix A-2).

County	Lake	Recruit Code	WBIC	With OTC	Without OTC	Total	% Contrib.
Barron	Granite	C-ST	2100800	0	9	9	0
Barron	Poskin	ST	2098000	4	0	4	100
Barron	Red Cedar*	C-NR	2109600	13	38	51	25
Barron	Silver	C-ST	1881100	1	32	33	3
Bayfield	Diamond	C-NR	2897100	3	0	3	100
Burnett	Lipsett*	ST	2678100	6	7	13	46
Oneida	McCormick	0-ST	1526600	15	0	15	100
Oneida	Sevenmile	C-NR	1605800	68	0	68	100
Oneida	Sevenmile	C-NR	1605800	89	0	89	100
Oneida	Tom Doyle	C-ST	1586800	2	0	2	100
Oneida	Tomahawk	C-ST	1542700	18	0	18	100
Sawyer	Chetac	C-NR	2113300	14	16	30	47
Sawyer	Sand	C-ST	2393200	28	16	44	64
Vilas	Allequash	ST	2332400	50	9	59	85
Vilas	Big St. Germain	C-ST	1591100	20	69	89	22
Vilas	Dead Pike	ST	2316600	33	0	33	100
Vilas	Little John	C-NR	2332300	37	63	100	37
Vilas	Razorback	C-NR	1013800	4	95	99	4
Vilas	White Sand	C-ST	2339100	67	7	74	91

\* Unmarked fish were also stocked in these lakes.

## CREEL SURVEYS

### Introduction

Creel surveys provide vital information about the use of fisheries by recreational anglers, including angling effort, catch, harvest, and exploitation rates on surveyed waters. Further, estimates on surveyed lakes can be used to estimate effort, catch and harvest at a larger scale (e.g. Ceded Territory) for all species of interest in that lake. The WDNR treaty fisheries program focuses primarily on game species (walleye, muskellunge, largemouth and smallmouth bass, and northern pike *Esox lucius*), but information on all species targeted, caught and harvested is recorded. Creel surveys are generally conducted in each lake in the same year in which a walleye population estimate is made. Marking of fish during spring population estimates and recovery of marked fish in subsequent creel surveys allows for the estimation of walleye exploitation rates.

### Methods

Creel survey estimates were conducted for 25 lakes in which walleye population estimates were made during spring 2004 (Appendix F). Some lakes were combined to obtain estimates of lake chains and flowages. Harvest from Pipe and North Pipe Lake (Polk Co) were combined for one estimate and harvest from Tiger Cat Flowage, Burns Lake, and Lake Placid (Sawyer Co) were combined for one estimate. Creel clerks were not necessarily present at each individual lake in a chain; however, during the interview clerks collected information specific to lakes within the chain thereby enabling creel estimates to be determined for individual lakes. WDNR 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 randomly chosen two or three weekdays. Only completed-trip interview information was used for analyses. Clerks counted the number of anglers and 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 May 1, 2004 and were completed March 6, 2005. The month of November was excluded due to poor ice conditions and low angler effort. Information from interviews was expanded

over the appropriate stratum to provide an estimate of total effort, catch, and harvest of each species in each lake for the year.

Angler exploitation rates for adult walleye were calculated by dividing the estimated number of marked adult walleye harvested by the total number of marked 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 calculated so an estimate of total adult walleye exploitation could be made in 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 rates were calculated by summing angling and tribal exploitation. Identical fin clips were given to some lakes within the Manitowish Chain therefore requiring exploitation rates to be calculated for these lake combinations.

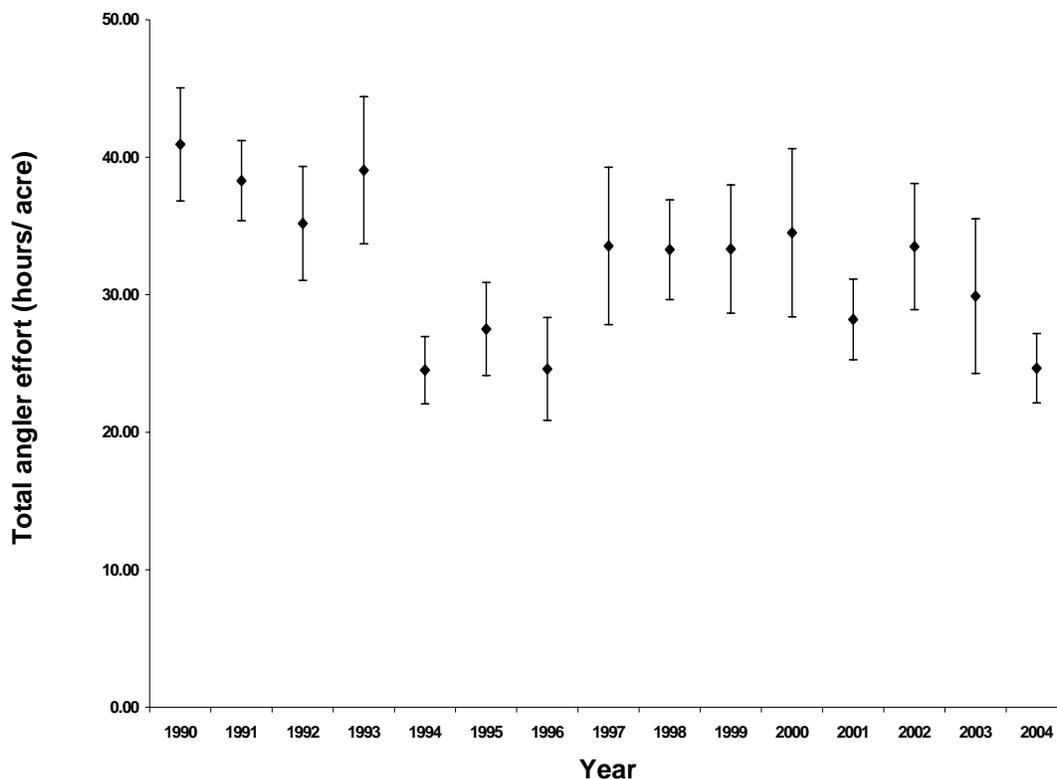
Creel data (Appendix F) were summarized for all lakes, lakes less than 500 acres ("small lakes"), and lakes 500 acres and larger ("large lakes"). In addition, walleye creel data were grouped for analysis based on population recruitment source and selected length regulations. Current state regulations include 15, 18, and 28" minimum size limits; one fish larger than 14" allowed; a 14-18" no-harvest slot with one fish larger than 18" allowed; a 20-28" no-harvest slot with a 15" minimum and one fish over 28" allowed, and no size restriction. Angler bag limits in the Ceded Territory are set on an annual basis using a "sliding bag-limit" system based upon tribal declarations and range between 2 and 5 fish (Appendix A1).

Total effort data provides an estimate of the amount of fishing pressure for each lake. The total effort result for Fawn Lake (Vilas Co) was unusually high (277 hrs/acre) and the value was removed prior to statistical analysis. Catch and harvest (hours/fish) rates were calculated for all gamefish species. The number of hours required to catch and harvest a 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 targeted.

## Results

### *Total Angler Effort*

The mean total angler effort per acre in lakes 500 acres and larger (22.3 hours/acre) did not statistically differ from the effort recorded on lakes smaller than 500 acres (27.5 hours/acre) in 2004-2005 (t-test (equal variances)  $t = -1.02$ ,  $df = 22$ ,  $P = 0.32$ ). Since 1990, mean total angler effort has been significantly lower in large lakes (28.7 hours/ acre) than in small lakes (38.4 hours/ acre; t-test (unequal variances)  $t = -4.12$ ,  $df = 237$ ,  $P < 0.01$ ). Total angler effort has declined since 1990 across all lakes ( $F = 7.76$ ,  $df = 1,346$ ,  $P < 0.01$ ). This decline contrasts the findings of Deroba et al (2007) where no significant change was detected in total angler-hours/acre on weekdays or weekends during 1991-2002. However, our results may reflect of the reduction in total angler-hours/acre since 2002 (Figure 16). It is also important to note that a process of random lake selection did not begin until 1995. There was no statistically detectable trend in total angler effort during 1995-2004 ( $F = 0.15$ ,  $df = 1,191$ ,  $P = 0.7$ ).



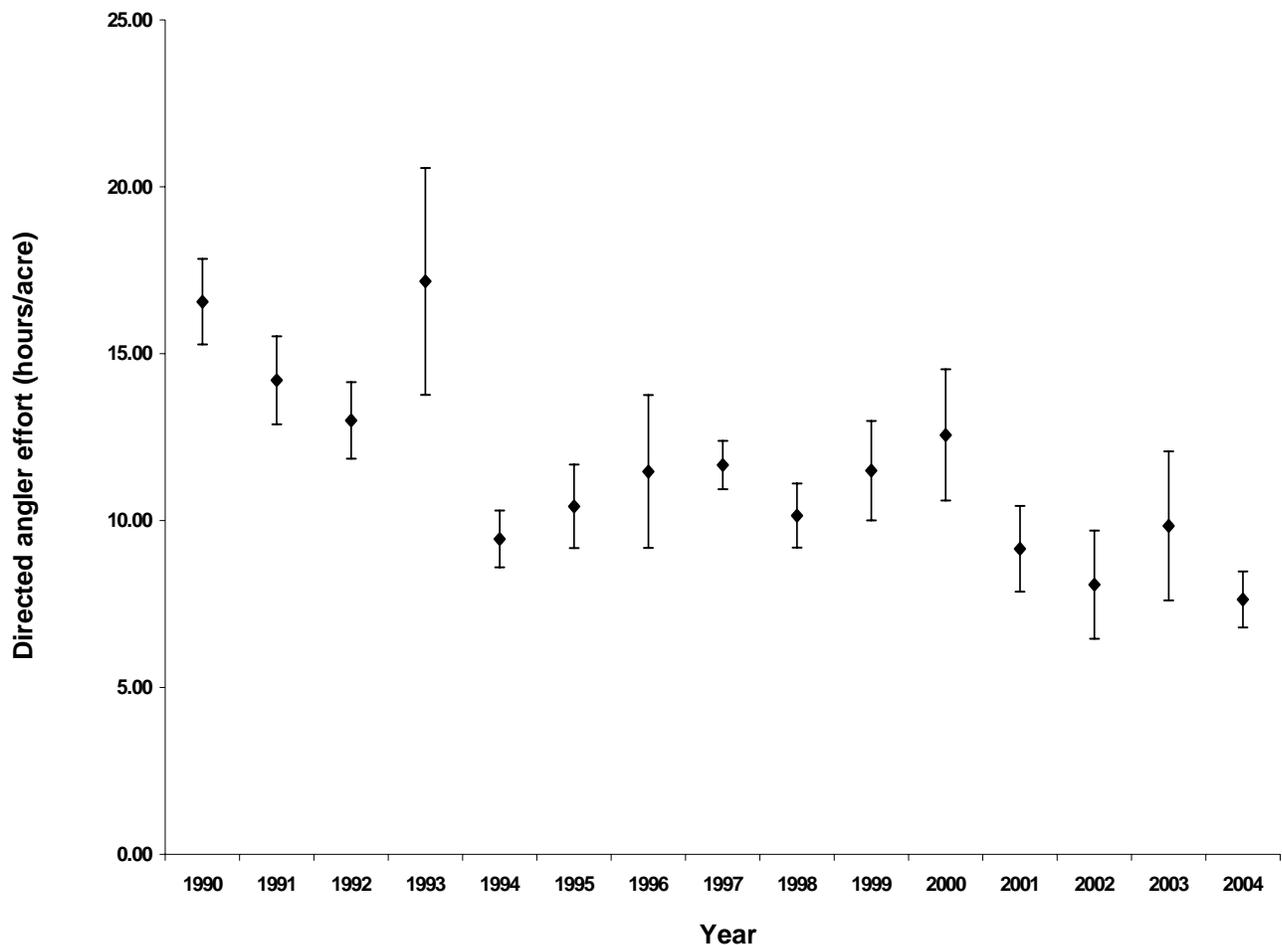
**Figure 16:** Total angler effort per acre in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1990-2004. Error bars represent standard error of the mean.

## Walleye

### Catch and effort

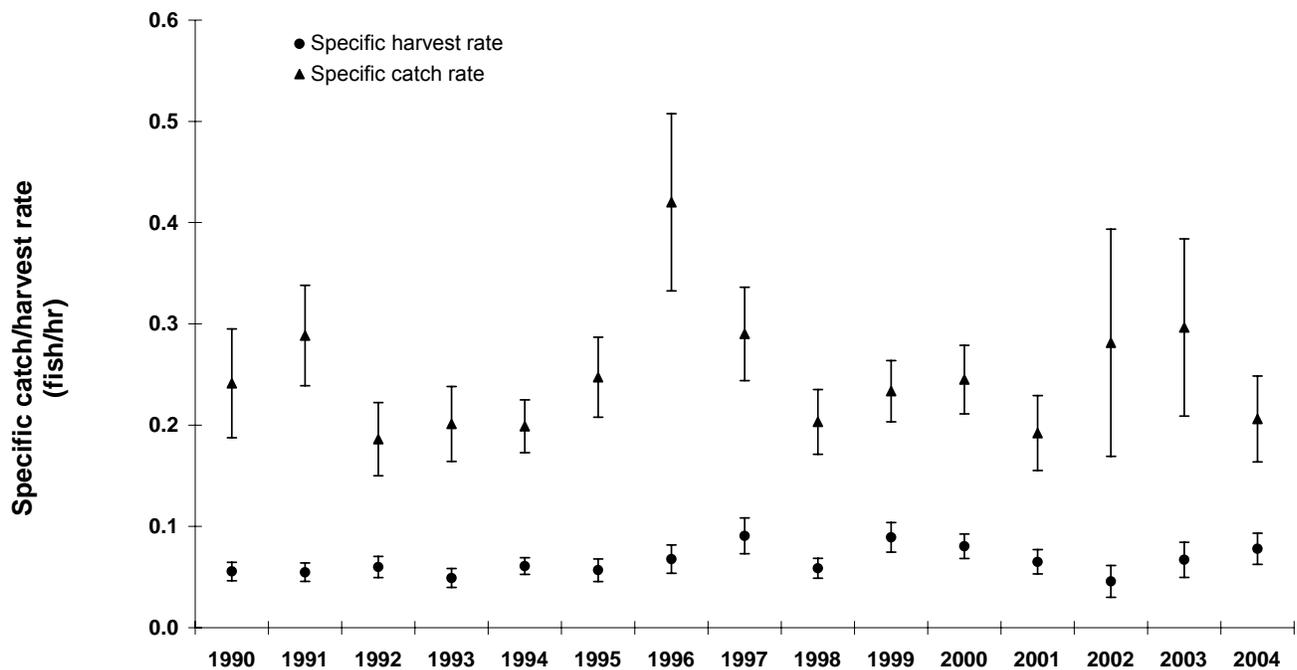
Directed effort for walleye averaged 7.6 hours per acre during the 2004-05 angling season.

Walleye anglers exerted approximately the same amount of pressure walleye fishing in lakes sustained by natural reproduction (7.7 hours/ acre) as they did in lakes sustained by stocking ((7.6 hours/ acre; t-test (equal variances)  $t = 0.07$ ,  $df = 22$ ,  $P = 0.94$ )). Directed effort was also the same in large (7.6 hours/ acre) and small lakes ((7.6 hours/ acre; t-test (equal variances)  $t = -0.02$ ,  $df = 23$ ,  $P = 0.99$ )). Overall directed angler effort (hours/acre) for walleye has declined since 1995 ( $F = 5.09$ ,  $df = 1,191$ ,  $P = 0.02$ ) (Figure 17). Prior to 1995, selection of lakes was based on the intensity of tribal harvest, and thus focused on lakes with large walleye populations. In 1995-96, a randomized selection process was adopted.



**Figure 17:** Directed angler effort per acre for walleye in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1990-2004. Directed effort is defined as hours reported by anglers fishing for a specific species. Error bars represent standard error of the mean.

In 2004-05, mean specific catch rates (SCR) were 0.25 walleye per hour (4.0 hours fishing/walleye caught) of directed effort in lakes with naturally sustained populations and 0.11 walleye/hour in lakes with populations sustained by stocking (1 fish caught per 9.1 hours of directed effort). In all lakes combined, mean SCR was 0.21 walleye/hour of directed effort (1 fish per 4.8 hours directed effort). Specific harvest rates were between 0.001 and 0.306 fish per hour. Anglers harvested approximately 29% of all walleye caught. There have been no statistically detectable trends in SCR ( $F = 1.8$ ,  $df = 1,191$ ,  $P = 0.18$ ) or specific harvest rate (SHR;  $F = 0.00$ ,  $df = 1,191$ ,  $P = 0.96$ ) for walleye in the Wisconsin Ceded Territory since 1995 (Figure 18). The long term walleye harvest rate during 1990-2004 has not changed from the harvest trend reported during 1991-2002 (Deroba et al. 2007).



**Figure 18:** Specific catch rates and harvest rates for walleye in surveyed lakes in the Wisconsin Ceded Territory, 1990-2004. Specific catch or harvest rate is number of walleye caught or harvested divided by time spent fishing specifically for walleye. Error bars represent standard error of the mean.

## Exploitation

Walleye exploitation rates were estimated for 22 lakes and chains during 2004-05 (Table 9; Appendix G). Total adult walleye exploitation ranged from 0% to 44.8%. Angler exploitation of adult walleyes ranged from 0% to 39.4%. Angler exploitation of walleyes 14" or longer ranged from 0% to 57.6%. Angler exploitation of adult walleyes 20" and longer ranged from 0.0% to 74.0%. Tribal exploitation of adult walleyes ranged from 0.0% to 24.0%. The total exploitation rates of walleye in Lost Land Lake, Sawyer Co. and Manitowish/Little Star, Vilas Co. exceeded 35%; Safe harvest limits are set so that over time there is less than a 1-in-40 chance that exploitation will exceed 35%.

**Table 9:** 2004 adult walleye exploitation rates and 1995-2003 mean exploitation rates. Tribal harvest data used to calculate tribal exploitation provided by the Great Lakes Indian Fish and Wildlife Commission (Ngu 1995, Ngu 1996, Krueger 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004).

Lake	County	Acres	Angler exploitation	Angler expl. >14 in	Angler expl. >20 in	Tribal expl.	Total adult exploitation
Lower Turtle	Barron	276	0.1018	0.1065	0.0000	0.0000	0.1018
Bony	Bayfield	191	0.0000	0.0000	0.0000	0.0000	0.0000
Middle Eau Claire	Bayfield	902	0.1880	0.1842	0.0000	0.0526	0.2405
Upper Eau Claire	Bayfield	996	0.1053	0.1224	0.2282	0.1732	0.2785
Lipsett	Burnett	393	0.1677	0.1776	0.3068	0.1143	0.2820
Patten	Florence	255	0.0529	0.0201	0.0000	0.0976	0.1505
Butternut	Forest	1292	0.0618	0.0542	0.0818	0.0834	0.1451
Metonga	Forest	1991	0.0631	0.0730	0.1223	0.1476	0.2107
Booth	Oneida	207	0.0180	0.0184	0.0000	0.0000	0.0180
Pipe*	Polk	342	0.1063	0.1078	0.3411	0.1069	0.2132
Lost Land	Sawyer	1304	0.3939	0.5759	0.7398	0.0244	0.4183
Teal	Sawyer	1049	0.0663	0.0792	0.0000	0.0453	0.1116
Tiger Cat Flowage <sup>#</sup>	Sawyer	1015	0.1419	0.1454	0.0000	0.0000	0.1419
Cedar	St. Croix	1100	0.1432	0.3023	0.2012	0.1061	0.2494
Alder	Vilas	274	0.0000	0.0000	0.0000	0.0385	0.0385
Clear	Vilas	555	0.2506	0.2513	0.1546	0.0793	0.3299
Island	Vilas	1023	0.0693	0.0557	0.0000	0.0634	0.1327
Manitowish/Little Star	Vilas	750	0.2074	0.2746	0.0000	0.2402	0.4476
Rest	Vilas	608	0.1209	0.1503	0.2175	0.0667	0.1876
Spider/Stone/Fawn	Vilas	485	0.1507	0.2012	0.0000	0.0636	0.2143
Wild Rice	Vilas	379	0.0362	0.0694	0.2381	0.1023	0.1385
Trout	Vilas	3816	0.0451	0.0565	0.0630	0.0555	0.1007
2004 mean			0.1132	0.1376	0.1225	0.0755	0.1887
1995-2003 mean			0.0768	0.0991	0.1353	0.0417	0.1182

\* Includes Pipe and North Pipe Lakes

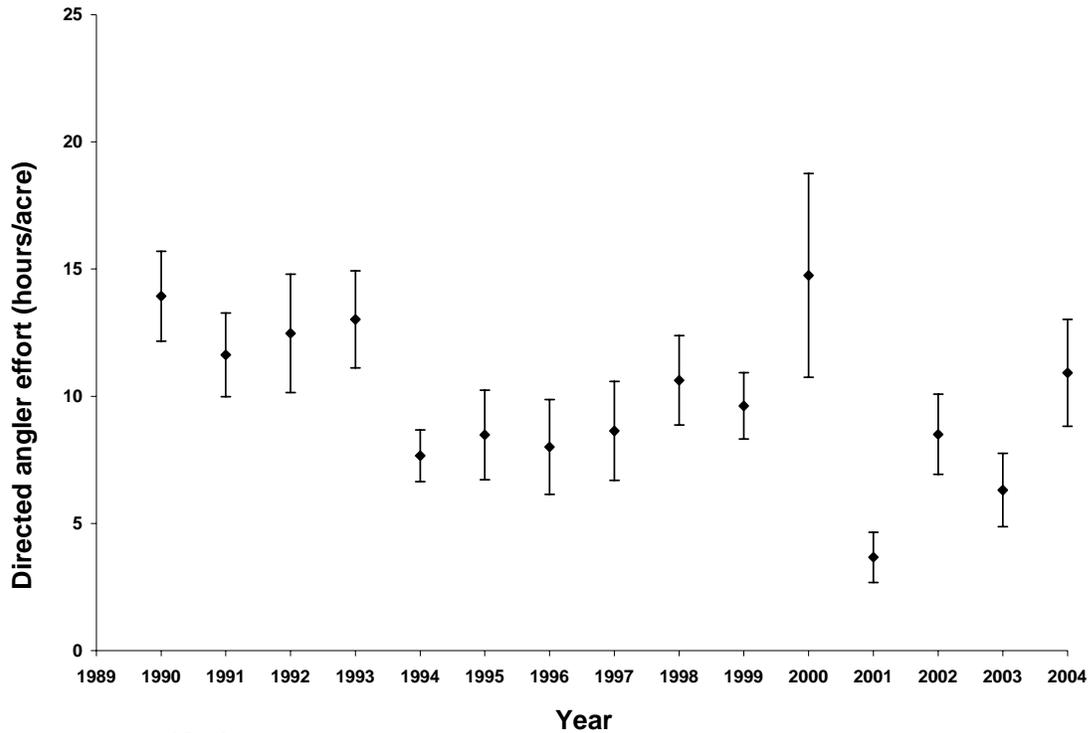
<sup>#</sup> Includes Tiger Cat Flowage, Burns Lake, and Lake Placid

## **Muskellunge**

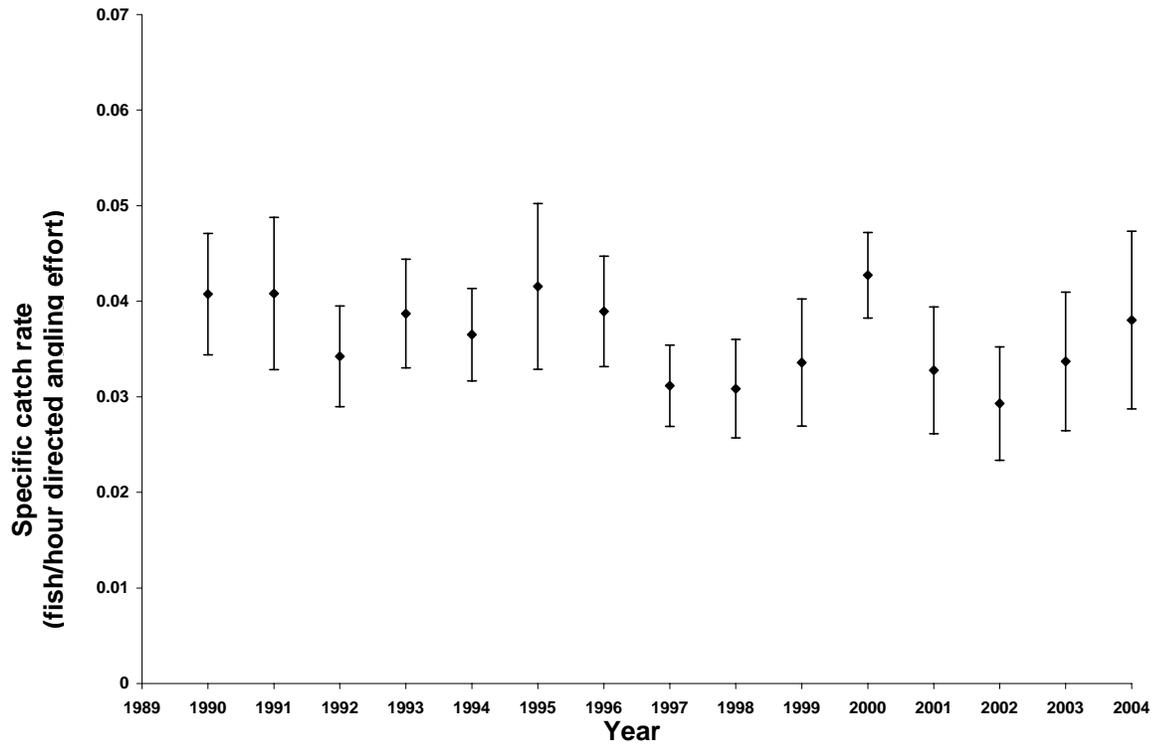
Of the 25 lakes and chains surveyed in 2004, 21 were classified as musky waters. Creel clerks recorded at least one musky caught from 21 of the 25 lakes surveyed. For the purpose of analyses and summarization of catch and effort, lakes not classified were excluded. In general, the “action classification” assigned to lakes (WDNR 1996; Simonson and Hewett 1999) is a better predictor of musky catch and effort than recruitment source or lake size to describe variability in catch and effort (Table 10). Overall specific catch rate in 2004 (0.037 fish/ hour, or 1 fish caught per 27.0 hours of directed effort) was slightly lower than the 1990-2003 average (0.0366 fish/ hour), but there has been no observed trend in muskellunge catch rates in the Ceded Territory since 1990 ( $F = 0.89$ ,  $df = 1,273$ ,  $p = 0.34$ ), despite year-to-year fluctuations in effort (Figures 19-20).

**Table 10:** Muskellunge catch and effort rates in the Wisconsin Ceded Territory, 1990-2004, by musky lake classification. Population estimates include only those approved for use by Wisconsin Technical Working Group in setting safe harvest levels.

<b>Class</b>	<b>Description</b>	<b>Lakes sampled</b>	<b>Angler catch/ acre</b>	<b>Specific catch rate (fish/ hour)</b>	<b>Directed effort (hours/ acre)</b>	<b>Mean density (PEs in sample)</b>
A1	Trophy waters	101	0.26	0.0268	7.4	0.29 (18)
A2	Action waters	138	0.72	0.0450	14.2	0.44 (14)
B	Intermediate action/ size	32	0.22	0.0386	5.4	0.28 (4)
C	Low importance	12	0.03	0.0056	1.9	
Total		283	0.47	0.0367	10.4	0.35 (36)



**Figure 19:** Directed angler effort per lake surface acre for muskellunge in surveyed lakes in the Wisconsin Ceded Territory, 1990-2004. Directed effort is defined as hours reported by anglers fishing for a specific species. Error bars represent the standard error of the mean.



**Figure 20:** Specific catch rate for muskellunge in surveyed lakes in the Wisconsin Ceded Territory, 1990-2004. Specific catch rate is number of muskellunge caught divided by time spent fishing for muskellunge. Error bars represent standard error of the mean.

### **Northern Pike**

Catches of northern pike were recorded for 24 of the 25 lakes and chains surveyed in 2004 although there was directed effort for northern pike on all 25 lakes creeled; no northern pike were caught on Little Star Lake, Vilas Co. Twelve of the lakes surveyed were smaller than 500 acres and 13 were 500 acres or larger. Although large differences in mean values were found for some variables, there were no significant differences in directed angler effort per acre, specific catch rate, angler catch per acre, or specific harvest rate in lakes smaller than 500 acres compared to lakes 500 acres and larger in 2004 (Table 11).

**Table 11:** Creel statistics for northern pike in 25 surveyed lakes in the Wisconsin Ceded Territory in 2004.

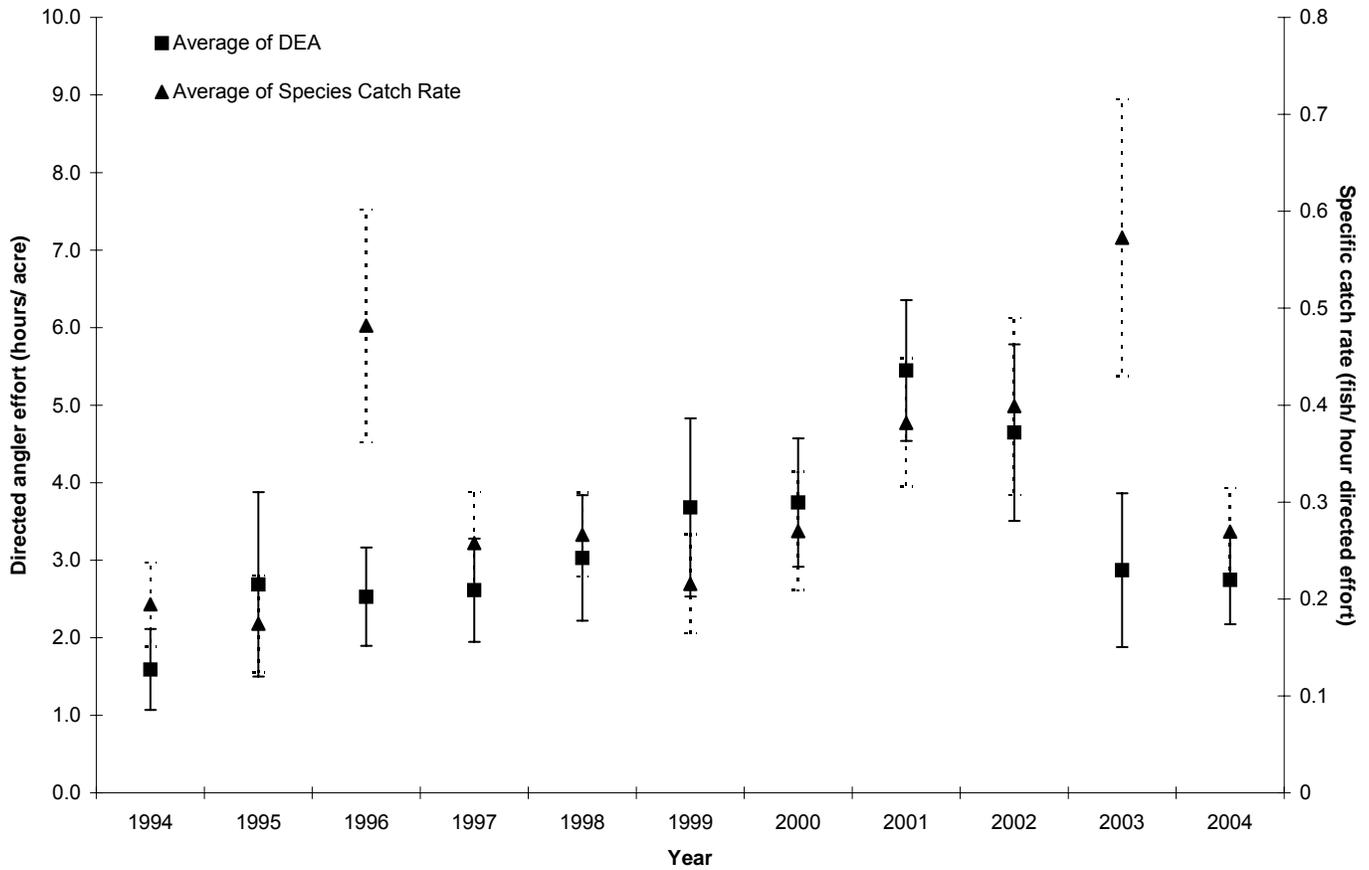
	Mean		df	T-value	P-value
	Large	Small			
Directed Angler Effort/Acre	2.50	4.61	15.8	-1.43	0.17
Specific Catch Rate	0.15	0.23	23	-1.47	0.16
Angler Catch/Acre	1.32	2.37	23	-1.21	0.24
Specific Harvest Rate	0.04	0.07	23	-1.82	0.08

Historically (1990 -2004), directed angler effort/ acre has been higher in lakes smaller than 500 acres (6.4 hours/ acre) than in larger lakes ((3.8 hours/ acre;  $t$  (unequal variances) = -2.52,  $df$  = 167,  $p$  = 0.01)). That higher effort has not been accompanied by concurrent increases in angler catch ((small = 0.19 fish/ hour; large 0.17 fish/hour;  $t$  (unequal variances) = -0.73,  $df$  = 227,  $p$  = 0.47)) or harvest rates ((small = 0.06 fish/ hour; large 0.05 fish/hour;  $t$  (unequal variances) = -0.83,  $df$  = 158,  $p$  = 0.40)).

### **Smallmouth Bass**

Catches of smallmouth bass were reported for 24 of the 25 lakes surveyed (Appendix F). There was no effort exerted for smallmouth bass on Lower Turtle Lake, Barron Co. There were no significant differences in directed angler effort ( $t$  = 0.25,  $df$  = 22,  $P$  = 0.80) or specific catch rate ( $t$  = -0.01,  $df$  = 22,  $P$  = 0.99) between lakes smaller or larger than 500 acres in 2004 (Table 12). Since 1994, there have been

statistically detectable trends of increasing angler effort (directed effort per acre:  $F = 5.43$ ,  $df = 1, 204$ ,  $P = 0.02$ ) and success (specific catch rate:  $F = 5.73$ ,  $df = 1, 203$ ,  $P = 0.02$ ; catch per acre:  $F = 6.23$ ,  $df = 1, 209$ ,  $P = 0.01$ ) in smallmouth bass fishing in Wisconsin Ceded Territory lakes (Figure 21).



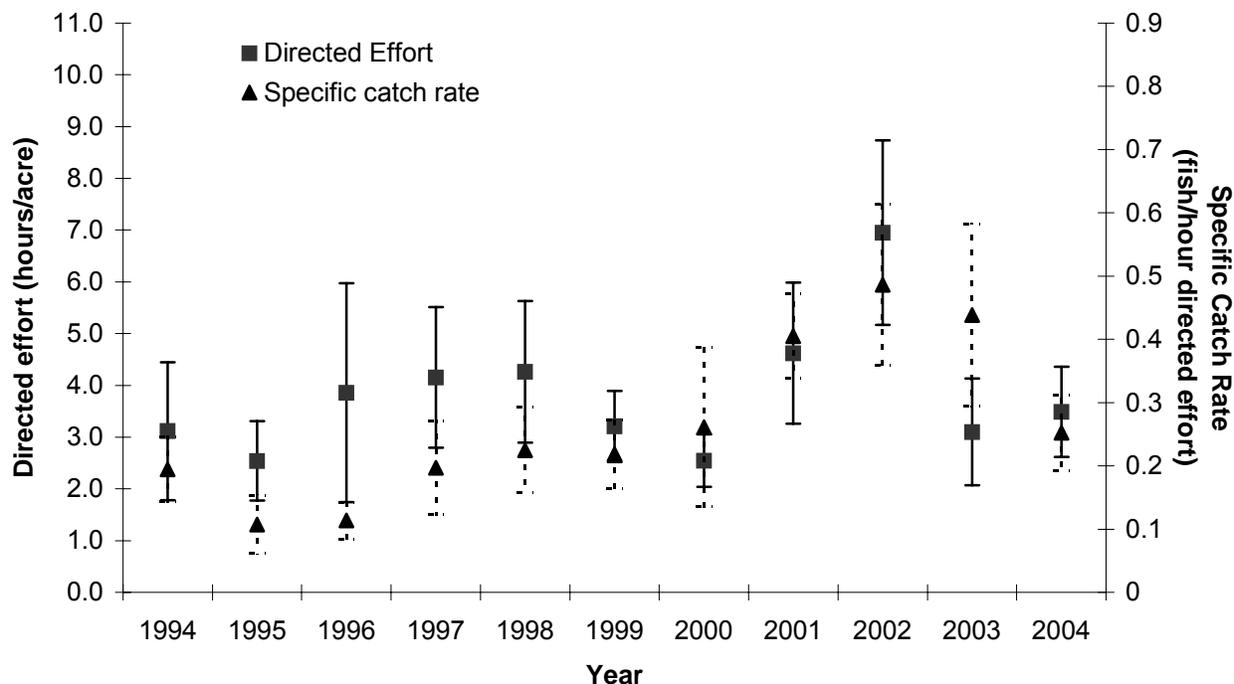
**Figure 21:** Directed angler effort per lake surface acre and specific catch rate for smallmouth bass in Wisconsin Ceded Territory lakes where WDNR conducted creel surveys, 1994-2004. Specific catch rate is the number of smallmouth bass caught divided by time spent fishing specifically for the species. Directed effort is hours reported by anglers specifically targeting smallmouth bass.

**Table 12:** Mean values calculated from 2004 and 1994-2003 smallmouth bass creel survey data. Specific and general catch and harvest rates are reported as number of fish caught or harvested per angling hour.

Year	Lake Size	N	Catch/ Acre	Angler Harvest/ Acre	Specific Catch Rate	Specific Harvest Rate	Directed Effort/ Acre
2004	All lakes	24	1.3	0.05	0.27	0.02	2.7
	< 500 acres	11	1.6	0.02	0.27	0.01	2.6
	> 500 acres	13	1.0	0.07	0.27	0.02	2.9
1994- 2003	All lakes	187	1.8	0.08	0.30	0.026	3.2
	< 500 acres	84	2.1	0.09	0.29	0.018	3.9
	> 500 acres	103	1.5	0.07	0.31	0.031	2.6

### ***Largemouth Bass***

Catches of largemouth bass were reported for 22 of the 25 lakes surveyed in 2004 although directed effort for largemouth bass was extended on 23 lakes. Bony Lake (Bayfield Co.) reported directed effort although no largemouth bass were caught. Ten of the lakes were smaller than 500 acres and thirteen were 500 acres or larger (Table 13). In 2004, there were no significant differences in angler effort ( $t = -1.27$ ,  $df = 21$ ,  $P = 0.22$ ) success (specific catch (t-test, unequal variances ( $t = -1.58$ ,  $df = 11.3$ ,  $P = 0.14$ ))), or harvest rates ( $t = -0.60$ ,  $df = 21$ ,  $P = 0.56$ ) between lake size classes. Effort directed towards largemouth bass in the Wisconsin Ceded Territory since 1994 has declined since a high set in 2002, but the trend is not statistically significant ( $F = 0.80$ ,  $df = 1, 206$ ,  $P = 0.37$ ). However, there is a statistically significant increasing trend in specific catch rate ( $F = 10.49$ ,  $df = 1, 206$ ,  $P < 0.01$ ) and marginally significant trend in angler catch per acre ( $F = 3.66$ ,  $df = 1, 216$ ,  $P = 0.06$ ) observed since 1994 (Figure 22).



**Figure 22:** Directed angler effort per lake surface acre and specific catch rate for largemouth bass in surveyed lakes in the Wisconsin Ceded Territory, 1994-2004. Directed effort is defined as hours reported by anglers fishing for a specific species. Specific catch rate is number of largemouth bass caught divided by time spent fishing for largemouth bass. Error bars represent SEM.

**Table 13:** Mean estimates calculated from 2004 and 1994-2003 largemouth bass creel survey data. Specific and general catch and harvest rates are reported as number of fish caught or harvested per angling hour.

Year	Lake Size	N	Catch/ Acre	Angler Harvest/ Acre	Specific Catch Rate	Specific Harvest Rate	Directed Effort/ Acre
2004	All lakes	23	2.9	0.12	0.25	0.013	3.5
	< 500 acres	10	4.8	0.18	0.36	0.016	4.7
	> 500 acres	13	1.44	0.07	0.16	0.012	2.5
1994- 2003	All lakes	185	2.8	0.14	0.26	0.016	3.8
	< 500 acres	87	2.5	0.12	0.25	0.013	4.4
	> 500 acres	98	3.1	0.16	0.27	0.018	3.2

## REFERENCES

- Anderson, R.O. and R.M. Neumann. 1996. Length, weight, and structural indices. *In Fisheries Techniques, Second Edition*. Edited by B.R. Murphy and D.W. Willis. American Fisheries Society, Bethesda, Maryland, USA. pp. 447 – 482.
- Beard, T. D., Jr., S. W. Hewett, Q. Yang, R. M. King, and S. J. Gilbert. 1997. Prediction of angler catch rates based on walleye population density. *North American Journal of Fisheries Management* 17 (4): 621-627.
- Deroba, J.D., M.J. Hansen, N.A. Nate, and J.M. Hennessy. 2007. Temporal profiles of walleye angling effort, harvest rate, and harvest in northern Wisconsin lakes. *North American Journal of Fisheries Management* 27:717-727.
- Hansen, M. J. 1989. A walleye population model for setting harvest quotas. Wisconsin Department of Natural Resources Bureau of Fisheries Management, Fish Management Report 143, Madison, Wisconsin.
- Hansen, M. J., M.D. Staggs, and M. H. Hoff. 1991. Derivation of safety factors for setting harvest quotas on adult walleyes from past estimates of abundance. *Transactions of the American Fisheries Society* 120: 620-628.
- Hansen, M. J., M.A. Bozek, J. R. Newby, S. P. Newman and M. D. Staggs. 1998. Factors affecting recruitment of walleyes in Escanaba Lake, Wisconsin, 1958-1996. *North American Journal of Fisheries Management* 18(4): 764-774.
- Hansen, M. J., T. D. Beard Jr., S. W. Hewett. 2000. Catch rates and catchability of walleyes in angling and spearing fisheries in Northern Wisconsin lakes. *North American Journal of Fisheries Management* 20(1): 109-118.
- Hewett, S. W. and T. D. Simonson. 1998. Wisconsin's walleye management plan: moving management into the 21<sup>st</sup> century. Wisconsin Department of Natural Resources, Administrative Report #43, Bureau of Fisheries Management and Habitat Protection, Madison, Wisconsin.
- Krueger, J. 2005. Open water spearing in northern Wisconsin by Chippewa Indians during 2004. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 2005-02, Odanah, Wisconsin.
- Krueger, J. 2004. Open water spearing in northern Wisconsin by Chippewa Indians during 2003. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 2004-01, Odanah, Wisconsin.
- Krueger, J. 2003. Open water spearing in northern Wisconsin by Chippewa Indians during 2002. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 2003-03, Odanah, Wisconsin.
- Krueger, J. 2002. Open water spearing in northern Wisconsin by Chippewa Indians during 2001. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 2002-01, Odanah, Wisconsin.
- Krueger, J. 2001. Open water spearing in northern Wisconsin by Chippewa Indians during 2000. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 2001-01, Odanah, Wisconsin.
- Krueger, J. 2000. Open water spearing in northern Wisconsin by Chippewa Indians during 1999. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 2000-05, Odanah, Wisconsin.
- Krueger, J. 1999. Open water spearing in northern Wisconsin by Chippewa Indians during 1998. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 99-4, Odanah, Wisconsin.

- Krueger, J. 1998. Open water spearing in northern Wisconsin by Chippewa Indians during 1997. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 98-01, Odanah, Wisconsin.
- Krueger, J. 1997. Open water spearing in northern Wisconsin by Chippewa Indians during 1996. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 97-02, Odanah, Wisconsin.
- Li, J., Y. Cohen, D. H. Schupp, and I. R. Adelman. 1996. Effects of walleye stocking on year-class strength. *North American Journal of Fisheries Management* 16(4): 840-850.
- Margenau, T. L. and S. P. AveLallemant. 2000. Effects of a 40-inch minimum length limit on muskellunge in Wisconsin. *North American Journal of Fisheries Management* 20: 986-993.
- Nate, N. A., M. A. Bozek, M. J. Hansen, and S. W. Hewett. 2000. Variation in walleye abundance with lake size and recruitment source. *North American Journal of Fisheries Management*. 20: 119-126.
- Ngu, H. H. 1996. Open water spearing in northern Wisconsin by Chippewa Indians during 1995. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 96-01, Odanah, Wisconsin.
- Ngu, H. H. 1995. Open water spearing in northern Wisconsin by Chippewa Indians during 1994. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 95-03, Odanah, Wisconsin.
- Ngu, H. H. 1994. Open water spearing in northern Wisconsin by Chippewa Indians during 1993. Great Lakes Indian Fish and Wildlife Commission, Administrative Report 94-1, Odanah, Wisconsin.
- Rasmussen, P. W., M. D. Staggs, T. D. Beard, Jr., and S. P. Newman. 1998. Bias and confidence interval coverage of creel survey estimators evaluated by simulation. *Transactions of the American Fisheries Society* 127: 460-480.
- Ricker, W. E. 1975. Computation and Interpretation of Biological Statistics of Fish Populations. *Bulletin of the Fisheries Research Board of Canada* 191. Department of the Environment, Fisheries, and Marine Science, Ottawa. 382 p.
- Serns, S. L. 1982. Relationship of walleye fingerling density and electrofishing catch per effort in northern Wisconsin lakes. *North American Journal of Fisheries Management* 2 (1): 38-44.
- Simonson, T.D. and S.W. Hewett. 1999. Trends in Wisconsin's Muskellunge Fishery. *North American Journal of Fisheries Management* 19:291-299.
- United States Department of the Interior, Bureau of Indian Affairs. 1991. *Casting Light Upon the Waters*. Minneapolis.
- Wisconsin Department of Natural Resources. 1996. *Wisconsin Muskellunge Waters*. Publication RS-919-96.
- Wisconsin Technical Working Group. 1999. December meeting minutes.

## APPENDIX A

**A1.** Reduced daily bag limits for walleye angling, based on Tribal Declarations as percentage of safe harvest. Reprinted from Wisconsin Administrative Code (NR 20.36).

Daily bag limit	Current population estimate	Population estimate made 1-2 years ago	Population estimate made 3 years ago or more or regression model
4	1-7	1-14	1-20
3	8-18	15-39	21-54
2	19-36	40-76	55-84
1	37-68	77-94	85-94
0	69 or more	95 or more	95 or more

**A2.** Walleye recruitment code descriptions (primary source of walleye recruitment; U. S. Department of the Interior, 1991).

Code	Model	Description
blank	None	unknown
NONE/ O	None	No walleye are present
REM	Remnant	Stocking provides the only source of recruitment but was discontinued. The stock is expected to disappear at some time in the future.
0-ST	Remnant	Stocking provides the only source of recruitment but was initiated only recently and has not yet resulted in a harvestable population of adults.
ST	Stocked	Stocking provides the only source of recruitment and is consistent enough to result in a multi-year class adult population.
C-ST	Stocked	Stocking provides the primary source of recruitment but some natural reproduction occurs and may augment the adult population.
C-	Natural	Natural reproduction and stocking provide more or less equal recruitment to the adult population.
C-NR	Natural	Natural reproduction is adequate to sustain the population even though the lake is being stocked.
NR	Natural	Natural reproduction only; consistent enough to result in multi-year class adult populations.
NR-2	Remnant	Natural reproduction only; inconsistent, results in missing year classes.

**APPENDIX B**

**B. WDNR Lake sampling rotation, revised January 6, 2005. (Temporal trend lakes are in capital letters.)**

<b>Year</b>	<b>Treaty Unit</b>	<b>MWBIC</b>	<b>County</b>	<b>Lake</b>	<b>Area</b>	<b>Model</b>
2002	Spooner	2949200	IRON	PINE (C)	312	N
2002	Spooner	2620600	POLK	BALSAM (C)	2054	S
2002	Spooner		Bayfield	Namekagon/Jackson	3,369	N
2002	Spooner	2353600	Rusk	Sand (C)	262	S
2002	Spooner	2392000	Sawyer	Whitefish (C)	786	S
2002	Spooner	2236800	Price	Lac Sault Dore	561	N
2002	Spooner	2726100	Sawyer	Smith	323	S
TOTAL	Spooner				7,667	
2002	Woodruff	1588200	ONEIDA	TWO SISTERS (C)	719	N
2002	Woodruff	2953500	VILAS	CRAB (C)	949	N
2002	Woodruff	1517900	Oneida	Hancock	259	S
2002	Woodruff	378400	Forest	Roberts	414	N
2002	Woodruff	417900	Oconto	Bass	149	N
2002	Woodruff	692900	Forest	Franklin (C)	892	N
2002	Woodruff		Oneida	Shishebogama/Gunlock (C)	966	S
TOTAL	Woodruff				4,348	
2002	TOTAL				12,015	
2003	Spooner	2897100	BAYFIELD	DIAMOND (C)	341	S
2003	Spooner	2391200	SAWYER	GRINDSTONE (C)	3,111	N
2003	Spooner	2942300	Iron	Gile FI	3,384	N
2003	Spooner	2283300	Price	Butternut	1,006	N
2003	Spooner	2706500	Washburn	Middle McKenzie (C)	530	N
2003	Spooner	2641000	Polk	Big Butternut	378	S
2003	Spooner	2359700	Rusk	Amacoy (C)	278	S
2003	Spooner	2242500	Price	Solberg	859	N
TOTAL	Spooner				9,887	
2003	Woodruff	1018500	VILAS	SNIPE (C)	239	N
2003	Woodruff	1592400	VILAS	PLUM (C)	1,033	N
2003	Woodruff	1427400	Marathon	Big Eau Pleine Reservoir	6,830	N
2003	Woodruff	973000	Oneida	Bolger	119	N
2003	Woodruff	1523600	Oneida	Bearskin (C)	400	N
2003	Woodruff	2271600	Vilas	Squaw (C)	785	N
TOTAL	Woodruff				9,406	
2003	TOTAL				19,293	

Year	Treaty Unit	MWBIC	County	Lake	Area	Model
2004	Spooner	2678100	BURNETT	LIPSETT	393	S
2004	Spooner	2742100	BAYFIELD	MIDDLE EAU CLAIRE	902	N
2004	Spooner		Sawyer	Lost Land/Teal	2,353	N
2004	Spooner	2742700	Bayfield	Upper Eau Claire	1,030	S
2004	Spooner	2490500	Polk	Pipe	270	N
2004	Spooner	2615100	St. Croix	Cedar	1,100	N
2004	Spooner	2435000	Sawyer	Tiger Cat FI	819	0-ST
2004	Spooner	2079700	Barron	Lower Turtle	276	N
TOTAL	Spooner				7,143	
2004	Woodruff	394400	FOREST	L METONGA	1,991	S
2004	Woodruff	2331600	VILAS	TROUT	3,816	S
2004	Woodruff		Vilas	Manitowish Chain	4,074	N
2004	Woodruff	692400	Forest	Butternut	1,292	N
2004	Woodruff	1537800	Oneida	Booth	207	S
2004	Woodruff	653700	Florence	Patten	255	N
TOTAL	Woodruff				11,635	
2004	TOTAL				18,778	
2005	Spooner	2949200	IRON	PINE	312	N
2005	Spooner	2620600	POLK	BALSAM	2054	S
2005	Spooner		Barron	Red Cedar/Hemlock/Balsam	2,493	N
2005	Spooner	2381100	Sawyer	L Winter	676	0-ST
2005	Spooner	2865000	Douglas	L Nebagamon	914	N
2005	Spooner		Price	Pike Chain	1,905	N
2005	Spooner	2695800	Washburn	Gilmore	389	S
TOTAL	Spooner				8,743	
2005	Woodruff	1588200	ONEIDA	TWO SISTERS	719	N
2005	Woodruff	1545600	VILAS	BIG ARBOR VITAE	1,090	N
2005	Woodruff		VILAS	Manitowish Chain	4,074	N
2005	Woodruff	2316600	Vilas	Dead Pike	297	N
2005	Woodruff	977500	Oneida	Clear	846	N
2005	Woodruff	1569900	Oneida	L Thompson	382	S
2005	Woodruff		Oneida	Carrol/Madeline Chain	494	S
2005	Woodruff	1593100	Vilas	Star	1,206	N
2005	Woodruff	387200	Langlade	Otter	90	S
TOTAL	Woodruff				9,198	
2005	TOTAL				17,941	

Year	Treaty Unit	MWBIC	County	Lake	Area	Model
2006	Spooner	2897100	BAYFIELD	DIAMOND	341	S
2006	Spooner	2391200	SAWYER	GRINDSTONE	3,111	N
2006	Spooner	2152800	Chippewa	L Wissota	6,300	N
2006	Spooner	2495100	Burnett	Sand	962	S
2006	Spooner	2081200	Barron	Beaver Dam	1,112	S
2006	Spooner	2621100	Polk	Half Moon	579	S
2006	Spooner	2858100	Douglas	Amnicon	426	N
TOTAL	Spooner				12,831	
2006	Woodruff	1018500	VILAS	SNIPE	239	N
2006	Woodruff	1592400	VILAS	PLUM	1,033	N
2006	Woodruff	1631900	Vilas	Lac Vieux Desert	4,300	N
2006	Woodruff	1595800	Oneida	N Nokomis	476	S
2006	Woodruff	1881900	Vilas	Sparkling	154	S
2006	Woodruff	1517200	Oneida	Manson	236	N
2006	Woodruff	1629500	Vilas	Big Portage	638	N
2006	Woodruff	2272600	Oneida	Buckskin	634	N
2006	Woodruff	396500	Forest	L Lucerne	1,026	S
TOTAL	Woodruff				8,736	
2006	TOTAL				21,567	
2007	Spooner	2678100	BURNETT	LIPSETT	393	S
2007	Spooner	2742100	BAYFIELD	MIDDLE EAU CLAIRE	902	N
2007	Spooner	2704200	Sawyer	Nelson	2,503	N
2007	Spooner		Douglas	Lower Eau Claire/Cranberry	860	N
2007	Spooner	2393200	Sawyer	Sand	928	N
2007	Spooner	2747300	Douglas	Upper St. Croix	855	N
2007	Spooner	2706800	Burnett	Big McKenzie	1,185	S
2007	Spooner	2624600	Polk	Magnor	224	S
2007	Spooner	2618000	Polk	Wapogasset	1,186	S
TOTAL	Spooner				9,036	
2007	Woodruff	394400	FOREST	L METONGA	1,991	S
2007	Woodruff	2331600	VILAS	TROUT	3,816	S
2007	Woodruff		Vilas	Twin L Chain	3,430	N
2007	Woodruff	1567325	Oneida	Hat Rapids Fl	650	N
2007	Woodruff	1545300	Vilas	Little Arbor Vitae	534	N
2007	Woodruff		Oneida	Moen Chain	1,172	N
2007	Woodruff	677100	Florence	Fay	247	S
TOTAL	Woodruff				11,840	
2007	TOTAL				20,876	

Year	Treaty Unit	MWBIC	County	Lake	Area	Model
2008	Spooner	2949200	IRON	PINE	312	N
2008	Spooner	2620600	POLK	BALSAM	2,054	S
2008	Spooner		Burnett	Yellow/Little Yellow	2,635	S
2008	Spooner	2676800	Burnett	Big Sand	1,400	0-ST
2008	Spooner	2105100	Barron	Bear	1,358	S
2008	Spooner	2882300	Bayfield	Siskiwit	330	N
2008	Spooner	2693700	Douglas	Bond	292	N
2008	Spooner		Rusk	Chain/Clear/Island/McCann	1,222	N
TOTAL	Spooner				9,603	
2008	Woodruff	1588200	ONEIDA	TWO SISTERS	719	N
2008	Woodruff	1545600	VILAS	BIG ARBOR VITAE	1,090	N
2008	Woodruff	1595300	Oneida	Rainbow FI	2,035	N
2008	Woodruff	1605800	Oneida	Sevenmile	503	N
2008	Woodruff	2954800	Vilas	Oxbow	511	N
2008	Woodruff		Vilas	Cisco Chain	1,539	N
2008	Woodruff	683000	Forest	Stevens	297	S
2008	Woodruff	439800	Oconto	Wheeler	293	N
TOTAL	Woodruff				6,987	
2008	TOTAL				16,590	
2009	Spooner	2897100	BAYFIELD	DIAMOND	341	S
2009	Spooner	2391200	SAWYER	GRINDSTONE	3,111	N
2009	Spooner	2294900	Iron	Turtle-Flambeau	13,545	N
2009	Spooner	2295200	Iron	Trude	781	N
2009	Spooner	1881100	Barron	Silver	337	N
2009	Spooner	2306300	Iron	Spider	352	N
2009	Spooner	2435700	Sawyer	Spider	1,454	S
TOTAL	Spooner				19,921	
2009	Woodruff	1018500	VILAS	SNIPE	239	N
2009	Woodruff	1592400	VILAS	PLUM	1,033	N
2009	Woodruff		Oneida	Tomahawk/Minocqua Chain	3,552	S
2009	Woodruff	1574300	Oneida	Jennie Webber	226	S
2009	Woodruff		Vilas	Palmer/Tenderfoot	1,072	S
2009	Woodruff	1515400	Lincoln	L Mohawksin	1,910	N
TOTAL	Woodruff				8,032	
2009	TOTAL				27,953	

Year	Treaty Unit	MWBIC	County	Lake	Area	Model
2010	Spooner	2678100	BURNETT	LIPSETT	393	S
2010	Spooner	2742100	BAYFIELD	MIDDLE EAU CLAIRE	902	N
2010	Spooner		Sawyer	Round/Little Round	3,283	N
2010	Spooner	2900200	Bayfield	L Owen	1,323	S
2010	Spooner	2492100	Douglas	Red	258	S
2010	Spooner	2382300	Sawyer	Barber	238	S
2010	Spooner	2393500	Sawyer	Sissabagama	719	N
2010	Spooner	2046500	Sawyer	Windfall	102	N
2010	Spooner	1884100	Washburn	Stone	523	S
TOTAL	Spooner				7,741	
2010	Woodruff	394400	FOREST	L METONGA	1,991	S
2010	Woodruff	2331600	VILAS	TROUT	3,816	S
2010	Woodruff	1528300	Oneida	Willow FI	5,135	N
2010	Woodruff	390600	Forest	Mole	73	0-ST
2010	Woodruff		Vilas	Turtle Chain	945	N
2010	Woodruff	1855900	Vilas	Jag	158	N
2010	Woodruff	1569600	Oneida	George	435	N
2010	Woodruff	1564200	Oneida	Crescent	612	N
TOTAL	Woodruff				13,165	
2010	TOTAL				20,906	
2011	Spooner	2949200	IRON	PINE	312	N
2011	Spooner	2620600	POLK	BALSAM	2,054	S
2011	Spooner	2399700	Sawyer	L Chippewa	15,300	N
2011	Spooner	1841300	Sawyer	Clear	77	0-ST
2011	Spooner	2303500	Iron	Long	396	S
2011	Spooner	2767100	Bayfield	Long	263	S
2011	Spooner	2914800	Ashland	English	244	S
TOTAL	Spooner				18,646	
2011	Woodruff	1588200	ONEIDA	TWO SISTERS	719	N
2011	Woodruff	1545600	VILAS	BIG ARBOR VITAE	1,090	N
2011	Woodruff	1579900	Oneida	Pelican	3,585	S
2011	Woodruff	1591100	Vilas	Big St. Germain	1,617	N
2011	Woodruff	1613500	Oneida	Whitefish	205	NR-2
2011	Woodruff		Vilas	Ballard Chain	1,025	S
2011	Woodruff	417400	Oconto	Archibald	430	0-ST
2011	Woodruff	1595600	Oneida	Muskellunge	284	N
2011	Woodruff	1630100	Vilas	Black Oak	584	S
TOTAL	Woodruff				9,539	
2011	TOTAL				28,185	

Year	Treaty Unit	MWBIC	County	Lake	Area	Model
2012	Spooner	2897100	BAYFIELD	DIAMOND	341	S
2012	Spooner	2391200	SAWYER	GRINDSTONE	3,111	N
2012	Spooner		Barron	L Chetek Chain	3,763	S
2012	Spooner		Bayfield	Pike Lake Chain	714	N
2012	Spooner	2627400	Polk	Big Round	1,015	S
2012	Spooner	2691500	Washburn	L Nancy	772	N
2012	Spooner	2351400	Chippewa	Long	1,052	N
2012	Spooner	2856400	Douglas	Lyman	403	N
2012	Spooner	2661100	Barron	Sand	322	S
TOTAL	Spooner				11,493	
2012	Woodruff	1018500	VILAS	SNIPE	239	N
2012	Woodruff	1592400	VILAS	PLUM	1,033	N
2012	Woodruff		Lincoln/Oneida	Nokomis/Rice Chain	3,916	N
2012	Woodruff	1623400	Vilas	Pioneer	427	0-ST
2012	Woodruff		Vilas	Presque Isle Chain	1,571	N
2012	Woodruff		Vilas	Upper/Lower Buckatabon	846	S
2012	Woodruff	2328700	Vilas	Papoose	428	N
TOTAL	Woodruff				8,460	
2012	TOTAL				19,953	
2013	Spooner	2678100	BURNETT	LIPSETT	393	S
2013	Spooner	2742100	BAYFIELD	MIDDLE EAU CLAIRE	902	N
2013	Spooner	2496300	Washburn	Shell	2,580	N
2013	Spooner	1764500	Taylor	Sackett	63	S
2013	Spooner	2461100	Burnett	Devils	1,001	S
2013	Spooner	2133200	Eau Claire	L Eau Claire	860	N
2013	Spooner		Sawyer	Connors/L of the Pines	702	N
2013	Spooner	2469800	Barron	Horseshoe	115	N
2013	Spooner	1875900	Rusk	Pulaski	126	N
TOTAL	Spooner				6,742	
2013	Woodruff	394400	FOREST	L METONGA	1,991	S
2013	Woodruff	2331600	VILAS	TROUT	3,816	S
2013	Woodruff		Vilas	<u>Eagle Chain</u>	4,174	N
2013	Woodruff	1482400	Lincoln	Tug	151	N
2013	Woodruff	2953800	Vilas	Annabelle	213	N
TOTAL	Woodruff				10,345	
2013	TOTAL				17,087	

## APPENDIX C

### C. Walleye population estimates in Wisconsin Ceded Territory lakes surveyed by WDNR in Spring 2004.

MWBC	County	Lake	Acres	Angler Reg	Recruit Code	PE - Males	CV Male PE	PE - Females	CV Female PE	M:F Ratio	Adult PE	CV Adult PE	L 95 C.I. Adults	Adult PE/Acre	Adult 0-12	Adult 1-15	Adult 15-20	Adult 20+	Total PE	CV Total PE	Total PE/Acre
2079700	Barron	Lower Turtle	276	15	ST	209	0.07	170	0.38	1.23	299	0.08	254	1.1	1	68	157	73	875	0.31	3.2
2742500	Bayfield	Bony	191	1>14	C-NR	312	0.18	110	0.25	2.84	432	0.16	301	2.3	6	151	248	27	720	0.22	3.8
2742100	Bayfield	Middle Eau Claire	902	1>14	C-NR	3028	0.06	2140	0.35	1.41	4128	0.06	3621	4.6	227	1100	2534	267	8477	0.16	9.4
2742700	Bayfield	Upper Eau Claire	996	15	C-NR	1440	0.07	760	0.30	1.89	2015	0.09	1674	2.0	3	622	919	471	6690	0.30	6.7
2678100	Burnett	Lipsett	393	15	ST	188	0.08	61	0.27	3.08	245	0.08	207	0.6	1	49	135	60	552	0.37	1.4
677400	Florence	Long	340	15	NONE	3	0.00	6	0.00	0.50	8	0.00	8	0.02	1	1	1	5	13	0.39	0.04
653700	Florence	Patten	255	1>14	NR	360	0.11	216	0.21	1.67	584	0.11	461	2.3	3	119	292	170	745	0.19	2.9
692400	Forest	Butternut	1292	14-18	C-NR	580	0.09	1678	0.55	0.35	1703	0.28	766	1.3	9	90	677	927	1405	0.22	1.1
394400	Forest	Melonga	1991	15	C-ST	591	0.21	399	0.31	1.48	1199	0.20	727	0.6	10	267	536	387	3659	0.33	1.8
494200	Langlade	Rose	112	1>14	C-ST	412	0.11	243	0.19	1.70	803	0.10	648	7.2	1	144	630	28	867	0.13	7.7
979100	Lincoln	Crystal	109	15	O-ST	46	0.00	22	0.00	2.09	64	0.00	64	0.6	1	2	28	33	65	0.00	0.6
1555500	Lincoln	Muskellunge	167	15	ST	66	0.07	26	0.07	2.54	92	0.08	78	0.6	1	7	52	32	83	0.00	0.5
1537800	Oneida	Booth	207	15	ST	90	0.11	86	0.17	1.05	193	0.09	158	0.9	4	4	112	73	981	0.40	4.7
1598900	Oneida	Indian	397	15	NR	301	0.11	254	0.32	1.19	566	0.16	391	1.4	2	79	337	148	646	0.24	1.6
2490500	Polk	Pipe*	342	15	C-NR	271	0.17	85	0.22	3.19	421	0.15	301	1.2	1	19	321	80	319	0.19	0.9
1515200	Price	North Spirit	213	14-18	O-ST	285	0.16	381	0.67	0.75	528	0.23	285	2.5	6	132	143	247			
2401300	Sawyer	L Black	129	15	O-ST	17	0.00	27	0.00	0.63	40	0.00	40	0.3	1	1	18	20	94	0.47	0.7
2418600	Sawyer	Lost Land	1304	none	C-ST	220	0.15	622	0.46	0.35	698	0.31	278	0.5	27	134	231	306	5772	0.46	4.4
2417000	Sawyer	Teal	1049	none	NR	4480	0.06	1279	0.25	3.50	5521	0.06	4897	5.3	1589	2064	1478	390	41601	0.21	39.7
2435000	Sawyer	Tiger Cat Flowage **	1015	15	O-ST	304	0.13	1186	0.25	0.26	1145	0.12	885	1.1	1	66	835	243	1357	0.17	1.3
2615100	St. Croix	Cedar	1100	15	NR	1934	0.04	730	0.56	2.65	2261	0.06	2013	2.1	127	1287	708	140	9151	0.13	8.3
2338800	Vilas	Big Crooked	682	none	NR	829	0.13	462	0.36	1.79	1277	0.14	925	1.9	153	167	206	99			
2338800	Vilas	Big Crooked†	682	none	NR	1055	0.13	871	0.18	1.21	1996	0.11	1579	2.9	266	380	850	500			
2339900	Vilas	Escanaba	293	28	NR	452	0.16	343	0.40	1.32	835	0.20	509	2.9	158	196	193	288			
2329600	Vilas	Alder	274	1>14	C-NR	1011	0.11	545	0.30	1.86	1664	0.11	1301	6.1	273	489	761	142	5687	0.52	20.8
2329000	Vilas	Clear	555	1>14	C-NR	1227	0.10	407	0.29	3.01	1576	0.09	1291	2.8	80	759	590	147	2474	0.20	4.5
2334400	Vilas	Island	1023	1>14	C-NR	2133	0.05	1187	0.20	1.80	3500	0.07	3012	3.4	518	1145	1393	444	8295	0.18	8.1
2329400	Vilas	Manitowish/ Little Star *	750	1>14	C-NR	497	0.16	217	0.30	2.29	712	0.13	525	0.9	180	294	216	22	2118	0.17	2.8
2327500	Vilas	Rest	608	1>14	C-NR	1350	0.07	933	0.41	1.45	1994	0.14	1432	3.3	273	792	523	406	5749	0.21	9.5
2329300	Vilas	Spider, Stone, Fawn ^	485	1>14	C-NR	426	0.33	174	0.33	2.45	708	0.23	396	1.5	289	120	244	55	9872	0.41	20.4
2329800	Vilas	Wild Rice	379	1>14	C-NR	143	0.16	40	0.06	3.58	264	0.29	115	0.7	60	65	120	19	2002	0.39	5.3
2328700	Vilas	Papoose	428	15	C-NR	901	0.07	175	0.37	5.15	1187	0.10	954	2.8	196	516	356	119	2276	0.14	5.3
2331600	Vilas	Trout	3816	15	C-ST	3131	0.09	4750	0.31	0.66	6520	0.12	5008	1.7	841	478	2951	2250	31429	0.33	8.2
2336100	Vilas	Wolf	393	15	NR	798	0.12	762	0.18	1.05	1697	0.11	1331	4.3	2	273	1251	171			

\* PE data include North Pipe Lake (2485700)

\*\* PE data include Lakes Burns (2436400) and Placid (2436500)

\* PE data include Little Star (2334300)

^ PE data include Spider (2329300), Stone (2328800), and Fawn (2328900)

† Includes angling recapture method

## APPENDIX D

D. Muskellunge population estimates completed in spring 2004 and prepared for Wisconsin Technical Working Group. Summary provided courtesy of GLIFWC. Methods Used: In year one, all sexable fish plus unknowns 30" and over are counted. In year two, all sexable fish plus unknowns 32" and over are counted, except take the lesser of 30" or the smallest half-inch group observed for each sex in the first year; for the second year, do not count sexable fish less than this minimum length plus 2", or plus a different growth correction derived from the data for the lake. No stratification by length or sex is used, and the Chapman correction of the Petersen estimator is used,  $(M+1)(C+1)/(R+1)$ .

**COUNTY:** Iron **LAKE:** Wilson **YEAR COMPLETED:** 2004  
**WBIC:** 2297000

MARKING PERIOD			RECAPTURE PERIOD UNMARKED			RECAPTURE PERIOD MARKED			
MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	
47		22	1	5	1	0	8	1	0

TOTAL MARKED (M):	70	CHAPMAN PE:	114	PE CV:	18.5%
TOTAL CAPTURED (C):	15	PE VARIANCE:	439.9	AREA:	162
TOTAL RECAPTURED (R):	9	PE ST. DEV:	21.0	DENSITY:	0.70

**COUNTY:** Polk **LAKE:** Deer **YEAR COMPLETED:** 2004  
**WBIC:** 2619400

MARKING PERIOD			RECAPTURE PERIOD UNMARKED			RECAPTURE PERIOD MARKED			
MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	
71		78	0	42	51	2	29	27	0

TOTAL MARKED (M):	149	CHAPMAN PE:	400	PE CV:	10.4%
TOTAL CAPTURED (C):	151	PE VARIANCE:	1724.1	AREA:	807
TOTAL RECAPTURED (R):	56	PE ST. DEV:	41.5	DENSITY:	0.50

**COUNTY:** Sawyer **LAKE:** Grindstone **YEAR COMPLETED:** 2004  
**WBIC:** 2391200

MARKING PERIOD			RECAPTURE PERIOD UNMARKED			RECAPTURE PERIOD MARKED			
MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	
34		1	29	19	2	0	2	1	0

TOTAL MARKED (M):	64	CHAPMAN PE:	406	PE CV:	41.0%
TOTAL CAPTURED (C):	24	PE VARIANCE:	27726.6	AREA:	3111
TOTAL RECAPTURED (R):	3	PE ST. DEV:	166.5	DENSITY:	0.13

**COUNTY:** Lincoln **LAKE:** Alice **YEAR COMPLETED:** 2004  
**WBIC:** 1555900

MARKING PERIOD			RECAPTURE PERIOD UNMARKED			RECAPTURE PERIOD MARKED			
MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	
59		38	1	24	14	0	9	4	0

TOTAL MARKED (M):	98	CHAPMAN PE:	368	PE CV:	22.1%
TOTAL CAPTURED (C):	51	PE VARIANCE:	6587.3	AREA:	1369
TOTAL RECAPTURED (R):	13	PE ST. DEV:	81.2	DENSITY:	0.27

**COUNTY:** Lincoln **LAKE:** Mohawksin **YEAR COMPLETED:** 2004  
**WBIC:** 1515400

MARKING PERIOD			RECAPTURE PERIOD UNMARKED			RECAPTURE PERIOD MARKED			
MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	
28		25	1	37	18	1	2	2	1

TOTAL MARKED (M):	54	CHAPMAN PE:	568	PE CV:	35.9%
TOTAL CAPTURED (C):	61	PE VARIANCE:	41677.8	AREA:	1910
TOTAL RECAPTURED (R):	5	PE ST. DEV:	204.2	DENSITY:	0.30

**COUNTY:** Oneida **LAKE:** Bearskin **YEAR COMPLETED:** 2004  
**WBIC:** 1523600

MARKING PERIOD			RECAPTURE PERIOD UNMARKED			RECAPTURE PERIOD MARKED			
MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	MALE	FEMALE	UNKNOWN	
65		52	4	4	1	0	8	2	0

## APPENDIX E

### E. Summary of young-of-year walleye surveys conducted by WDNR in fall 2004.

County	Lake	WBIC	Acres	WRC	Model	Date	Temp	Total Shoreline	Miles Shocked	Percent Shock	Hours Shocked	Age 0 Caught	Age0 Min Lngth	Age0 Max Lngth	Age0 Modal
ASHLAND	AUGUSTINE	2410400	166	NONE	none	9/8/2004	NA	2.3	2.3	100.0	1.0	2	6.5	7.4	NONE
ASHLAND	ENGLISH	2914800	244	ST	stocked	10/6/2004	55	4.1	4.1	100.0	1.8	3	5.4	6	NONE
ASHLAND	L GALILEE	2935500	213	0-ST	remnant	10/11/2004	53	2.9	2.9	100.0	1.3	22	3.5	7.4	NONE
ASHLAND	LOON	2767300	36		N/A	9/7/2004	64	1.4	1.4	100.0	0.5	0			
ASHLAND	POTTER	2917200	29	ST	stocked	10/4/2004	52	0.9	0.9	100.0	0.7	0			
ASHLAND	SPILLERBERG	2936200	75	C-NR	natural	10/4/2004	52	1.5	1.5	100.0	0.7	68	4	6.7	NONE
BARRON	BIG MOON	2079000	191	C-ST	stocked	9/20/2004	65	3.2	3.2	100.0	1.1	0			
BARRON	GRANITE	2100800	154	C-ST	stocked	9/21/2004	65	3.4	3.4	100.0	1.4	9	5	6.4	NONE
BARRON	L MONTANIS	2103200	200	C-ST	stocked	10/7/2004	58	2.7	2.7	100.0	1.0	1	7	7.4	NONE
BARRON	LOWER TURTLE	2079700	276	ST	stocked	9/29/2004	65-68	3.8	3.8	100.0	1.3	6	6.6	7.9	NONE
BARRON	POSKIN	2098000	150	ST	stocked	9/30/2004	NA	4.1	4.1	100.0	0.9	4	5.5	6.6	NONE
BARRON	PRAIRIE	2094100	1534	C-ST	stocked	10/6/2004	57-61	25.4	8	31.5	2.8	0			
BARRON	RED CEDAR	2109600	1841	C-NR	natural	10/5/2004	57-60	15.9	12.3	77.4	4.8	818	3.5	7.9	4.5-4.9
BARRON	SHALLOW	1880600	92		N/A	10/12/2004	64	2.6	2.6	100.0	0.9	0			
BARRON	SILVER	1881100	337	C-ST	stocked	9/27/2004	61	4.4	4.4	100.0	2.1	36	4	6.4	5.0-5.4
BARRON	UPPER TURTLE	2079800	438	C-NR	natural	9/22/2004	65	4.8	4	83.3	1.6	7	4.5	6.9	NONE
BAYFIELD	ANODANTA	2898200	26		N/A	9/22/2004	64	1.3	1.3	100.0	0.5	0			
BAYFIELD	BONY	2742500	191	C-NR	natural	10/4/2004	57	2.7	2.7	100.0	1.1	294	3.2	7.8	3.8,4.0
BAYFIELD	BUFFALO	1837700	179	0-ST	remnant	9/30/2004	60	3.3	3	90.9	1.3	0			
BAYFIELD	DIAMOND	2897100	341	C-NR	natural	9/9/2004	66-68	5	5	100.0	1.6	3	5.4	6	NONE
BAYFIELD	MIDDLE EAU CLAIRE	2742100	902	C-NR	natural	9/30/2004	62-63	11	7.7	70.0	3.4	886	3.3	7.9	4.2
BAYFIELD	PIGEON	2489400	213	0-ST	remnant	9/23/2004	67	6.4	4	62.5	1.8	0			
BAYFIELD	TAYLOR	2734100	94	REM	remnant	9/21/2004	64	1.7	1.7	100.0	0.8	0			
BAYFIELD	TOMAHAWK	2501700	134	NONE	none	10/5/2004	54-56	2.9	2.9	100.0	1.2	0			
BAYFIELD	UPPER EAU CLAIRE	2742700	996	C-NR	natural	9/27/2004	62-63	11.1	11.1	100.0	4.0	322	4.4	7.1	5.7
BURNETT	BANACH	2450100	16		N/A	10/13/2004	58	0.7	0.7	100.0	0.4	0			
BURNETT	BIG SAND	2676800	1400	0-ST	remnant	9/14/2004	70	7.6	3.5	46.1	1.4	0			
BURNETT	FISH	2464500	356	REM	remnant	9/15/2004	69	4.3	4	93.0	1.6	0			
BURNETT	GULL	2671100	182	NONE	none	9/27/2004	63	5	1.4	28.0	0.8	0			
BURNETT	LILY	2475300	165	NONE	none	9/20/2004	69	3.1	3.1	100.0	1.1	0			
BURNETT	LIPSETT	2678100	393	ST	stocked	10/7/2004	60	3.5	3.5	100.0	1.3	13	5	6.5	NONE
BURNETT	LOVE	2671000	177	NONE	none	9/27/2004	63	2.8	2.5	89.3	1.1	0			
BURNETT	MINERVA	2670600	222	NONE	none	9/22/2004	70	5.8	3.6	62.1	1.6	0			
BURNETT	NICABOYNE	2486100	291		N/A	9/21/2004	68	3.8	3.3	86.8	1.4	0			
CHIPPEWA	BOB	2178400	97	NONE	none	9/27/2004	68	1.8	1.5	83.3	1.3	0			
CHIPPEWA	HALLIE	2150200	79		N/A	9/15/2004	67	2.9	2.9	100.0	2.0	0			
CHIPPEWA	OTTER	2157000	661	ST	stocked	9/28,29/2004	65-67	20	6	30.0	3.2	0			
CHIPPEWA	PIKE	2157900	192		N/A	10/4/2004	NA	2.7	2.7	100.0	1.6	0			
CHIPPEWA	ROUND	2169200	216	C-ST	stocked	10/5/2004	NA	2.9	2.9	100.0	1.9	0			
DOUGLAS	BEAR	2857700	47	NR	natural	9/22/2004	64	1.3	1.3	100.0	0.6	0			
DOUGLAS	DOWLING	2858300	154	NR	natural	9/21/2004	64	2.1	2.1	100.0	0.9	0			
DOUGLAS	L NEBAGAMON	2865000	914	C-NR	natural	9/16/2004	67	10.8	4	37.0	1.7	13	4	6.8	6
DOUGLAS	RADIGAN FLOWAGE	2687500	62		N/A	9/20/2004	67	2.9	2.9	100.0	1.0	0			
DOUGLAS	RED	2492100	258	0-ST	remnant	9/10/2004	68	3.5	3.5	100.0	1.4	0			
DOUGLAS	WHITEFISH	2694000	832	NR	natural	9/14/2004	68	6.9	4	58.0	1.5	45	2.8	5.1	NONE
DUNN	TAINTER	2068000	1752	NR	natural	9/21/2004	65	25.7	6	23.3	3.5	93	4	6.9	4.5-4.9
IRON	CEDAR	2309700	193	C-ST	stocked	9/23/2004	66	4.4	4.4	100.0	1.7	14	5.5	7.9	6.0-6.4
IRON	GILE FLOWAGE	2942300	3384	NR	natural	9/27/2004	57-62	27.2	13.9	51.1	4.7	636	3	6.4	4.0-4.4
IRON	MCDERMOTT	2296500	84	0-ST	remnant	10/19/2004	45	2.6	2.6	100.0	0.9	7	4.5	5.9	5.5-5.9
IRON	PINE	2949200	312	NR	natural	9/16/2004	63-65	6	6	100.0	2.7	48	3.9	6.7	NONE
IRON	RANDALL	2318500	115	C-	natural	10/9/2004	64	2.1	2.1	100.0	0.6	29	4	6.4	5.0-5.4
IRON	SPIDER	2306300	352	NR	natural	10/10/2004	50	7.3	4.4	60.3	1.5	26	4	6.9	NONE
IRON	TRUDE	2295200	792	NR	natural	9/20/2004	63	15.1	4.2	27.8	1.6	437	<3.0	6.9	5.0-5.4

County	Lake	Age0Hr	Age0Mi	Serns	Age1 Max				Age1 Hr	Age1Mi	OtherWE	TotalWE	MUE	NP	LMB	SMB
					Age1	MinL	Lgth	Age1 Modal								
ASHLAND	AUGUSTINE	2.0	0.9	NA	-->					91	93	5	1	0	0	
ASHLAND	ENGLISH	1.7	0.7	NA	-->					33	36	13	0	51	0	
ASHLAND	L GALILEE	16.9	7.6	1.8	-->					110	132	0	11	2	0	
ASHLAND	LOON	0.0	0.0	0.0	0				0.0	0	0	0	3	26	0	
ASHLAND	POTTER	0.0	0.0	0.0	0				0.0	3	3	8	0	0	0	
ASHLAND	SPILLERBERG	97.1	45.3	10.6	-->					26	94	6	0	0	0	
BARRON	BIG MOON	0.0	0.0	0.0	2	12	12.4	NONE	1.8	0	2	3	6	52	0	
BARRON	GRANITE	6.4	2.6	NA	-->					60	69	0	9	5	0	
BARRON	L MONTANIS	1.0	0.4	0.1	4	8	9.4	NONE	4.0	10	15	0	15	23	9	
BARRON	OWER TURTL	4.6	1.6	NA	0				0.0	26	32	0	33	70	0	
BARRON	POSKIN	4.4	1.0	NA	0				0.0	8	12	0	15	30	0	
BARRON	PRAIRIE	0.0	0.0	NA	5	10.4	11.2	NONE	1.8	14	19	0	6	52	1	
BARRON	RED CEDAR	170.1	66.5	NA	-->					117	935	0	23	33	8	
BARRON	SHALLOW	0.0	0.0	0.0	0				0.0	0	0	0	3	23	0	
BARRON	SILVER	17.1	8.2	1.9	4	9	9.9	NONE	1.9	12	52	0	4	47	3	
BARRON	PPER TURTL	4.4	1.8	NA	-->					16	23	0	13	41	5	
BAYFIELD	ANODANTA	0.0	0.0	NA	0				0.0	0	0	0	5	40	0	
BAYFIELD	BONY	267.3	108.9	25.5	31	8.4	10.8	9.5	28.2	47	372	0	16	3	1	
BAYFIELD	BUFFALO	0.0	0.0	NA	0				0.0	2	2	1	0	7	0	
BAYFIELD	DIAMOND	1.9	0.6	NA	0				0.0	4	7					
BAYFIELD	DLE EAU CLA	260.6	115.1	NA	-->					273	1159	3	3	6	6	
BAYFIELD	PIGEON	0.0	0.0	NA	0				0.0	0	0	0	5	52	0	
BAYFIELD	TAYLOR	0.0	0.0	0.0	0				0.0	0	0	0	7	19	0	
BAYFIELD	TOMAHAWK	0.0	0.0	NA	0				0.0	1	1	0	24	9	0	
BAYFIELD	PER EAU CLA	80.5	29.0	6.8	25	8.5	11	10.2	6.3	4	351	6	3	31	28	
BURNETT	BANACH	0.0	0.0	NA	0				0.0	0	0	0	0	30	0	
BURNETT	BIG SAND	0.0	0.0	NA	0				0.0	0	0	0	21	82	0	
BURNETT	FISH	0.0	0.0	NA	0				0.0	0	0	0	9	98	0	
BURNETT	GULL	0.0	0.0	NA	0				0.0	0	0	0	2	28	0	
BURNETT	LILY	0.0	0.0	NA	0				0.0	1	1	0	0	38	0	
BURNETT	LIPSETT	10.0	3.7	0.9	0				0.0	9	22	0	39	137	0	
BURNETT	LOVE	0.0	0.0	NA	0				0.0	0	0	0	26	73	0	
BURNETT	MINERVA	0.0	0.0	NA	0				0.0	0	0	0	29	97	0	
BURNETT	NICABOYNE	0.0	0.0	NA	0				0.0	0	0	0	23	61	0	
CHIPPEWA	BOB	0.0	0.0	NA	0				0.0	0	0	0	7	35	0	
CHIPPEWA	HALLIE	0.0	0.0	NA	-->					1	1	0	4	188	0	
CHIPPEWA	OTTER	0.0	0.0	NA	-->					9	9	0	2	335	0	
CHIPPEWA	PIKE	0.0	0.0	NA	0				0.0	0	0	0	3	172	1	
CHIPPEWA	ROUND	0.0	0.0	0.0	0				0.0	5	5	2	4	46	0	
DOUGLAS	BEAR	0.0	0.0	0.0	0				0.0	0	0	1	0	0	0	
DOUGLAS	DOWLING	0.0	0.0	NA	0				0.0	6	6	5	0	19	0	
DOUGLAS	NEBAGAMOI	7.6	3.3	NA	7	8.8	9.7	NONE	4.1	39	59	0	14	0	1	
DOUGLAS	IGAN FLOW/	0.0	0.0	NA	0				0.0	0	0	0	1	0	0	
DOUGLAS	RED	0.0	0.0	NA						0	0					
DOUGLAS	WHITEFISH	30.0	11.3	NA	29	5.9	9.2	NONE	19.3	21	95	0	3	6	5	
DUNN	TAINTER	26.3	15.5	NA	-->					109	202	0	10	18	22	
IRON	CEDAR	8.2	3.2	NA	-->					60	74	10	0	0	0	
IRON	ILE FLOWAG	135.3	45.8	NA	-->					168	804	42	23	0	5	
IRON	MCDERMOTT	7.8	2.7	0.6	-->					73	80	1	9	11	2	
IRON	PINE	17.8	8.0	1.9	-->					494	542	8				
IRON	RANDALL	48.3	13.8	3.2	8	7.5	9.4	NONE	13.3	51	88	4	4	0	0	
IRON	SPIDER	17.3	5.9	NA	-->					53	79	4	7	2	15	
IRON	TRUDE	273.1	104.0	NA	101	7	9.9	NONE	63.1	91	629	0	19	3	11	

County	Lake	Clarity	Adverse Conditions	Reliability	Comments	No. Stocked	Size	Survival	Stocking Date
ASHLAND	AUGUSTINE	NA	NA	M	baseline				
ASHLAND	ENGLISH	NA	Y	M	N	21602	SMALL FINGERLING		06/22/2004
ASHLAND	L GALILEE	NA	NA	H	baseline	13886	SMALL FINGERLING	0.02723	07/22/2004
ASHLAND	LOON	NA	NA	H	baseline				
ASHLAND	POTTER	NA	Y	M	N				
ASHLAND	SPILLERBERG	NA	Y	M	N				
BARRON	BIG MOON	NA	Y	M	baseline				
BARRON	GRANITE	NA	Y	M	baseline, OTC lake	7700	SMALL FINGERLING		06/23/2004
BARRON	L MONTANIS	NA	N	H	N				
BARRON	LOWER TURTLE	NA	Y	M	N	5506	LARGE FINGERLING		09/20/2004
BARRON	POSKIN	NA	Y	M	N, OTC lake	11250	SMALL FINGERLING		06/23/2004
BARRON	PRAIRIE	<1	Y	L	N				
BARRON	RED CEDAR	4	Y	M	N, OTC lake	138059	SMALL FINGERLING		06/29,30/2004
BARRON	SHALLOW	NA	N	H	N				
BARRON	SILVER	NA	Y	M	baseline, OTC lake	25313	SMALL FINGERLING	0.025489	06/23/2004
BARRON	UPPER TURTLE	NA	N	H	baseline	32912	SMALL FINGERLING		06/23/2004
BAYFIELD	ANODANTA	NA	Y	L	N				
BAYFIELD	BONY	NA	N	H	N				
BAYFIELD	BUFFALO	8	Y	L	N				
BAYFIELD	DIAMOND	NA	Y	M	N, OTC lake	17061	SMALL FINGERLING		06/29/2004
BAYFIELD	MIDDLE EAU CLAIRE	NA	Y	M	N				
BAYFIELD	PIGEON	NA	Y	M	baseline				
BAYFIELD	TAYLOR	NA	Y	M	N				
BAYFIELD	TOMAHAWK	NA	Y	L	baseline				
BAYFIELD	UPPER EAU CLAIRE	NA	Y	H	N				
BURNETT	BANACH	NA	Y	M	baseline				
BURNETT	BIG SAND	NA	Y	M	baseline	70973	SMALL FINGERLING		06/18/2004
BURNETT	FISH	NA	Y	M	baseline				
BURNETT	GULL	NA	Y	M	baseline				
BURNETT	LILY	NA	Y	M	baseline				
BURNETT	LIPSETT	NA	N	H	N, OTC lake	19600	SMALL FINGERLING	0.017427	07/21/2004
BURNETT	LOVE	NA	N	H	baseline				
BURNETT	MINERVA	NA	Y	M	baseline				
BURNETT	NICABOYNE	NA	Y	M	baseline				
CHIPPEWA	BOB	NA	Y	M	baseline				
CHIPPEWA	HALLIE	NA	Y	L	baseline				
CHIPPEWA	OTTER	NA	Y	M	baseline				
CHIPPEWA	PIKE	NA	N	M	baseline				
CHIPPEWA	ROUND	NA	Y	M	baseline				
DOUGLAS	BEAR	NA	Y	M	baseline				
DOUGLAS	DOWLING	NA	Y	M	baseline				
DOUGLAS	L NEBAGAMON	NA	Y	M	baseline				
DOUGLAS	RADIGAN FLOWAGE	NA	Y	M	baseline				
DOUGLAS	RED	NA	Y	M	N	12965	SMALL FINGERLING		07/21/2004
DOUGLAS	WHITEFISH	NA	Y	M	54baseline				
DUNN	TAINTER	NA	Y	L	baseline				
IRON	CEDAR	NA	Y	M	baseline				
IRON	GILE FLOWAGE	NA	Y	M	N				
IRON	MCDERMOTT	NA	NA	L	baseline				

County	Lake	WBIC	Acres	WRC	Model	Date	Temp	Total Shoreline	Miles Shocked	Percent Shock	Hours Shocked	Age 0 Caught	Age0 Min Lngth	Age0 Max Lngth
IRON	TURTLE FLAMBEAU FLOWAGE	2294900	13122	C-NR	natural	9/21,22/2004	63-66	206.3	8.4	4.1	3.2	319	3	6.4
POLK	BALSAM	2620600	2054	C-ST	stocked	9/28/2004	64-67	22.7	22.7	100.0	8.6	22	4.5	6.8
POLK	BIG	2615900	259	NONE	none	9/16/2004	65	3	3	100.0	1.1	0		
POLK	BLACK BROOK FLOWAGE	2621900	98	NONE	none	9/29/2004	61	5	5	100.0	1.4	0		
POLK	LITTLE BUTTERNUT	2640700	189	C-ST	stocked	9/12/2004	73	2.4	2.4	100.0	0.8	0		
POLK	PIPE	2490500	284	C-NR	natural	9/23/2004	68-69	6.9	6.9	100.0	2.1	0		
POLK	SAND	2495000	187	ST	stocked	10/4/2004	56	2.6	2.6	100.0	0.9	0		
PRICE	LE TOURNEAU	2286900	124	REM	remnant	9/15/2004	68-69	2.1	2.1	100.0	0.8	0		
PRICE	PIXLEY FLOWAGE	2288900	193	NR	natural	10/5/2004	52-53	8.1	4	49.4	2.2	6	4.7	5.4
PRICE	TURNER	2268500	149	C-	natural	10/5/2004	49	2.6	2.6	100.0	1.2	22	4.2	6.6
PRICE	WILSON FLOWAGE	2246500	269		N/A	9/29/2004	59	7.7	1.9	24.7	0.7	0		
RUSK	AUDIE	2368700	128	NONE	none	10/4/2004	55	5.1	4	78.4	1.4	0		
RUSK	CHAIN	2350500	468	C-NR	natural	9/21/2004	68	7.9	4	50.6	1.6	6	5.5	6.6
RUSK	CLEAR	2350600	95	C-NR	natural	9/22/2004	68	1.8	1.7	94.4	0.6	0		
RUSK	DAIRYLAND RESERVOIR	2229200	1745	NR	natural	9/27/2004	64-66	20.4	6	29.4	2.6	230	3.7	6.3
RUSK	ISLAND	2350200	526	C-NR	natural	9/20/2004	68	5.8	4	69.0	1.6	0		
RUSK	LADYSMITH FLOWAGE	2228700	288	NR	natural	9/28/2004	65	10.4	4	38.5	1.6	18	3.3	4.8
RUSK	MCCANN	2350400	133	C-NR	natural	9/22/2004	70	4.2	1.7	40.5	0.6	0		
RUSK	POTATO	2355300	534	ST	stocked	10/11/2004	61	9.2	3.7	40.2	1.1	0		
RUSK	THORNAPPLE FLOWAGE	2227500	268	NR	natural	9/29/2004	63	7.6	4	52.6	1.6	20	3.5	5.2
SAWYER	ASHEGON	2448800	75	NONE	none	9/14/2004	66	2.3	2.3	100.0	0.8	1	6	6.4
SAWYER	BARBER	2382300	238	C-ST	stocked	10/12/2004	59	4.8	4	83.3	1.4	0		
SAWYER	BLACK	2401300	129	0-ST	remnant	9/28/2004	63	3	2.5	83.3	1.2	0		
SAWYER	BLACK DAN	2381900	128	0-ST	remnant	10/5/2004	55	3	3	100.0	0.5	15	7.5	8.4
SAWYER	BLUEBERRY	1835700	280	ST	stocked	10/7/2004	56	4.2	3	71.4	1.2	0		
SAWYER	CHRISTNER	1840800	34		N/A	9/14/2004	64	1	2	200.0	0.9	0		
SAWYER	GRINDSTONE	2391200	3111	C-NR	natural	9/14/2004	67-69	10.5	9.3	88.6	2.9	946	3.1	6.7
SAWYER	HAYWARD	2725500	247	C-NR	natural	10/6/2004	49	8.6	6.6	76.7	1.8	9	6	7.9
SAWYER	ISLAND	2381800	67	0-ST	remnant	10/5/2004	55	1.5	1.5	100.0	0.5	12	7.5	8.4
SAWYER	L CHETA C	2113300	1920	C-NR	natural	9/28/2004	63-65	17.5	13.9	79.4	4.5	288	4.5	7.4
SAWYER	L CHIPPEWA	2399700	15300	C-NR	natural	9/15,17/2004	65-66	232.9	3.7	1.6	1.9	10	3.5	5.9
SAWYER	LOST LAND	2418600	1304	C-ST	stocked	9/21/2004	65-66	11.3	11.3	100.0	3.1	15	4.6	6.5
SAWYER	NELSON	2704200	2503	C-ST	stocked	9/27/2004	61-64	31.4	14.9	47.5	5.9	0		
SAWYER	TEAL	2417000	1049	NR	natural	9/22/2004	65-71	11.8	11.8	100.0	4.3	122	4.1	6.6
SAWYER	TIGER CAT FLOWAGE	2435000	819	0-ST	remnant	9/20/2004	66-67	25.6	25.6	100.0	8.0	0		
SAWYER	WINDIGO	2046600	522	C-NR	natural	10/6/2004	57-61	9	5.5	61.1	NA	62	3.5	6.9
ST. CROIX	CEDAR	2615100	1100	NR	natural	10/4/2004	57-59	6.3	6.3	100.0	3.4	580	4.6	7.5
WASHBURN	BIRCH	2113000	368	C-ST	stocked	10/4/2004	58	6.7	4	59.7	1.7	30	4.6	6.7
WASHBURN	L NANCY	2691500	772	C-NR	natural	10/5/2004	58	10.9	4	36.7	1.7	16	4.5	7.5
WASHBURN	LITTLE STONE	1862400	27	NR-2	remnant	9/8/2004	68	0.9	0.9	100.0	0.5	0		
WASHBURN	MIDDLE MCKENZIE	2706500	530	C-NR	natural	10/12/2004	59	4.1	4.1	100.0	1.8	57	4.7	7.2
WASHBURN	MINONG FLOWAGE	2692900	1564	NR	natural	10/6/2004	56	24.8	6	24.2	2.6	88	5.3	7.8
WASHBURN	STONE	1884100	523	C-NR	natural	9/8/2004	68	4	4	100.0	1.8	0		
WASHBURN	YELLOW RIVER FLOWAGE	2681600	344	REM	remnant	10/19/2004	46	7.5	2.5	33.3	1.3	0		
Langlade	Moccasin	1005600	111	C-ST	stocked	09/29/2004	63	3	3	100.0	1.5	0		
Langlade	Otter	387200	83.3	NR-2	remnant	10/07/2004	57	2.4	2.4	100.0	1.1	0	0	0
Langlade	Rolling Stone	389300	672	ST	stocked	09/21/2004	62	4.8	4.8	100.0	1.9	0		
Langlade	Upper Post	399200	757	C-ST	stocked	09/22/2004	64	7.6	7.4	97.4	2.5	0		
Lincoln	Pesabic	1481600	146	ST	stocked	10/04/2004	52	2.3	2.3	100.0	1.0	0		
Lincoln	Seven Island	1490300	132	C-ST	stocked	10/06/2004	56	4	2.6	65.0	1.1	0		
Lincoln	Somo	1547700	472	C-ST	stocked	10/05/2004	56	11.9	5	42.0	1.2	0		
Lincoln	Spirit Reservoir	1506800	1663	C-NR	natural	10/05/2004	52	50.3	2.2	4.4	1.0	69	3.7	5.6
Lincoln	Squaw	1564400	82	ST	stocked	09/23/2004	70	2.6	2.6	100.0	1.1	0		

County	Lake	Age0Hr	Age0Mi	Serns	Age1	Age1 MinL	Age1 Max Lgth	Age1			OtherWE	TotalWE	MUE	NP	LMB	SMB
								Modal	Age1Hr	Age1Mi						
IRON	TURTLE FLAMBEAU FLOWAGE	99.6875	37.97619048	NA	157	6.5	10.4	8.0-8.9	49.0625	18.7	101.0	577	2	32	0	10
POLK	BALSAM	2.55814	0.969162996	NA	4	10.7	11.5	NONE	0.465116279	0.2	6.0	32			515	
POLK	BIG	0	0	0	0				0	0.0	0.0	0	0	5	99	0
POLK	BLACK BROOK FLOWAGE	0	0	NA	0				0	0.0	0.0	0	0	2	1	0
POLK	LITTLE BUTTERNUT	0	0	NA								0				
POLK	PIPE	0	0	NA	2	10.4	11	NONE	0.952380952	0.3	5.0	7	0	22	46	14
POLK	SAND	0	0	0	0				0	0.0	0.0	0	0	5	67	0
PRICE	LE TOURNEAU	0	0	NA	0				0	0.0	5.0	5	0	0	60	1
PRICE	PIXLEY FLOWAGE	2.727273	1.5	NA	19	6.9	8.5	8	8.636363636	4.8	24.0	49	15	7	0	5
PRICE	TURNER	18.33333	8.461538462	1.98	-->						61.0	83	5	11	43	0
PRICE	WILSON FLOWAGE	0	0	NA	0				0	0.0	0.0	0	0	13	0	0
RUSK	AUDIE	0	0	NA	0				0	0.0	0.0	0	1	3	43	0
RUSK	CHAIN	3.75	1.5	NA	27	8.5	11.5	9.7	16.875	6.8	9.0	42	6	11	93	13
RUSK	CLEAR	0	0	NA	1	10.5	10.5	NONE	1.666666667	0.6	0.0	1	0	1	31	0
RUSK	DAIRYLAND RESERVOIR	88.46154	38.33333333	NA	-->						180.0	410	10	0	0	35
RUSK	ISLAND	0	0	NA	5	10.3	11.1	NONE	3.125	1.3	16.0	21	0	5	88	1
RUSK	LADYSMITH FLOWAGE	11.25	4.5	NA	-->						82.0	100	4	3	0	39
RUSK	MCCANN	0	0	NA	0				0	0.0	0.0	0	2	0	32	1
RUSK	POTATO	0	0	NA	0				0	0.0	14.0	14	9	5	27	0
RUSK	THORNAPPLE FLOWAGE	12.5	5	NA	17	6.1	8.3	NONE	10.625	4.3	19.0	56	0	11	0	41
SAWYER	ASHEGON	1.25	0.434782609	NA	0				0	0.0	1.0	2	0	0	15	0
SAWYER	BARBER	0	0	NA	0				0	0.0	8.0	8	13	0	37	0
SAWYER	BLACK	0	0	NA	0				0	0.0	0.0	0	3	0	31	0
SAWYER	BLACK DAN	30	5	1.17	17	8.5	10.9	NONE	34	5.7	4.0	36	7	6	31	0
SAWYER	BLUEBERRY	0	0	NA	0				0	0.0	10.0	10	0	2	119	0
SAWYER	CHRISTNER	0	0	0	0				0	0.0	0.0	0	0	0	33	0
SAWYER	GRINDSTONE	326.2069	101.7204301	NA	131	6.9	10	8.2	45.17241379	14.1	17.0	1094	0	0	0	12
SAWYER	HAYWARD	5	1.363636364	NA	-->						13.0	22	12	47	22	0
SAWYER	ISLAND	24	8	1.872	1	10	10.4	NONE	2	0.7	1.0	14	2	0	20	0
SAWYER	L CHETAC	64	20.71942446	NA	-->						262.0	550	0	44	200	3
SAWYER	L CHIPPEWA	5.263158	2.702702703	NA	-->						216.0	226	0	8	2	0
SAWYER	LOST LAND	4.83871	1.327433628	NA	25	8.2	10.3	NONE	8.064516129	2.2	25.0	65	4	31	34	11
SAWYER	NELSON	0	0	NA	0				0	0.0	15.0	15	0	10	81	0
SAWYER	TEAL	28.37209	10.33898305	NA	-->						686.0	808	27	18	12	5
SAWYER	TIGER CAT FLOWAGE	0	0	NA	-->						42.0	42	92	5	294	1
SAWYER	WINDIGO	NA	11.27272727	NA	-->						11.0	73	0	12	17	9
ST. CROIX	CEDAR	171.4286	92.06349206	NA	386	8.1	11.6	10	114.08867	61.3	91.0	1057	1	17	17	10
WASHBURN	BIRCH	18.18182	7.5	NA	15	7.5	11.2	NONE	9.090909091	3.8	25.0	70	0	30	62	19
WASHBURN	L NANCY	9.356725	4	NA	0				0	0.0	1.0	17	0	29	172	0
WASHBURN	LITTLE STONE	0	0	NA								0				
WASHBURN	MIDDLE MCKENZIE	32.02247	13.90243902	3.25317073	1	9.2	9.2	NONE	0.561797753	0.2		58				
WASHBURN	MINONG FLOWAGE	34.24125	14.66666667	NA	-->						251.0	339	0	84	25	2
WASHBURN	STONE	0	0	NA								0				
WASHBURN	YELLOW RIVER FLOWAGE	0	0	NA	0				0	0.0	0.0	0	0	10	25	0
Langlade	Moccasin	0	0	0	0				0	0.0	3.0	3	5	9	26	
Langlade	Otter	0	0	0	1	7.8	7.8		0.909090909	0.4	49.0	50		9	71	
Langlade	Rolling Stone	0	0	0	0				0	0.0	1.0	1		23	20	
Langlade	Upper Post	0	0	NA	2	8.5	8.9		0.8	0.3	32.0	34	3	15	25	2
Lincoln	Pesabic	0	0	0	0				0	0.0	3.0	3		8	12	
Lincoln	Seven Island	0	0	NA	0				0	0.0	8.0	8	6	0	14	1
Lincoln	Somo	0	0	NA	47	7.4	9	8.3, 8.5	39.16666667	9.4	52.0	99	8	7	10	5
Lincoln	Spirit Reservoir	69	31.36363636	NA	32	7.5	10	8.9	32	14.5	4.0	105	0	31	4	0
Lincoln	Squaw	0	0	0	18	6.9	8.2	7.7	16.36363636	6.9	7.0	25	1	3	6	1

County	Lake	Clarity	Adverse Conditions	Reliability	Comments	No. Stocked	Size	Survival	Stocking Date
IRON	TURTLE FLAMBEAU FLOWAGE	NA	Y	M	N				
POLK	BALSAM	NA	Y	M	N	18853	LARGE FINGERLING		09/21,22,24/2004
POLK	BIG	NA	Y	M	baseline				
POLK	BLACK BROOK FLOWAGE	NA	Y	L	baseline				
POLK	LITTLE BUTTERNUT	NA	Y	M	N	9440	SMALL FINGERLING		07/15/2004
POLK	PIPE	NA	Y	M	N				
POLK	SAND	NA	Y	M	baseline				
PRICE	LE TOURNEAU	NA	Y	M	baseline				
PRICE	PIXLEY FLOWAGE	NA	Y	M	baseline				
PRICE	TURNER	NA	Y	M	N				
PRICE	WILSON FLOWAGE	NA	N	H	N				
RUSK	AUDIE	NA	Y	M	baseline				
RUSK	CHAIN	NA	Y	M	baseline				
RUSK	CLEAR	NA	Y	M	baseline				
RUSK	DAIRYLAND RESERVOIR	NA	Y	M	baseline				
RUSK	ISLAND	NA	Y	M	baseline				
RUSK	LADYSMITH FLOWAGE	NA	N	H	baseline				
RUSK	MCCANN	NA	Y	M	baseline				
RUSK	POTATO	<1	Y	M	N	26700	SMALL FINGERLING		07/01/2004
RUSK	THORNAPPLE FLOWAGE	NA	Y	M	baseline				
SAWYER	ASHEGON	NA	Y	L	N				
SAWYER	BARBER	NA	NA	H	baseline	11900	SMALL FINGERLING		06/21/2004
SAWYER	BLACK	NA	Y	L	N				
SAWYER	BLACK DAN	NA	NA	H	N				
SAWYER	BLUEBERRY	NA	Y	M	baseline				
SAWYER	CHRISTNER	NA	N	M	baseline				
SAWYER	GRINDSTONE	8	Y	M	N				
SAWYER	HAYWARD	NA	Y	M	N	2460	LARGE FINGERLING		09/20/2004
SAWYER	ISLAND	NA	N	H	N				
SAWYER	L CHETAC	<1-4	Y	L	N, OTC lake	19199	SMALL FINGERLING		06/21/2004
SAWYER	L CHIPPEWA	NA	Y	L	N				
SAWYER	LOST LAND	NA	Y	M	N				
SAWYER	NELSON	2-4	Y	M	N				
SAWYER	TEAL	NA	Y	M	N				
SAWYER	TIGER CAT FLOWAGE	NA	Y	M	N				
SAWYER	WINDIGO	NA	Y	M	baseline				
ST. CROIX	CEDAR	<1	Y	M	N				
WASHBURN	BIRCH	NA	N	H	baseline	18400	SMALL FINGERLING		07/01/2004
WASHBURN	L NANCY	NA	N	H	baseline	38597	SMALL FINGERLING		06/22/2004
WASHBURN	LITTLE STONE	NA	Y	M	N				
WASHBURN	MIDDLE MCKENZIE	NA	N	H	N	26499	SMALL FINGERLING		06/22/2004
WASHBURN	MINONG FLOWAGE	NA	N	H	baseline				
WASHBURN	STONE	NA	Y	M	N	26130	SMALL FINGERLING		07/15/2004
WASHBURN	YELLOW RIVER FLOWAGE	NA	Y	M	baseline				
Langlade	Moccasin	6	Dense vegetation, floating bog	High	Walleye Stocking Evaluation	11000	SMALL FINGERLING	0	06/22/2004
Langlade	Otter	6	None	High	Walleye Recruitment Survey				
Langlade	Rolling Stone	7.5	None	High	Walleye Recruitment Survey				
Langlade	Upper Post	4	Algal bloom, numerous boat docks	High	Walleye Recruitment Survey				
Lincoln	Pesabic	9	None	High	Walleye Stocking Evaluation	14600	SMALL FINGERLING	0	06/22/2004
Lincoln	Seven Island	9.5	None	High	Walleye Recruitment Survey				
Lincoln	Somo	4	Numerous boat docks	High	Walleye Recruitment Survey				
Lincoln	Spirit Reservoir	5.25	None	High	Walleye Recruitment Survey				
Lincoln	Squaw	6.5	None	High	Walleye Recruitment Survey				

County	Lake	WBIC	Acres	WRC	Model	Date	Temp	Total	Miles	Percent	Hours	Age 0	Age0	Age0	
								Shoreline	Shocked	Shock	Shocked	Caught	Min Lngth	Max Lngth	Modal
Lincoln	Tug	1482400	151	C-	natural	10/06/2004	56	2.7	2.7	100.0	1.4	7	4.5	7.2	
Oneida	Alva	968100	203	C-NR	natural	10/05/2004	56	3.6	3.6	100.0	1.5	0			
Oneida	Blue	1538600	456	NR	natural	09/28/2004	63	6.9	6.9	100.0	3.5	104	4.2	6.6	5.3
Oneida	McCormick	1526600	118	0-ST	remnant	10/13/2004	53	2.1	2.1	100.0	1.0	15	4	7.1	
Oneida	Sevenmile	1605800	503	C-NR	natural	09/29/2004	63	6.1	3.9	63.9	2.2	68	5.8	7	6.6
Oneida	Tom Doyle	1586800	102	C-ST	stocked	10/14/2004	52	2.4	2.4	100.0	1.2	2	5.4	5.8	
Oneida	West Horsehead	1522900	151	0-ST	remnant	10/18/2004	47	2.8	2.8	100.0	1.3	0			
Vilas	Alder	2329600	274	C-NR	natural	09/22/2004	68	3.9	3.9	100.0	1.4	127	3.6	7.1	5.4
Vilas	Big Crooked	2338800	682	NR	natural	09/09/2004	66	5	5	100.0	2.8	91	2.9	5.4	3.5
Vilas	Big St. Germain	1591100	1617	C-ST	stocked	09/29/2004	63	7.5	7.5	100.0	3.0	93	4.2	7	6.2
Vilas	Dead Pike	2316600	297	ST	stocked	10/11/2004	57	3.8	3.1	82.0	1.6	34	5.4	6.7	6.0, 6.2
Vilas	Escanaba	2339900	293	NR	natural	09/08/2004	65	5.2	5.2	100.0	3.0	361	3.7	6.4	6
Vilas	Fawn	2328900	74	C-NR	natural	10/05/2004	53	2.76	2.76	100.0	0.7	18	4.3	6.4	5.6
Vilas	Found	1593800	326	ST	stocked	09/22/2004	67	3.7	3.7	100.0	1.7	0			
Vilas	Little Star	2334300	244	C-NR	natural	09/21/2004	66	3.8	3.8	100.0	1.1	42	3.6	6.6	
Vilas	Manitowish	2329400	496	C-NR	natural	09/21/2004	66	7.6	7.3	96.1	2.1	49	3.8	7.2	4.7
Vilas	Sparkling	1881900	154	C-ST	stocked	09/22/2004	68	2.7	2.7	100.0	0.8	0			
Vilas	Spider	2329300	272	C-NR	natural	09/28/2004	63	5.9	5.9	100.0	1.3	133	3.4	7.3	4
Vilas	Stone	2328800	139	C-NR	natural	10/05/2004	53	3.56	3.56	100.0	1.8	31	3.6	6.3	5.5
Vilas	Wolf	2336100	393	NR	natural	09/28/2004	63	4.4	4.4	100.0	2.0	217	5.4	6.6	6.1
Florence	Cosgrove	585100	75		N/A	09/30/2004	63	2.5	2.5	100.0	1.2	0			
Florence	Halsey	679300	517	0-ST	remnant	09/16/2004	63	4	4	100.0	1.4	0			
Florence	Keyes	672900	202	C-NR	natural	09/13/2004	68	3.2	3.2	100.0	1.2	0			
Florence	Patten	653700	255	NR	natural	09/23/2004	68	4	4	100.0	1.4	253	3.7	7.4	4.7
Florence	Sand	591600	50	REM	remnant	09/28/2004	64	1.3	1.3	100.0	0.7	0			
Florence	Sealion	672300	125	REM	remnant	09/13/2004	68	3.5	3.5	100.0	1.4	0			
Forest	Butternut	692400	1292	C-NR	natural	09/27/2004	63	7.8	4	51.3	1.5	27	3.9	4.7	
Forest	Crane	388500	337	ST	stocked	10/04/2004	53	3.9	3.9	100.0	1.4	0			
Forest	Franklin	692900	892	NR	natural	10/12/2004	57	6.6	6.6	100.0	2.2	32	3.8	5.1	4.4
Forest	Metonga	394400	1991	C-ST	stocked	09/26/2004	67	7.9	7.9	100.0	4.3	108	3.6	7.2	5.1, 5.4
Forest	Pickerel	388100	1299	0-ST	remnant	10/06/2004	54	11	11	100.0	3.3	0			
Forest	Windfall	373500	58	NONE	none	10/04/2004	52	1.6	1.6	100.0	0.7	0			
Langlade	Lower Clear	1002400	81		N/A	10/07/2004	56	2.7	2.7	100.0	1.1	0			
Langlade	Mary	496300	156		N/A	09/27/2004	64	1.8	1.8	100.0	1.0	0			
Langlade	Sawyer	198100	149	NR	natural	09/27/2004	66	5.2	4	76.9	1.6	2	6.3	6.5	
Langlade	Rose	494200	112	C-ST	stocked	09/16/2004	68	7.25	7.25	100.0	1.7	6	6.1	6.7	
Lincoln	Harrison	1560400	206		N/A	09/30/2004	60	5.31	4	75.3	1.3	0			
Lincoln	Merrill Flowage	1481100	164	NR	natural	10/04/2004	56	8.54	4	46.8	2.0	39	3.8	6	4.9
Oneida	Bear	1527800	312	ST	stocked	09/08/2004	67	4.1	3.6	87.8	2.1	0			
Oneida	Booth	1537800	207	ST	stocked	09/16/2004	65	3.6	3.6	100.0	1.5	0			
Oneida	Burrows	975000	156	0-ST	remnant	09/02/2004	68	2.7	2.7	100.0	1.9	0			
Oneida	Indian	1598900	397	NR	natural	09/09/2004	62	5.1	5.1	100.0	3.2	57	3.2	4.7	3.7
Oneida	Julia (Rhineland)	995000	238	C-NR	natural	10/02/2004	55	4.6	4.6	100.0	2.5	0			
Oneida	Long	1001300	175	ST	stocked	09/13/2004	68	4.5	4.1	91.1	2.0	14	5.4	6.6	5.6
Oneida	Maple	1609900	144	0-ST	remnant	09/07/2004	66	2.3	2.3	100.0	1.5	0			
Oneida	Pelican	1579900	3585	C-NR	natural	10/04/2004	50	16.7	16.7	100.0	9.1	659	3	7.7	5.6
Vilas	Allequash	2332400	426	ST	stocked	10/04/2004	54	5.8	3.2	55.2	1.4	99	5	6.8	6
Vilas	Big Muskellunge	1835300	930	NR	natural	10/14/2004	53	10.2	10.2	100.0	3.7	234	2.7	7.2	4.2
Vilas	Clear	2329000	555	C-NR	natural	09/20/2004	65	6	4.3	71.7	2.0	226	3.6	6.6	5
Vilas	Island	2334400	1023	C-NR	natural	09/20/2004	63	16.75	7.64	45.6	3.8	176	3.6	6.6	4.3

County	Lake	Age1															
		Age0Hr	Age0Mi	Sems	Age1	Age1	MinL	Lgth	Age1 Modal	Age1Hr	Age1Mi	OtherWE	TotalWE	MUE	NP	LMB	SMB
Lincoln	Tug	5	2.5926	0.607	11	8.1	9.6		7.8571429	4.1	61.0	79	0	33	17		
Oneida	Alva	0	0	0	0				0	0.0	5.0	5	0	1	14	54	
Oneida	Blue	29.71429	15.072	3.527	8	8.3	9.9	9.3	2.2857143	1.2	28.0	140		20	7	176	
Oneida	McCormick	14.56311	7.1429	1.671	10	8.8	10.3		9.7087379	4.8	39.0	64		3	17		
Oneida	Sevenmile	31.19266	17.436	NA	16	7.8	9.2	8.2, 9.0	7.3394495	4.1	0.0	84	0	3	2	6	
Oneida	Tom Doyle	1.694915	0.8333	0.195	0				0	0.0	3.0	5	2	11	4	3	
Oneida	West Horsehead	0	0	0	0				0	0.0	0.0	0	5	19	3		
Vilas	Alder	89.43662	32.564	7.62	28	7.4	9.5	8.2	19.71831	7.2	26.0	181	2	1	1	11	
Vilas	Big Crooked	33.09091	18.2	4.259	117	8.9	10.2	9.5	42.545455	23.4	0.0	208					
Vilas	Big St. Germain	31	12.4	2.902	0				0	0.0	27.0	120	1	115	25	6	
Vilas	Dead Pike	20.82058	10.97	2.57	0				0	0.0	15.0	49	3	7	8	23	
Vilas	Escanaba	120.3333	69.423	16.25	44	7.5	9.9	9.2	14.666667	8.5	0.0	405					
Vilas	Fawn	26.86567	6.5217	1.526	3	8.2	8.8		4.4776119	1.1	4.0	25	0	2	6	0	
Vilas	Found	0	0	0	0				0	0.0	15.0	15	2	25	34	7	
Vilas	Little Star	37.16814	11.053	2.586	4	8.2	9.4		3.539823	1.1	11.0	57	0	0	0	0	
Vilas	Manitowish	23.55769	6.7123	1.571	8	7.6	9.4	8.8	3.8461538	1.1	28.0	85	4	0	0	0	
Vilas	Sparkling	0	0	0	26	7.4	10.2		31.212485	9.6	9.0	35					
Vilas	Spider	106.4	22.542	5.275	47	7.5	9.4	7.8	37.6	8.0	31.0	211	3	1	2	9	
Vilas	Stone	17.71429	8.7079	2.038	11	7	8.9	7.7	6.2857143	3.1	14.0	56	1	3	1	0	
Vilas	Wolf	108.5	49.318	11.54	10	9.1	10.1	9.9	5	2.3	0.0	227					
Florence	Cosgrove	0	0	0	0				0	0.0	0.0	0		1	206	9	
Florence	Halsey	0	0	0	0				0	0.0	1.0	1		1	5		
Florence	Keyes	0	0	0	4	7.7	8.7		3.2520325	1.3	1.0	5		1	19	1	
Florence	Patten	175.6944	63.25	14.8	30	8.2	9.7	9.2	20.833333	7.5	18.0	301		10	11	29	
Florence	Sand	0	0	0	0				0	0.0	0.0	0			6	7	
Florence	Sealion	0	0	0	0				0	0.0	1.0	1		6	13	2	
Forest	Butternut	18	6.75	NA	19	7.1	8.9	8.1	12.666667	4.8	1.0	47		6		36	
Forest	Crane	0	0	0	0				0	0.0	2.0	2		16	47		
Forest	Franklin	14.88372	4.8485	1.135	53	6.2	9.2	7.7	24.651163	8.0	3.0	88		12	0	62	
Forest	Metonga	25.04638	13.671	3.199	6	9.2	9.8		1.3914657	0.8	52.0	166		9	8	33	
Forest	Pickerel	0	0	0	0				0	0.0	2.0	2		76	42		
Forest	Windfall	0	0	0	0				0	0.0	0.0	0	0	3	9		
Langlade	Lower Clear	0	0	0	0				0	0.0	1.0	1			56		
Langlade	Mary	0	0	0	0				0	0.0	0.0	0			40		
Langlade	Sawyer	1.236858	0.5	NA	1	10	10		0.6184292	0.3	16.0	19		5	53	12	
Langlade	Rose	3.529412	0.8276	0.194	0				0	0.0	54.0	60			68	82	
Lincoln	Harrison	0	0	0	0				0	0.0	0.0	0		16			
Lincoln	Merrill Flowage	19.5	9.75	NA	24	7.8	10.2	8.8	12	6.0	19.0	82	2	23	1	17	
Oneida	Bear	0	0	NA	0				0	0.0	9.0	9		26	66	2	
Oneida	Booth	0	0	0	1	9.5	9.5		0.6756757	0.3	8.0	9	3	0	14		
Oneida	Burrows	0	0	0	0				0	0.0	2.0	2	0	1	15		
Oneida	Indian	18.09524	11.176	2.615	9	7.8	9.2	8.5	2.8571429	1.8	6.0	72	0	26	35	38	
Oneida	Julia (Rhineland)	0	0	0	0				0	0.0	6.0	6	4	4	4	3	
Oneida	Long	7.06001	3.4146	0.799	9	8.7	10.1		4.5385779	2.2	15.0	38	1	1	14		
Oneida	Maple	0	0	0	0				0	0.0	3.0	3	0	19	9		
Oneida	Pelican	72.57709	39.461	9.234	66	8	9.7	9.1	7.2687225	4.0	167.0	892	13	39	3	0	
Vilas	Allequash	72.42136	30.938	NA	1	9.4	9.4		0.7315289	0.3	62.0	162	0	11	7	4	
Vilas	Big Muskellunge	62.61707	22.941	5.368	73	7.7	9.7	8.2	19.534386	7.2	157.0	464	1	10	0	8	
Vilas	Clear	113	52.558	NA	11	7	59.9		5.5	2.6	14.0	251	0	1	4	4	
Vilas	Island	46.56085	23.037	NA	398	6.9	9.7	8.5	105.29101	52.1	131.0	705	1	6	3	8	
Vilas	Jag	0	0	0	0				0	0.0	0.0	0	1		2	5	
Vilas	Lac Vieux Desert	61.29447	32.5	NA	31	7.1	8.9	8.3	13.287613	7.0	135.0	309	2	7	6	14	
Vilas	Little John	389.3581	153.67	35.96	12	8.4	9.6	9.4	10.135135	4.0	78.0	551	4	4	8	0	

County	Lake	Clarity	Adverse Conditions	Reliability	Comments	No. Stocked	Size	Survival
Lincoln	Tug	3	Dark water, bluegreen algal bloom	High	Walleye Recruitment Survey			
Oneida	Alva	5	Moderately windy	High	Walleye Stocking Evaluation	10098	SMALL FINGERLING	
Oneida	Blue	8	None	High	Walleye Recruitment Survey			
Oneida	McCormick	2	Wind	Moderate	Walleye Stocking Evaluation, OTC lake	11800	SMALL FINGERLING	0.016714286
Oneida	Sevenmile	4	None	High	Walleye Stocking Evaluation, OTC lake	25150	SMALL FINGERLING	
Oneida	Tom Doyle	2	None	High	Walleye Stocking Evaluation, OTC lake	10800	SMALL FINGERLING	0.001841667
Oneida	West Horsehead	5	None	High	Walleye Stocking Evaluation	14500	SMALL FINGERLING	0
Vilas	Alder	3	None	High	Walleye Recruitment Survey			
Vilas	Big Crooked	NA	None	High	Juvenile Walleye PE- Marking			
Vilas	Big St. Germain	4	None	High	Walleye Stocking Evaluation, OTC lake	81106	SMALL FINGERLING	0.05784883
Vilas	Dead Pike	4	None	High	Walleye Stocking Evaluation, OTC lake	14850	SMALL FINGERLING	0.0514
Vilas	Escanaba	NA	None	High	Juvenile Walleye PE- Marking			
Vilas	Fawn	4	None	High	Walleye Recruitment Survey			
Vilas	Found	5	None	High	Walleye Stocking Evaluation	3259	LARGE FINGERLING	0
Vilas	Little Star	10	None	High	Walleye Recruitment Survey			
Vilas	Manitowish	6	None	High	Walleye Recruitment Survey			
Vilas	Sparkling	10	None	High	Walleye Stocking Evaluation	3080	LARGE FINGERLING	0
Vilas	Spider	4	None	High	Walleye Recruitment Survey			
Vilas	Stone	4	None	High	Walleye Recruitment Survey			
Vilas	Wolf	NA	None	High	Walleye Recruitment Survey			
Florence	Cosgrove	5	None	High	baseline			
Florence	Halsey	3	None	High	baseline	6888	LARGE AND SMALL FINGERLING	0
Florence	Keyes	6	None	High	baseline	25587	SMALL and Large FINGERLING	
Florence	Patten	5	Wind and Rain	High	baseline			
Florence	Sand	6	None	High	baseline			
Florence	Sealion	5	None	High	baseline			
Forest	Butternut	5	Windy	Moderate	baseline	5556000	FRY	
Forest	Crane	3	None	High	baseline	17050	SMALL FINGERLING	0
Forest	Franklin	6	None	High	baseline			
Forest	Metonga	NA	None	High	baseline	107850	SMALL FINGERLING	0.059055946
Forest	Pickereel	6	None	High	baseline	64950	SMALL FINGERLING	0
Forest	Windfall	5	Shallow, weedy areas	Moderate	baseline			
Langlade	Lower Clear	10	Numerous boat docks	High	baseline			
Langlade	Mary	10	None	High	baseline			
Langlade	Sawyer	9	None	High	baseline			
Langlade	Rose	NA	None	High	baseline			
Lincoln	Harrison	6.5	Shallow water, dense vegetation, stumps	Moderate	baseline			
Lincoln	Merrill Flowage	3.75	Oveihanging trees along shore	High	baseline			
Oneida	Bear	5	None	High	baseline			
Oneida	Booth	4	None	High	baseline	967	LARGE FINGERLING	0
Oneida	Burrows	5	low conductivity, dense aquatic vegetation	Moderate	baseline			
Oneida	Indian	4	Aquatic vegetation & docks	Moderate	baseline			
Oneida	Julia (Rhinela nder)	4	Rain and wind	Moderate	baseline	23800	SMALL FINGERLING	
Oneida	Long	6	Wind, dense aquatic vegetation	Moderate	baseline			
Oneida	Maple	6	None	High	baseline			
Oneida	Pelican	5	None	High	baseline			
Vilas	Allequash	5	None	High	baseline, OTC lake	21293	SMALL FINGERLING	
Vilas	Big Muskellunge	10	None	High	baseline			
Vilas	Clear	5	Wind	Moderate	baseline			
Vilas	Island	3	None	High	baseline			
Vilas	Jag	10	Low Conductivity	Moderate	baseline			
Vilas	Lac Vieux Desert	4	None	High	baseline			
Vilas	Little John	4	None	High	baseline, OTC lake	8295	SMALL FINGERLING	

County	Lake	WBIC	Acres	WRC	Model	Date	Temp	Total Shoreline	Miles Shocked	Percent Shock	Hours Shocked	Age 0 Caught	Age0	Age0	Age0 Modal
													Min Lngth	Max Lngth	
Vilas	Little Spider	1540400	235	C-ST	stocked	09/30/2004	63	4.6	01/04/1900	100.0	1.7	0			
Vilas	Lost Canoe	2339800	249	NR	natural	10/07/2004	59	5.8	01/04/1900	72.4	1.5	200	3.1	6.7	4
Vilas	Mann	2332000	261	0-ST	remnant	09/27/2004	64	4.9	01/04/1900	87.8	1.7	0			
Vilas	Rest	2327500	608	C-NR	natural	09/21/2004	67	8	01/08/1900	100.0	4.3	536	2.9	7.2	5
Vilas	Trout	2331600	3816	C-ST	stocked	09/29/2004	63	16.5	01/04/1900	24.2	2.2	19	3	5.6	5.3
Vilas	White Sand	2339100	734	C-ST	stocked	10/05/2004	56	5.5	01/04/1900	85.5	2.2	73	4.7	7	5.8
Vilas	Wild Rice	2329800	379	C-NR	natural	09/22/2004	65	3.7	01/03/1900	86.5	1.8	49	4.4	7.2	5.1
Forest	Bear	552100	68	REM	remnant	09/23/2004	68	1.7	01/01/1900	100.0	0.8	0			
Forest	Deer	548700	57	0	none	09/23/2004	67	1.1	01/01/1900	100.0	0.5	0			
Forest	Himley	378900	149		N/A	09/15/2004	68	3.7	01/03/1900	100.0	1.5	0			
Forest	Little Star	190900	20		N/A	09/15/2004	70	1	01/01/1900	100.0	0.5	0			
Langlade	Glade	421200	26	0	none	09/16/2004	66	1	01/01/1900	100.0	0.5	0			
Langlade	Jack	992400	86	0	none	09/29/2004	62	2.1	01/02/1900	100.0	1.1	0			
Lincoln	Crystal	979100	109	0-ST	remnant	09/28/2004	64	1.6	01/01/1900	100.0	0.7	0			
Lincoln	Muskellunge	1555500	167	ST	stocked	09/28/2004	64	4.2	01/04/1900	100.0	1.7	0			
Oneida	Squirrel	1536300	1317	NR	natural	10/26/2004	48	13.9	01/07/1900	54.7	2.7				
Oneida	Upper Kaubashine	1535000	190	C-NR	natural	09/27/2004	64	3.4	01/03/1900	100.0	1.9	177	4	7.6	6.1
Vilas	Emily	2269600	26		N/A	09/27/2004	62	1	01/01/1900	100.0	0.4	0			
Vilas	Favil	2269900	42	REM	remnant	09/27/2004	63	1.3	01/01/1900	100.0	0.6	0			

County	Lake	Age0Hr	Age0Mi	Serns	Age1	Age1		Age1 Modal	Age1Hr	Age1Mi	OtherWE	TotalWE	MUE	NP	LMB	SMB
						MinL	Max Lgth									
Vilas	Little Spider	0.0	0.0	0.0	0				0.0	0.0	7	7	4	2	13	0
Vilas	Lost Canoe	133.2	47.6	NA	1	9.2	9.2		0.7	0.2	22	223	2	20	8	3
Vilas	Mann	0.0	0.0	NA	0				0.0	0.0	5	5		21		
Vilas	Rest	124.4	67.0	15.7	58	7.5	9.3	8.9	13.5	7.3	130	724	9	2	1	6
Vilas	Trout	8.6	4.8	NA	63	6.4	9.4	8.3	28.4	15.8	17	99	0	0	0	4
Vilas	White Sand	32.9	15.5	3.6	1	7.7	7.7		0.5	0.2	47	121	7	3	7	2
Vilas	Wild Rice	28.0	15.3	3.6	20	7.4	9.6		11.4	6.3	8	77	0	0	7	6
Forest	Bear	0.0	0.0	0.0	0				0.0	0.0	1	1		7	73	
Forest	Deer	0.0	0.0	0.0	0				0.0	0.0	0	0		0	74	
Forest	Himley	0.0	0.0	0.0	0				0.0	0.0	0	0		0	369	
Forest	Little Star	0.0	0.0	0.0	0				0.0	0.0	0	0			27	
Langlade	Glade	0.0	0.0	0.0	0				0.0	0.0	0	0		11	20	
Langlade	Jack	0.0	0.0	0.0	0				0.0	0.0	0	0			59	0
Lincoln	Crystal	0.0	0.0	0.0	0				0.0	0.0	0	0		25	15	3
Lincoln	Muskellunge	0.0	0.0	0.0	0				0.0	0.0	4	4	0	14	21	
Oneida	Squirrel												3	17		
Oneida	Upper Kaubashine	94.7	52.1	12.2	0				0.0	0.0	68	245	5	2	14	37
Vilas	Emily	0.0	0.0	0.0	0				0.0	0.0	0	0	1	8	35	
Vilas	Favil	0.0	0.0	0.0	0				0.0	0.0	0	0		4	61	

County	Lake	Clarity	Adverse Condtions	Reliability	Comments	No. Stocked	Size	Survival	Stocking Date
Vilas	Little Spider	3.0	None	High	baseline				
Vilas	Lost Canoe	6.0	None	High	baseline				
Vilas	Mann	2.0	None	High	baseline	3174400	FRY		38125.0
Vilas	Rest	5.0	None	High	baseline				
Vilas	Trout	6.0	None	High	baseline				
Vilas	White Sand	6.0	Wind, waves	Moderate	baseline, OTC lake	36675	SMALL FINGERLING	0.072649489	38155.0
Vilas	Wild Rice	4.0	None	High	baseline				
Forest	Bear	NA	Low water levels	Moderate	General Survey				
Forest	Deer	NA	Turbid, algal bloom	Low	General Survey				
Forest	Himley	NA	Wind, rough water	Moderate	General Survey				
Forest	Little Star	NA	Wind and poor conductivity	Low	General Survey				
Langlade	Glade	NA	Light algal bloom	High	General Survey				
Langlade	Jack	12.0	None	High	Comprehensive Survey				
Lincoln	Crystal	11.5	None	High	Comprehensive Survey				
Lincoln	Muskellunge	6.0	None	High	Comprehensive Survey				
Oneida	Squirrel	3.0	Windy along west shore	Moderate	Muskellunge Recruitment Survey				
Oneida	Upper Kaubashine	3.0	None	High	General Gamefish Survey				
Vilas	Emily	NA	Moderate algal bloom	Moderate	General Survey				
Vilas	Favil	NA	Low water, algal bloom, dense vegetation	Low	General Survey				

**APPENDIX F**

**F1. 2004 WDNR Annual Creel Survey Summary Table - Walleye.** Catch and effort rates are per hour of angling.

County	Lake Name	MWBC	Acres	2004 WAE			2004 Adult PE	Adult PE per Acre	Angler Catch	Angler			Specific Catch Rate	Specific Harvest Rate	Number of Fish Measured	Mean Length	General Catch Rate
				Recruit Code	Bag Limit	Size Limit				Catch	Harvest	Harvest per Acre					
Barron	Lower Turtle	2079700	276	ST	3	15	299	1.08	354	1.28	112	0.41	0.0893	0.0459	28	17.5	0.0250
Bayfield	Bony	2742500	191	C-NR	5	1>14	432	2.26	301	1.58	80	0.42	0.2134	0.0597	3	14.3	0.0175
Bayfield	Middle Eau Claire	2742100	902	C-NR	2	1>14	4,128	4.58	3,785	4.20	1,299	1.44	0.3072	0.1049	155	15.2	0.1949
Bayfield	Upper Eau Claire	2742700	996	C-NR	2	15	2,015	2.02	668	0.67	325	0.33	0.1002	0.0473	86	18.5	0.0325
Burnett	Lipsett	2678100	393	ST	3	15	245	0.62	143	0.36	85	0.22	0.0424	0.0242	17	19.2	0.0104
Polk	Pipe	2490500	342	C-NR	3	15	421	1.23	75	0.22	37	0.11	0.0702	0.0421	12	18.7	0.0133
		North Pipe		2485700	NR	5											
St. Croix	Cedar	2615100	1,100	NR	3	15	2,261	2.06	4,392	3.99	472	0.43	0.4106	0.0446	88	16.4	0.2824
Sawyer	Lost Land	2418600	1,304	C-ST	3	none	698	0.54	1,090	0.84	444	0.34	0.1038	0.0413	40	18.3	0.0194
Sawyer	Teal	2417000	1,049	NR	2	none	5,521	5.26	6,596	6.29	818	0.78	0.8646	0.1084	85	13.8	0.2431
Sawyer	Tiger Cat	2435000	1,015	0-ST	3	15	1,145	1.13	242	0.24	131	0.13	0.0358	0.0182	5	18.9	0.0102
	Burns	2436400		NR-2	3	15											
	Lake Placid	2436500		0-ST	3	15											
Florence	Patten	653700	255	NR	2/3 <sup>1</sup>	1>14	584	2.29	247	0.97	212	0.83	0.0714	0.0614	51	15.4	0.0433
Forest	Butternut	692400	1,292	C-NR	2	14-18 slot	1,703	1.32	682	0.53	217	0.17	0.0666	0.0202	58	19.4	0.0326
Forest	Metonga	394400	1,991	C-ST	2	15	1,199	0.60	2,794	1.40	369	0.19	0.1594	0.0204	51	17.6	0.0799
Oneida	Booth	1537800	207	ST	3	15	193	0.93	58	0.28	3	0.01	0.0176	0.0014	1	17.0	0.0072
Vilas	Alder	2329600	274	C-NR	3	1>14	1,592	5.81	99	0.36	25	0.09	0.0852	0.0211	2	17.2	0.0447
Vilas	Clear	2329000	555	C-NR	3	1>14	1,576	2.84	1,346	2.43	889	1.60	0.1987	0.1311	124	14.8	0.0712
Vilas	Island	2334400	1,023	C-NR	3	1>14	3,500	3.42	1,072	1.05	589	0.58	0.1753	0.0958	84	13.6	0.0660
Vilas	Manitowish	2329400	506	C-NR	3	1>14	*	*	245	0.48	103	0.20	0.1612	0.0676	8	11.2	0.0258
Vilas	Little Star	2334300	244	C-NR	3	1>14	712	0.95	315	1.29	139	0.57	0.6908	0.3060	11	13.6	0.1666
Vilas	Rest	2327500	608	C-NR	3	1>14	1,994	3.28	2,610	4.29	1,108	1.82	0.4630	0.1956	167	13.9	0.2392
Vilas	Spider	2329300	272	C-NR	3	1>14	**	**	201	0.74	85	0.31	0.1485	0.0625	13	13.1	0.0487
Vilas	Stone	2328800	139	C-NR	3	1>14	**	**	211	1.52	154	1.11	0.3773	0.2752	11	11.8	0.0582
Vilas	Fawn	2328900	74	C-NR	3	1>14	708	1.46	95	1.28	70	0.95	0.0196	0.0196	9	15.0	0.0123
Vilas	Wild Rice	2329800	379	C-NR	3	1>14	264	0.70	128	0.34	116	0.31	0.0589	0.0533	26	14.8	0.0191
Vilas	Trout	2331600	3,816	C-ST	3	15	6,520	1.71	3,416	0.90	1190	0.31	0.2259	0.0792	199	19.5	0.1365

<sup>1</sup> Initial/Final

**F2. 2004 WDNR Annual Creel Survey Summary Table - Muskellunge. Catch and effort rates are per hour of angling.**

County	Lake Name	MWBC	Acres	2004 Musky Recruit Code	Size Limit	Angler		Angler		Specific Catch Rate	Specific Harvest Rate	No. of Fish Measured	Mean Length	General Catch Rate
						Angler Catch per Acre	Angler Harvest	Harvest per Acre	Harvest per Acre					
Barron	Lower Turtle	2079700	276	None	34	5	0.02	0	0.000	0.0638	0.0000	0	-	0.0042
Bayfield	Bony	2742500	191	NR	40	13	0.07	0	0.000	0.1973	0.0000	0	-	0.0154
Bayfield	Middle Eau Claire	2742100	902	C-	40	146	0.16	8	0.009	0.0141	0.0023	1	44.0	0.0091
Bayfield	Upper Eau Claire	2742700	996	C-	40	64	0.06	0	0.000	0.0133	0.0000	0	-	0.0038
Burnett	Lipsett	2678100	393	0-ST	34	11	0.03	0	0.000	0.0000	0.0000	0	-	0.0013
Polk	Pipe	2490500	342	None	34									
	North Pipe	2485700		None	34									
St. Croix	Cedar	2615100	1,100	ST	34	81	0.07	0	0.000	0.0169	0.0000	0	-	0.0090
Sawyer	Lost Land	2418600	1,304	C-ST	34	940	0.72	0	0.000	0.0321	0.0000	0	-	0.0173
Sawyer	Teal	2417000	1,049	C-ST	34	663	0.63	17	0.016	0.0375	0.0011	1	44.0	0.0247
Sawyer	Tiger Cat	2435000	1,015	NR	28	1852	1.82	0	0.000	0.0799	0.0000	0	-	0.0590
	Burns	2436400												
	L Placid	2436500												
Florence	Patten	653700	255	None	34									
Forest	Butternut	692400	1,292	None	34									
Forest	Metonga	394400	1,991	None	34									
Oneida	Booth	1537800	207	ST	34	186	0.90	11	0.05	0.0802	0.0052	1	37.0	0.0249
Vilas	Alder	2329600	274	C-	34	135	0.49	3	0.01	0.0550	0.0014	1	34.0	0.0440
Vilas	Clear	2329000	555	C-	34	117	0.21	0	0.00	0.0135	0.0000	0	-	0.0070
Vilas	Island	2334400	1,023	C-	34	302	0.30	0	0.00	0.0275	0.0000	0	-	0.0188
Vilas	Manitowish	2329400	506	C-	34	108	0.21	0	0.00	0.0162	0.0000	0	-	0.0108
Vilas	Little Star	2334300	244	C-	34	60	0.25	0	0.00	0.0264	0.0000	0	-	0.0217
Vilas	Rest	2327500	608	C-	34	108	0.18	0	0.00	0.0225	0.0000	0	-	0.0119
Vilas	Spider	2329300	272	C-	34	85	0.31	10	0.04	0.0212	0.0029	1	37.0	0.0160
Vilas	Stone	2328800	139	C-ST	34	62	0.45	0	0.00	0.0089	0.0000	0	-	0.0094
Vilas	Fawn	2328900	74	C-ST	34	106	1.43	0	0.00	0.0303	0.0000	0	-	0.0137
Vilas	Wild Rice	2329800	379	C-ST	34	113	0.30	0	0.00	0.0206	0.0000	0	-	0.0142
Vilas	Trout	2331600	3,816	C-NR	45	122	0.03	0	0.00	0.0215	0.0000	0	-	0.0054

**F3. 2004 WDNR Annual Creel Survey Summary Table – Northern Pike.** Catch and effort rates are per hour of angling.

County	Lake Name	MWBC	Acres	Bag Limit	Size Limit	Angler Catch	Angler Catch per Acre	Angler Harvest	Angler Harvest per Acre	Specific Catch Rate	Specific Harvest Rate	No. Fish Measured	Mean Length	General Catch Rate
Barron	Lower Turtle	2079700	276	5	None	1,084	3.93	340	1.23	0.2051	0.0859	82	23.2	0.0712
Bayfield	Bony	2742500	191	5	None	292	1.53	0	0.00	0.1973	0.0000	0	-	0.0169
Bayfield	Middle Eau Claire	2742100	902	5	None	1,234	1.37	117	0.13	0.1271	0.0113	16	23.5	0.0740
Bayfield	Upper Eau Claire	2742700	996	5	None	2,210	2.22	413	0.41	0.2805	0.0645	105	23.0	0.1076
Burnett	Lipsett	2678100	393	5	None	3,271	8.32	375	0.95	0.5771	0.0991	88	19.9	0.2384
Polk	Pipe	2490500	342	5	None	519	1.52	51	0.15	0.4657	0.0808	11	25.9	0.1037
	North Pipe	2485700		5	None									
St. Croix	Cedar	2615100	1100	5	None	672	0.61	111	0.10	0.1196	0.0299	17	25.1	0.0450
Sawyer	Lost Land	2418600	1,304	5	None	8,665	6.64	1,042	0.80	0.3693	0.0578	73	22.0	0.1546
Sawyer	Teal	2417000	1,049	5	None	782	0.75	77	0.07	0.0894	0.0038	4	22.4	0.0317
Sawyer	Tiger Cat	2435000	1015	5	None	370	0.36	61	0.06	0.0354	0.0000	3	20.5	0.0255
	Burns	2436400												
	L Placid	2436500												
Florence	Patten	653700	255	5	None	669	2.62	256	1.00	0.2942	0.1632	75	21.1	0.1176
Forest	Butternut	692400	1,292	1	32	792	0.61	7	0.01	0.1262	0.0000	2	34.4	0.0379
Forest	Metonga	394400	1,991	5	None	1,319	0.66	160	0.08	0.0693	0.0245	27	24.0	0.0408
Oneida	Booth	1537800	207	5	None	533	2.57	106	0.51	0.1731	0.0569	13	23.1	0.0671
Vilas	Alder	2329600	274	5	None	68	0.25	8	0.03	0.2920	0.1562	7	24.0	0.0613
Vilas	Clear	2329000	555	5	None	1,248	2.25	260	0.47	0.1902	0.1041	73	22.6	0.0663
Vilas	Island	2334400	1,023	5	None	922	0.90	136	0.13	0.1748	0.0887	18	21.7	0.0567
Vilas	Manitowish	2329400	506	5	None	258	0.51	47	0.09	0.2253	0.0000	3	20.5	0.0340
Vilas	Little Star	2334300	244	5	None	0	0.00	0	0.00	0.0000	0.0000	0	-	0.0000
Vilas	Rest	2327500	608	5	None	191	0.31	62	0.10	0.0890	0.0410	8	22.3	0.0267
Vilas	Spider	2329300	272	5	None	42	0.15	0	0.00	0.0000	0.0000	0	-	0.0274
Vilas	Stone	2328800	139	5	None	120	0.86	13	0.09	0.2254	0.0000	1	12.3	0.0317
Vilas	Fawn	2328900	74	5	None	431	5.82	173	2.34	0.1560	0.1248	57	22.4	0.0559
Vilas	Wild Rice	2329800	379	5	None	317	0.84	85	0.22	0.1560	0.0932	48	25.0	0.0464
Vilas	Trout	2331600	3,816	5	None	118	0.03	35	0.01	0.04	0.0417	4	26.8	0.0066

**F4. 2004 WDNR Annual Creel Survey Summary Table – Smallmouth Bass. Catch and effort rates are per hour of angling.**

County	Lake Name	MWBC	Acres	Bag Limit	Size Limit	Angler Catch	Angler Catch per Acre	Angler Harvest	Angler		No. Fish Measured	Mean Length	General Catch Rate	
									Harvest per Acre	Specific Harvest Rate				
Barron	Lower Turtle	2079700	276	5	14									
Bayfield	Bony	2742500	191	5	14	33	0.17	0	0.00	0.0000	0.0000	0	-	0.0240
Bayfield	Middle Eau Claire	2742100	902	5	14	1,147	1.27	12	0.01	0.3293	0.0000	2	16.0	0.0728
Bayfield	Upper Eau Claire	2742700	996	5	14	742	0.74	71	0.07	0.2219	0.0211	13	16.8	0.0430
Burnett	Lipsett	2678100	393	5	14	28	0.07	0	0.00	0.0976	0.0000	0	-	0.0051
Polk	Pipe	2490500	342	5	14	1,911	5.59	23	0.07	0.6525	0.0067	8	17.4	0.3917
	North Pipe	2485700		5	14									
St. Croix	Cedar	2615100	1100	5	14	155	0.14	4	0.00	0.4887	0.0814	2	14.2	0.0178
Sawyer	Lost Land	2418600	1,304	5	14	450	0.35	29	0.02	0.0265	0.0000	2	14.8	0.0110
Sawyer	Teal	2417000	1,049	5	14	445	0.42	11	0.01	0.1081	0.0049	0	-	0.0203
Sawyer	Tiger Cat	2435000	1015	5	14	125	0.12	0	0.00	0.0000	0.0000	0	-	0.0399
	Burns	2436400												
	L Placid	2436500												
Florence	Patten	653700	255	5	14	316	1.24	14	0.05	0.2025	0.0138	4	17.5	0.0679
Forest	Buttemut	692400	1,292	5	14	8,755	6.78	292	0.23	0.5212	0.0157	74	16.0	0.4338
Forest	Metonga	394400	1,991	5	14	5,007	0.02	407	0.20	0.4820	0.0435	41	16.5	0.2012
Oneida	Booth	1537800	207	5	14	31	0.09	0	0.00	0.0000	0.0000	0	-	0.0125
Vilas	Alder	2329600	274	5	14	18	0.07	0	0.00	0.0000	0.0000	0	-	0.0307
Vilas	Clear	2329000	555	5	14	693	1.25	22	0.04	0.3320	0.0146	4	16.1	0.0422
Vilas	Island	2334400	1,023	5	14	359	0.35	18	0.02	0.2240	0.0073	3	16.5	0.0283
Vilas	Manitowish	2329400	506	5	14	310	0.61	32	0.06	0.2379	0.0375	2	9.4	0.0342
Vilas	Little Star	2334300	244	5	14	180	0.74	0	0.00	0.2246	0.0000	0	-	0.1390
Vilas	Rest	2327500	608	5	14	884	1.45	116	0.19	0.3013	0.0523	23	15.9	0.0891
Vilas	Spider	2329300	272	5	14	253	0.93	18	0.07	0.5462	0.0437	1	16.1	0.0833
Vilas	Stone	2328800	139	5	14	722	5.19	0	0.00	0.7515	0.0000	0	-	0.1962
Vilas	Fawn	2328900	74	5	14	219	2.96	0	0.00	0.0542	0.0000	0	-	0.0357
Vilas	Wild Rice	2329800	379	5	14	289	0.76	31	0.08	0.4455	0.0490	4	15.0	0.0523
Vilas	Trout	2331600	3,816	1	18	1,005	0.26	6	0.00	0.2251	0.0019	1	20.5	0.0441

**F5. 2004 WDNR Annual Creel Survey Summary Table – Largemouth Bass. Catch and effort rates are per hour of angling.**

County	Lake Name	MWBC	Acres	Bag Limit	Size Limit	Angler Catch	Angler Catch per Acre	Angler Harvest	Angler Harvest per Acre	Specific Catch Rate	Specific Harvest Rate	No. Fish Measured	Mean Length	General Catch Rate
Barron	Lower Turtle	2079700	276	5	14	1,489	5.39	92	0.33	0.6336	0.0266	20	15.6	0.1133
Bayfield	Bony	2742500	191	5	14	0	0.00	0	0.00	0.0000	0.0000	0	-	0.0000
Bayfield	Middle Eau Claire	2742100	902	5	14	544	0.60	0	0.00	0.2080	0.0000	0	-	0.0438
Bayfield	Upper Eau Claire	2742700	996	5	14	2,873	2.88	177	0.18	0.2219	0.0211	21	15.0	0.0430
Burnett	Lipsett	2678100	393	5	14	7,598	19.33	159	0.40	1.0760	0.0182	33	14.6	0.5564
Polk	Pipe	2490500	342	5	14	2,152	6.29	92	0.27	0.7760	0.0134	10	17.2	0.4008
	North Pipe	2485700		5	14									
St. Croix	Cedar	2615100	1100	5	14	130	0.12	2	0.00	0.0721	0.0022	1	17.2	0.0125
Sawyer	Lost Land	2418600	1,304	5	none	5,776	4.43	78	0.06	0.4216	0.0111	3	12.8	0.0107
Sawyer	Teal	2417000	1,049	5	14	601	0.57	0	0.00	0.1041	0.0000	0	-	0.0241
Sawyer	Tiger Cat	2435000	1015	5	14	9,194	9.06	527	0.52	0.4899	0.0321	24	15.2	0.3128
	Burns	2436400												
	L Placid	2436500												
Florence	Patten	653700	255	5	14	65	0.25	7	0.03	0.0931	0.0371	2	17.6	0.0152
Forest	Buttemut	692400	1,292	5	14	8	0.01	0	0.00	0.0000	0.0000	0	-	0.0019
Forest	Metonga	394400	1,991	5	14	124	0.06	0	0.00	0.1403	0.0000	0	-	0.0077
Oneida	Booth	1537800	207	5	14	926	4.47	6	0.03	0.3249	0.0056	1	14.7	0.1218
Vilas	Alder	2329600	274	5	14									
Vilas	Clear	2329000	555	5	14	393	0.71	32	0.06	0.2501	0.0240	4	16.3	0.0238
Vilas	Island	2334400	1,023	5	14	112	0.11	18	0.02	0.1463	0.0400	3	14.7	0.0161
Vilas	Manitowish	2329400	506	5	14	102	0.20	16	0.03	0.0848	0.0203	1	15.0	0.0148
Vilas	Little Star	2334300	244	5	14									
Vilas	Rest	2327500	608	5	14	3	0.00	0	0.00	0.0000	0.0000	0	-	0.0006
Vilas	Spider	2329300	272	5	14	11	0.04	0	0.00	0.0000	0.0000	0	-	0.0106
Vilas	Stone	2328800	139	5	14	51	0.37	0	0.00	0.0000	0.0000	0	-	0.0158
Vilas	Fawn	2328900	74	5	14	850	11.49	56	0.76	0.5383	0.0568	3	15.3	0.1196
Vilas	Wild Rice	2329800	379	5	14	26	0.07	0	0.00	0.2101	0.0000	0	-	0.0153
Vilas	Trout	2331600	3,816	1	18	51	0.01	0	0.00	0.0162	0.0000	0	-	0.0028

## APPENDIX G

### G1. Walleye exploitation rates 2004-2005.

Year	WBIC	COUNTY	LAKE	ACRES	Size Limit	Clip Given	Total # Clips	# Clips >=14"	# Clips >=20"	# Clips Obs.	# Clips Proj.	# Obs. >=14"	# Proj. >=14"	# Obs. >=20"	# Proj. >=20"
2004	2079700	Barron	Lower Turtle	276	15	RV, TC	226	216	49	9	23	9	23	0	0
2004	2742500	Bayfield	Bony	191	1>14	C, RV, FLOY, T	197	162	12	0	0	0	0	0	0
2004	2742100	Bayfield	Middle Eau Claire	902	1>14	RP, FLOY, TC	1,564	1,297	65	32	294	26	239	0	0
2004	2742700	Bayfield	Upper Eau Claire	996	15	RP, TC	969	833	149	24	102	24	102	8	34
2004	2678100	Burnett	Lipsett	393	15	LP, TC	161	152	44	8	27	8	27	4	14
2004	653700	Florence	Patten	255	1>14	LV, TC	340	298	90	3	18	1	6	0	0
2004	692400	Forest	Butternut	1292	14-18 slot	LV, TC	680	646	214	12	42	10	35	5	18
2004	394400	Forest	Metonga	1991	15	LV, TC	539	466	139	4	34	4	34	2	17
2004	1537800	Oneida	Booth	207	15	LV, TC	167	163	70	1	3	1	3	0	0
2004	2490500	Polk	Pipe*	342	15	RV, TC	207	204	43	6	22	6	22	4	15
2004	2418600	Sawyer	Lost Land	1304	15	RV, TC	231	158	41	6	91	6	91	2	30
2004	2417000	Sawyer	Teal	1049	none	RP, TC	2,291	959	123	18	152	9	76	0	0
2004	2435000	Sawyer	Tiger Cat Flowage <sup>®</sup>	1015	15	LV, TC	465	454	122	3	66	3	66	0	0
2004	2615100	St. Croix	Cedar	1100	15	LV, TC	1,180	559	30	28	169	28	169	1	6
2004	2329600	Vilas	Alder	274	1>14	RV, TC	688	368	66	0	0	0	0	0	0
2004	2329000	Vilas	Clear	555	1>14	LV, TC	802	512	52	25	201	16	129	1	8
2004	2334400	Vilas	Island	1023	1>14	RP, TC	1,732	1,013	132	17	120	8	56	0	0
2004	2329400	Vilas	Manitowish/ Little Star	750	1>14	BC, TC	376	213	28	4	78	3	59	0	0
2004	2327500	Vilas	Rest	608	1>14	LP, TC	1,026	495	76	15	124	9	74	2	17
2004	2329300	Vilas	Spider, Stone, Fawn	485	1>14	AF, TC	272	163	47	5	41	4	33	0	0
2004	2329800	Vilas	Wild Rice	379	1>14	DF, TC	138	72	21	1	5	1	5	1	5
2004	2331600	Vilas	Trout	3816	15	LV, TC	1,772	1,415	423	15	80	15	80	5	27

WBIC	COUNTY	LAKE	Adult PE (Unk. >15")	Total PE	Proj. Angler Harvest	Tribal Harvest	Angler Exploit	# Proj >=14/ #Clips >=14	# Proj >=20/ #Clips >=20	Tribal Exploit	Angler Harvest/ Adult PE	Angler Harvest/ Total PE	Total Exploit.
2079700	Barron	Lower Turtle	299	875	112	0	0.1018	0.1065	0.0000	0.0000	0.3746	0.1280	0.1018
2742500	Bayfield	Bony	432	720	80	0	0.0000	0.0000	0.0000	0.0000	0.1852	0.1111	0.0000
2742100	Bayfield	Middle Eau Claire	4,128	8,477	1,299	217	0.1880	0.1842	0.0000	0.0526	0.3147	0.1532	0.2405
2742700	Bayfield	Upper Eau Claire	2,015	6,690	325	349	0.1053	0.1224	0.2282	0.1732	0.1613	0.0486	0.2785
2678100	Burnett	Lipsett	245	552	85	28	0.1677	0.1776	0.3068	0.1143	0.3469	0.1540	0.2820
653700	Florence	Patten	584	745	212	57	0.0529	0.0201	0.0000	0.0976	0.3630	0.2846	0.1505
692400	Forest	Butternut	1,703	1,405	217	142	0.0618	0.0542	0.0818	0.0834	0.1274	0.1544	0.1451
394400	Forest	Metonga	1,199	3,659	369	177	0.0631	0.0730	0.1223	0.1476	0.3078	0.1008	0.2107
1537800	Oneida	Booth	193	981	3	0	0.0180	0.0184	0.0000	0.0000	0.0155	0.0031	0.0180
2490500	Polk	Pipe*	421	319	37	45	0.1063	0.1078	0.3411	0.1069	0.0879	0.1160	0.2132
2418600	Sawyer	Lost Land	698	5,772	444	17	0.3939	0.5759	0.7398	0.0244	0.6361	0.0769	0.4183
2417000	Sawyer	Teal	5,521	41,601	818	250	0.0663	0.0792	0.0000	0.0453	0.1482	0.0197	0.1116
2435000	Sawyer	Tiger Cat Flowage <sup>®</sup>	1,145	1,357	131	0	0.1419	0.1454	0.0000	0.0000	0.1144	0.0965	0.1419
2615100	St. Croix	Cedar	2,261	9,151	472	240	0.1432	0.3023	0.2012	0.1061	0.2088	0.0516	0.2494
2329600	Vilas	Alder	1,664	5,687	25	64	0.0000	0.0000	0.0000	0.0385	0.0150	0.0044	0.0385
2329000	Vilas	Clear	1,576	2,474	889	125	0.2506	0.2513	0.1546	0.0793	0.5641	0.3593	0.3299
2334400	Vilas	Island	3,500	8,295	589	222	0.0693	0.0557	0.0000	0.0634	0.1683	0.0710	0.1327
2329400	Vilas	Manitowish/ Little Star	712	2,118	242	171	0.2074	0.2746	0.0000	0.2402	0.3399	0.1143	0.4476
2327500	Vilas	Rest	1,994	5,749	1,108	133	0.1209	0.1503	0.2175	0.0667	0.5557	0.1927	0.1876
2329300	Vilas	Spider, Stone, Fawn	708	9,872	309	45	0.1507	0.2012	0.0000	0.0636	0.4364	0.0313	0.2143
2329800	Vilas	Wild Rice	264	2,002	116	27	0.0362	0.0694	0.2381	0.1023	0.4394	0.0579	0.1385
2331600	Vilas	Trout	6,520	27,242	1,190	362	0.0451	0.0565	0.0630	0.0555	0.1825	0.0437	0.1007

\* Includes North Pipe

® Includes Lakes Burns and Placid

