

DATE: February 9, 2002

TO: Lake Wisconsin File

FROM: Tim Larson – Fisheries Biologist, Poynette

SUBJECT: Walleye/Sauger Database Update – 2001 (MWBC 1260600)

### **SUMMARY**

Fishing for larger size walleye and sauger is as good as it gets right now, or was in 2001. This situation appears to occur every 5-10 years. Possibly the no-harvest 20"-28" walleye size limit, which becomes effective April 1, 2002, will maintain this fishery. Extremely high reproduction of both walleye and sauger, which occurred in the mid 1990s, is responsible for the current bonanza, but it has been reduced since 1997. Supplemental stocking during off years has been requested by anglers, but would not be practical for creating additional years of high recruitment.

### **DATA**

#### **Length Frequency of Angler Caught Fish**

##### Walleye (Table 1)

During the mid 1980s a very good distribution of all sizes of walleye, including fish >20" was present. The 90s found the fishery to be cut off at the 15" size limit which was enacted in 1990, except for 1996 which displayed a better distribution of fish >15". In 2000 the 16-18" component again appeared which became even better in 2001, with 15-18" fish present and also a group around 21".

##### Sauger (Table 2)

The mid 80s was also a very good time for 15-20" sauger in the lake. As with the walleye, the 90s (except 1996) showed the population to plummet at 15", though the 15" sauger size limit was not enacted until 1994. Years 1999, 2000 and more so in 2001 are showing a better component of sauger >15".

#### **Percent >15" and >20" in the Population**

Another analysis of the size distribution of the fishery can be represented by the ratio of fish which are greater than 15.0" and 20.0" compared to all fish over 10". This can be skewed by the

changing number of fish present between 10-15", but there still must be fish over 15" to show the years when better numbers of large fish exist.

#### Walleye (Tables 3 and 4)

This clearly illustrates that 2000-2001 and the mid 1980s are the years with the highest ratios of 15"+ and 20"+ walleyes, with 1996 slightly higher. While both DNR fall shoreline boomshocker data and the volunteer angler catch data are comparable, the angler catch typically shows higher values of the larger fish.

#### Sauger (Table 5)

Sauger over 15" were highest in the mid 1980s, followed by 1996 and 2001. The 2001 population is mostly comprised of 15" fish, so as they grow the next few years, more 18-20" fish will be present, as existed back in the mid 80s. Few sauger grow past 20"

### **Year Class Strength**

#### Walleye (Table 6)

The current presence of larger walleye is due to the extremely high levels of reproduction in 1994, 1996 and 1997. The average number of fall fingerlings collected, by boomshocking 6 transects totaling 15 miles of shoreline, was 102/mile. The other six years between 1993-2001 averaged 31/mile. Unfortunately recruitment monitoring wasn't done prior to 1993, except for 1984, but the higher levels of larger fish in 1996 and the mid 80s likely would also have been preceded by a specific year of good reproduction. Such recruitment occurs infrequently, ie. every 5-10 years.

#### Sauger (Table 7)

The high level of 15-16" sauger in 2001 is from the 1997 year class (55/mile), which is about 2X higher than the average (28/mile) of the other 8 years between 1993-2001. Sauger recruitment appears to be much more consistent than walleye.

### **Growth**

#### Walleye (Table 8)

There are a few points of interest here. In 1984 growth to 18" after 3 years was reported compared to about 15" in the 90s. The 2001 data showed improved growth to almost 18" after 4 years. Also prior to the 3 large year classes of 94,96 and 97, the age 3 fish reached about 15.5". This declined to around 14" from 97-99, in the presence of the large walleye population and is

now back to 15.8” since reproduction has diminished after 1997. Personal observation from night boomshocking noted the virtual absence of shad during 97-99, which has since re-occurred. Lack of shad, possibly from overpredation by walleye and sauger may have influenced the change in growth.

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Sauger (Table 8)

Sauger growth shows somewhat of the same trend going from 13” at age 3 in 1994, dropping to 12.2” in 1999 and now back to 13.5”. Age 4 fish went from 15” to 14.2” and now have recovered to 15.4” in 2000.

### **Angler Diary Catch Rates** (Table 9)

Catch rates are effected by many factors, including the ability of individual anglers, who have changed over the years. However they also show the highest catch rate on 15”+ walleye and sauger to have been 1996 and 2001, corresponding to the fishery data indicating a higher proportion of 15”+ fish present then. Catch rates on all sizes of walleye were highest from 1995-1999 (.68-.89/hr) immediately following the years of peak recruitment. In 1993 and 00-01 they ranged from .24-.46/hr. Sauger catch rates on all sizes are more consistent, associated with their more consistent recruitment.

Studies on Escanaba Lake in northern Wisconsin have shown better walleye catch rates in years when the primary forage population (yellow perch) were low. It appears there currently has been a winterkill of shad in Lake Wisconsin as many reports of dead shad frozen in the ice have been received during January of 2002. Possibly this may bump up the catch rate in 2002.

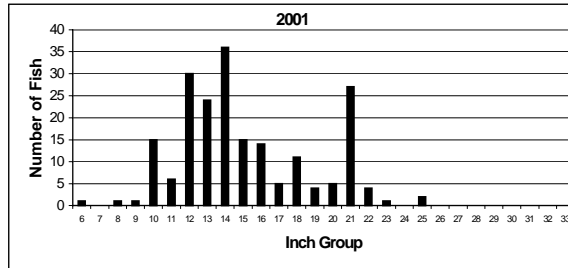
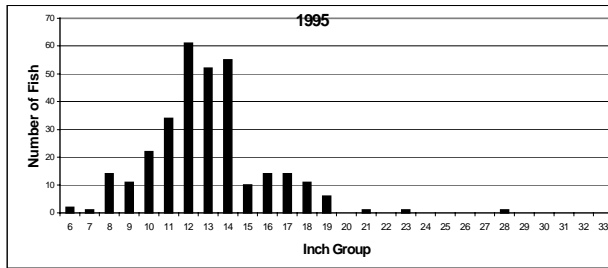
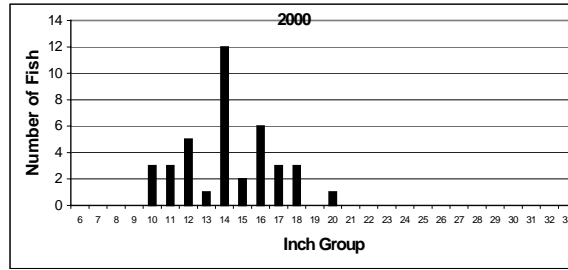
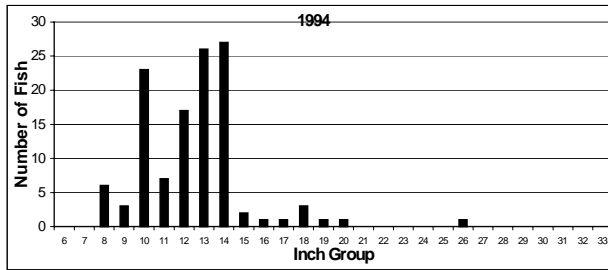
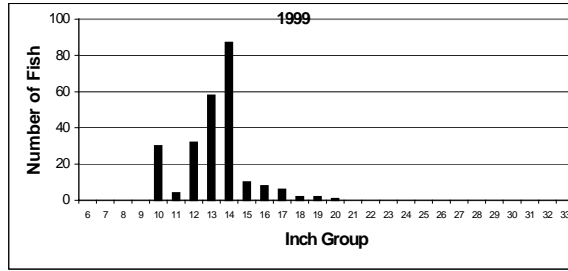
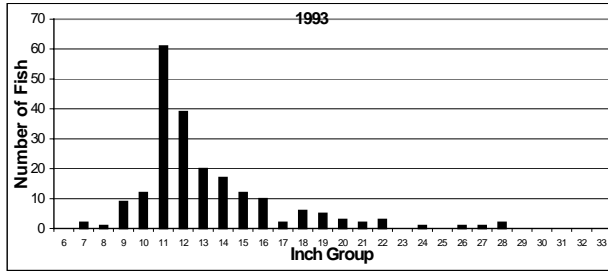
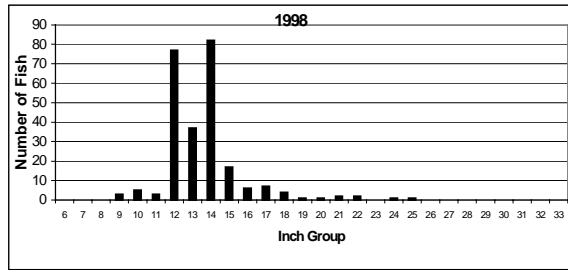
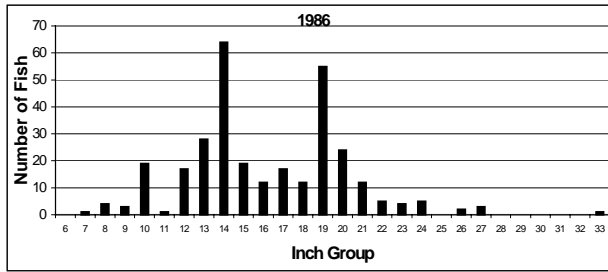
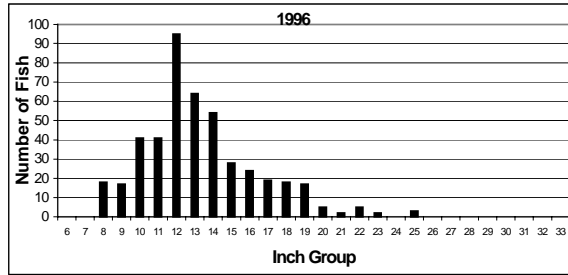
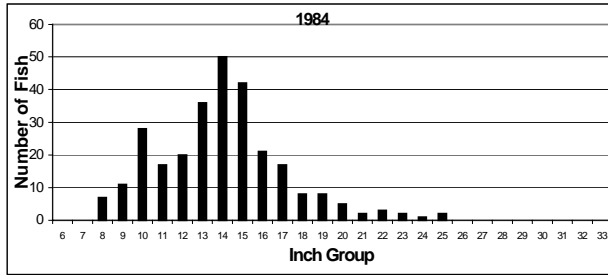
### **Stocking**

Anglers have suggested stocking during years when recruitment is lower. Such stocking can not be recommended for the following reasons:

- 1) An extensive analysis of case histories in Minnesota of “supplemental” stocking to enhance existing walleye populations was usually determined to not be successful. In addition standard stocking of the June fingerlings would occur prior to knowing the level of abundance of natural reproduction that year (as determined by fall shocking). Certainly one would not want to stock during a year of high natural abundance.
- 2) It is not economically feasible or practical to stock Lake Wisconsin. The State hatchery system typically produces about 5 million small fingerlings (2”) per year. To expect to stock about .45 million (50/ac, standard rate) or 9% of the States total production in a water with natural reproduction would be unacceptable. Supplemental stocking of many other waters with natural recruitment could also be requested. The cost of .45 million small fingerlings is about \$45,000.

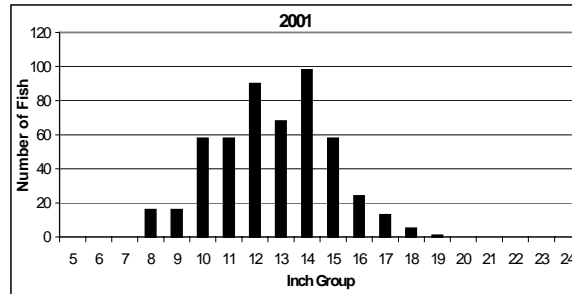
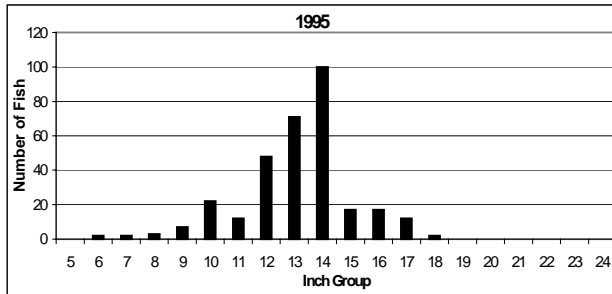
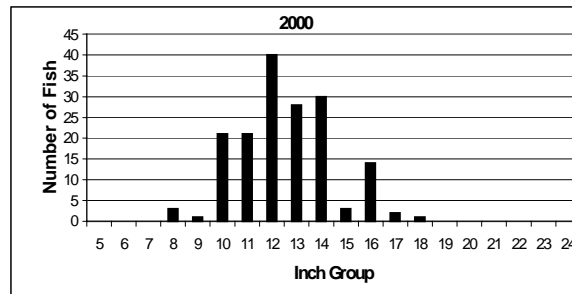
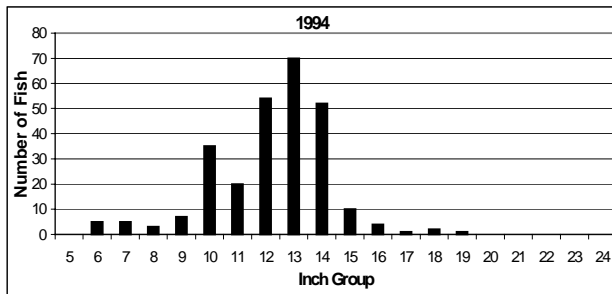
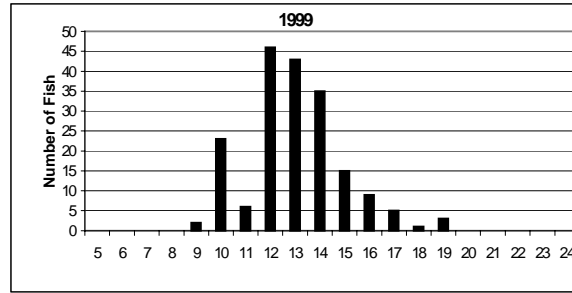
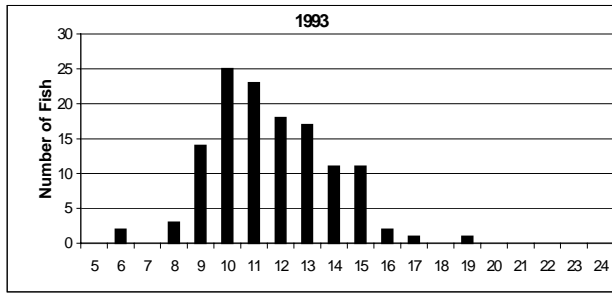
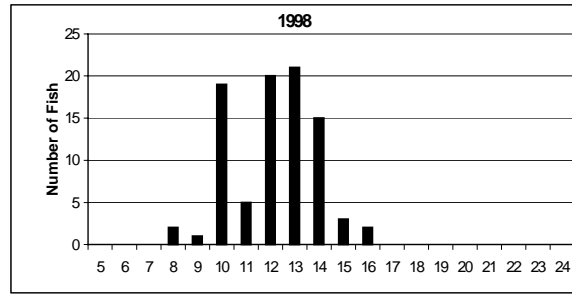
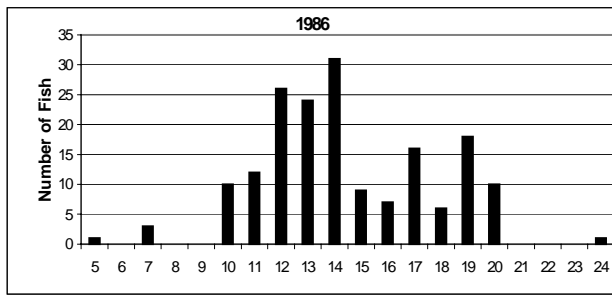
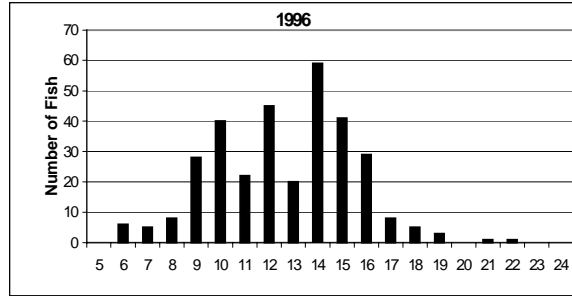
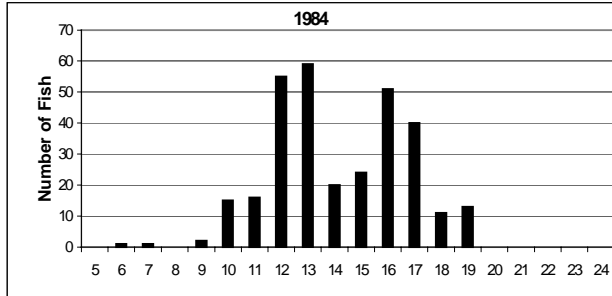
- 3) This study shows the average walleye reproduction, measured by boomshocking, to be about 30 fall fingerlings per mile. An infrequent, high year of reproduction measures about 100/mile. These are the events which anglers detect as “great” fishing, ie. higher catch rate and eventually more larger fish. Other area lakes (Park, Redstone, Delton, Mirror, Dutch Hollow) whose walleye fishery is totally dependent on stocking at the standard rate of 50 small fingerlings/ac produces fall shocking rates of 5-20 fingerlings/mile. Add this to the normal Lake Wisconsin level of 30/mile and the added fish from a standard stocking rate does little to approach the high recruitment event that occurs every 5-10 years.

**Table 1**  
**Length Frequency of Angler Diary Walleye-Lake Wisconsin**

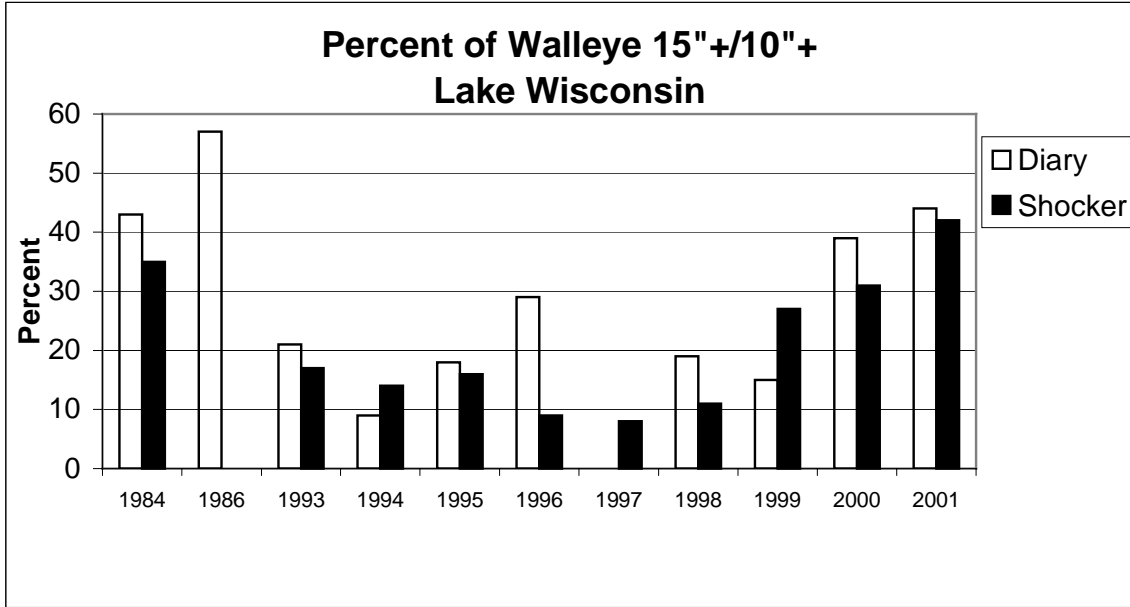




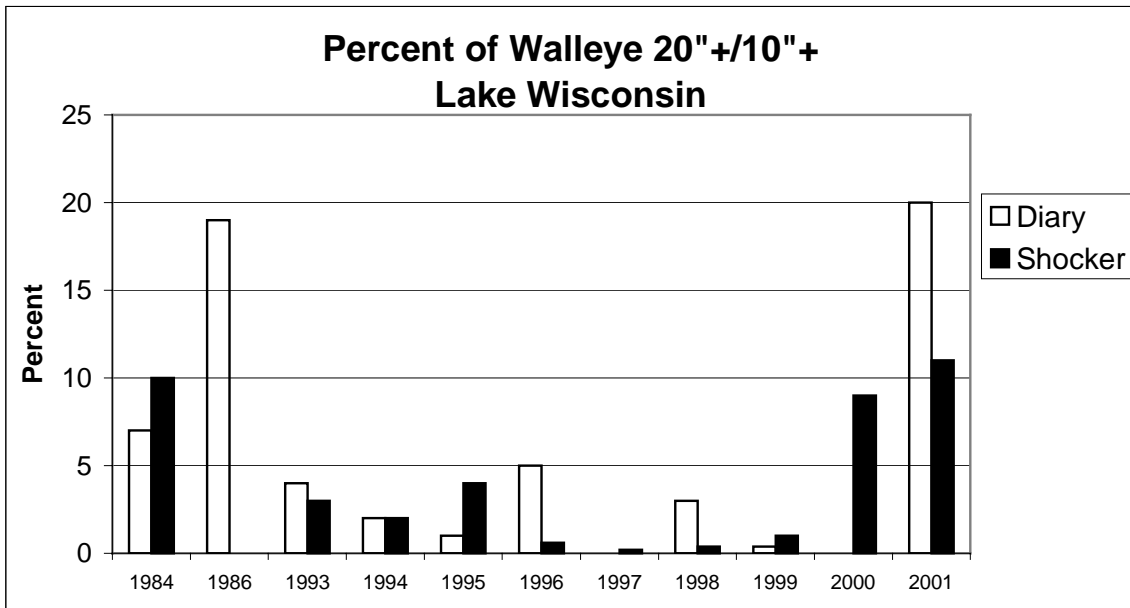
**Table 2**  
**Length Frequency of Angler Diary Sauger-Lake Wisconsin**



**Table 3**

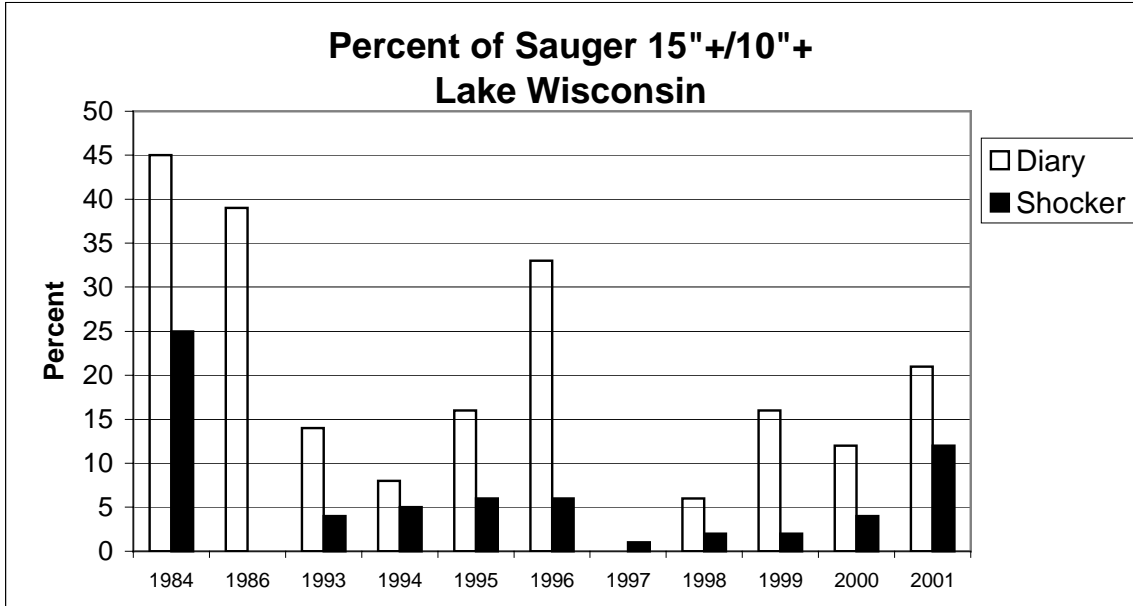


**Table 4**





**Table 5**



**Table 6**

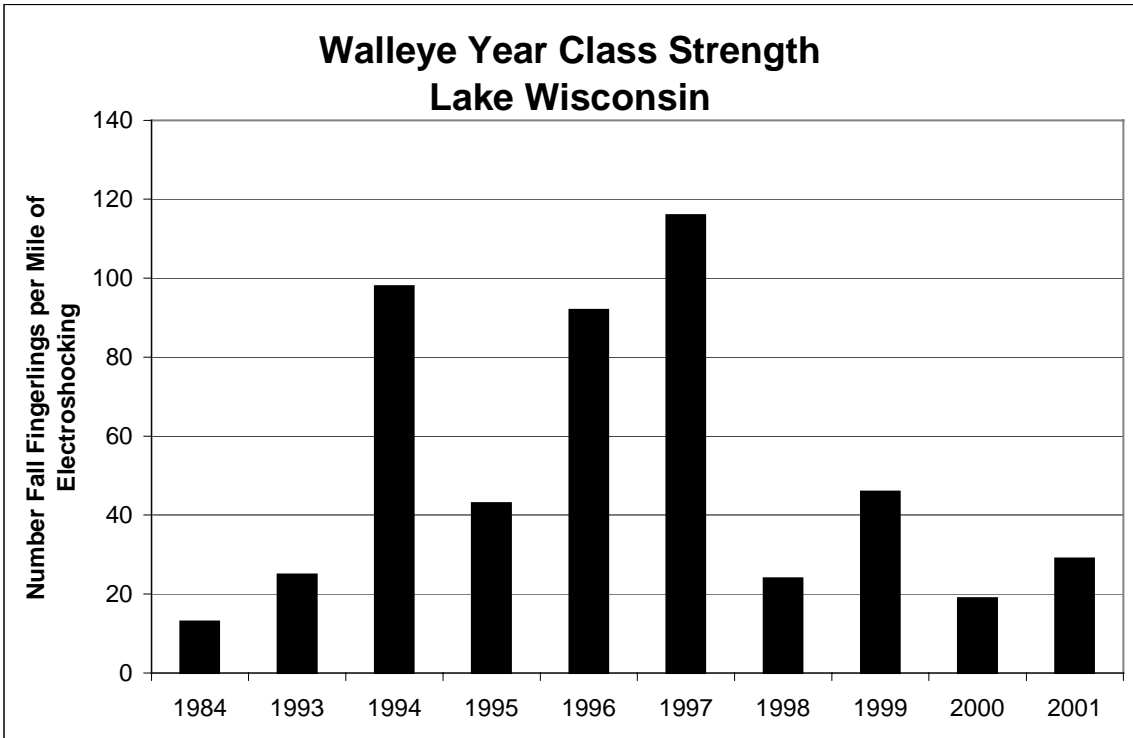
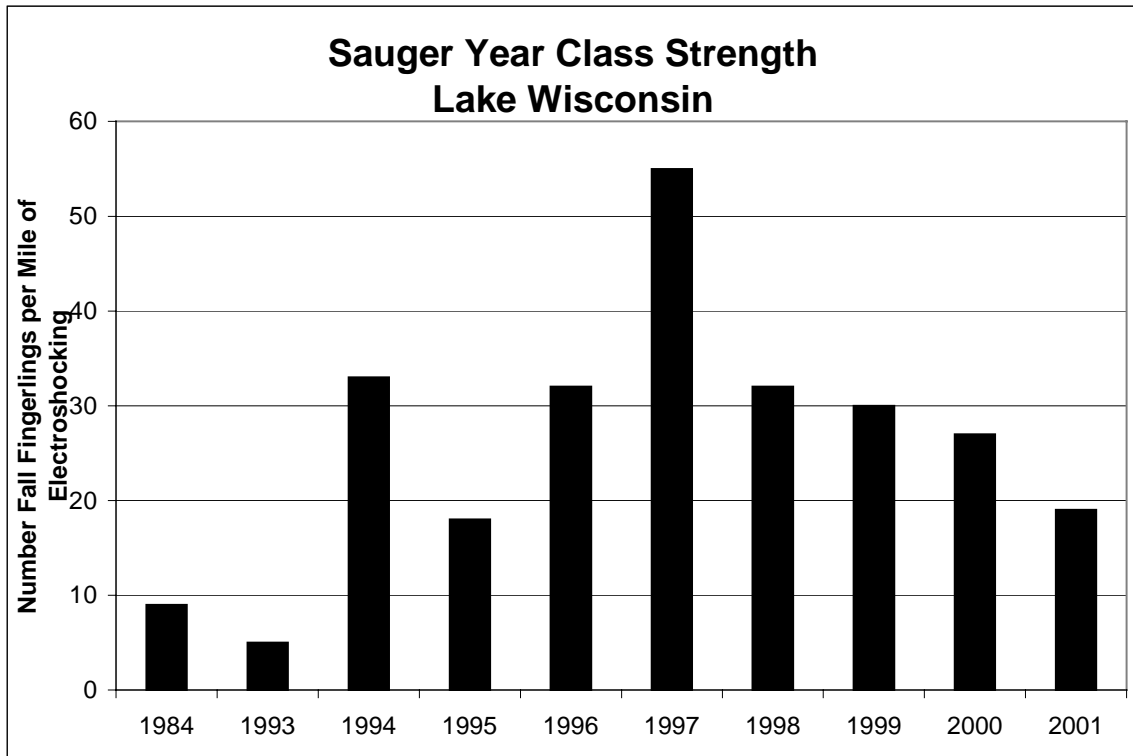


Table 7



**Table 8**

**Growth (sexes combined) - Lake Wisconsin**

<b>Walleye</b>	1	2	3	4	5	6	7
1984	8.0	14.0	18.4	21.4			
1990*							
1993	6.3						
1994	6.4	11.8	15.3				
1995	7.3	12.1	15.8				
1996	7.1						
1997	7.0	11.0	14.2				
1998	8.7	11.4	14.2	15.6	17.0		
1999	7.8	12.5	15.5	16.8	17.7		
2000	8.4	13.6	15.8	17.7	19.7	21.6	23.0
2001	7.8						

<b>Sauger</b>	1	2	3	4	5
1984	7.9	11.7	15.0	17.1	19.0
1993	5.5				
1994*	5.8	10.9	13.2		
1995	6.2	10.4	12.9	15.1	
1996	6.3				
1997	5.6				
1998	7.1	10.8	12.9	14.6	
1999	6.3	10.3	12.2	14.2	15.5
2000	6.6	10.6	13.5	15.4	16.0
2001	6.4				

\* 15" minimum size limit enacted

**Table 9**

**Volunteer Angler Diary Walleye/Sauger Catch Rates - Lake Wisconsin**

<b>Year</b>	<b>Angler Hours</b>	<b>Walleye (Catch/Hr)</b>		<b>Sauger (Catch/Hr)</b>		<b>Species Combined</b>	
		<b>All Sizes</b>	<b>Legals (15"+)</b>	<b>All Sizes</b>	<b>Legals (15"+)</b>	<b>All Sizes</b>	<b>Legals (15"+)</b>
1984	934	0.60		0.32		0.92	
1986*	795	0.42		0.30		0.72	
1993	442	0.46	0.10	0.24	0.03	0.68	0.13
1994	375	0.31	0.02	0.81	0.04	1.12	0.06
1995	679	0.74	0.13	0.73	0.08	1.47	0.21
1996	510	0.68	0.16	0.51	0.14	1.19	0.30
1996*	295	1.11	0.62	0.51	0.23	1.62	0.85
1997	No data, fish weren't biting						
1998	225	0.89	0.19	0.26	0.004	1.14	0.19
1999	426	0.85	0.10	0.55	0.07	1.40	0.17
2000	165	0.24	0.10	1.00	0.07	1.24	0.17
2001	393	0.46	0.18	1.24	0.23	1.70	0.41

\* Individual diary of Bob Hutter

